GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
Madhurawada :: Visakhapatnam – 530 048

Constitution and list of members of Governing Body 2024-2025

5 members from the Management (Chairman or President of the Management as the Chairperson)

1	Prof. P. Srinivasa Rao, B.Tech. (Hons), M.Tech., Dr.Ing (Munich) President, Gayatri Vidya Parishad Advisor (Tech. Edn. and R&D), GVP Formerly Professor of Civil Engineering, Formerly Dean of Industrial Consultancy, IIT Madras, Formerly Dean of Academic Courses, IIT Madras	Chairman
2	Sri D. Dakshina Murthy, M.Sc. Former Principal, Govt. Degree College, Vice-President, Gayatri Vidya Parishad	Member
3	Prof. K.P.R. Sastry, Formerly Professor of Mathematics Vice-President, Gayatri Vidya Parishad	Member
4	Prof. P. Soma Raju, M.A., Ph.D. Secretary, Gayatri Vidya Parishad and Professor of Mathematics	Member
5	Sri V.R.K.S. Siva Prasad, C.A. Treasurer, Gayatri Vidya Parishad and Chartered Accountant	Member

2 Teachers of the College nominated by the Principal based on seniority.

6	Dr. G. Sudheer Professor & Vice Principal GVP College of Engineering for Women	Teacher of the College
7	Prof.Dr.P.V.S.L.Jagadamba Professor Department of Computer Science & Engineering GVP College of Engineering for Women	Teacher of the College

1 Educationist or industrialist nominated by the Management

8	Prof. V.S.R.K. Prasad, Ph.D. Advisor-Academics, Coordinator, Indian Institute of Petroleum & Energy Retd. Professor, Chemical Engineering, Andhra University Retd. Principal, ANITS, Visakhapatnam Member, Gayatri Vidya Parishad.	Member

1 State Government Nominee

9	Sri K Vijaya Bhaskar Deputy Director Academic Department of Technical Education Govt. of Andhra Pradesh	Government Nominee

1 University Nominee nominated by the Affiliating University

10	Prof.Dr.K Rama Sudha Professor Department of Electrical & Electronics Engineering AU College of Engineering (A) Visakhapatnam	University Nominee

1 Principal of the College (Ex-officio)

11	Dr.R. K. Goswami Principal GVP College of Engineering for Women	Member - Secretary

Special Invitees

12	Sri D.V.S. Kameswara Rao, B.E. Joint Secretary, Gayatri Vidya Parishad Joint Secretary, Gayatri Engineering Works	Member
13	Dr. P. Rajaganapathi, M.Sc., Ph.D. Former Principal, Govt. Degree College, Member, Gayatri Vidya Parishad.	Member
14	Prof. P.V. Sarma, M.A., Ph.D. Vice-President, Gayatri Vidya Parishad Former Professor of Economics and Co-ordinator, School of Economics, Andhra University, Director, R&D, Gayatri Vidya Parishad	Member
15	Sri A.S.N. Prasad, B.E., M.I.E. Director, Sri Rama Corporation; Member, Srinivasa Vidya Parishad; Secretary, Institute of Development & Planning Studies, Visakhapatnam; Member, Gayatri Vidya Parishad	Member
16	Dr. B. Subba Rao, M.S., M.Ch. (Neuro Surgery) Former Professor of Neuro Surgery, AMC Formerly Vice-Principal, AMC, Formerly Additional Director of Health Services, Govt. of Andhra Pradesh.	Member
17	Sri K.G.K.V.S.B.S.R.Ch.K. Raju Member, Gayatri Vidya Parishad	Member

18	Prof.P.S.Avadhani Member, Governing Body, GVPCEW Director, IIIT, Agartala Former Professor of CSE, AU College of Engineering, Andhra University	Member
19	Prof.Dr. M Sasi Professor of CSE, Andhra University	Member
20	Smt. Annamraju Rama Devi Social Worker	Member

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)
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Accredited by NAAC with A Grade from 2022-2023 to 2027-2028

DEPARTMENT ADVISORY COMMITTEE (DAC) REPORT

Department of Basic Sciences & Humanities

For Proposed Autonomous Syllabus – Academic Year 2024–2025

The Department Advisory Committee (DAC) meeting was conducted on 16-07-2024 to review the *proposed* syllabus changes for the upcoming Autonomous Academic Year. The committee discussed observations received from subject faculty (English, Mathematics, Physics, Chemistry) and provided recommendations that will be placed before the Board of Studies (BoS) for final approval.

DAC Members :

Dr. K.L. Sai Prasad , Professor, HoD, BS&H
Dr.G. Sudheer, Professor, BS&H(Mathematics)
Dr.A. Suseelatha, Assistant Professor, First Year Coordinator, BS&H(Mathematics)
Dr.A. Kameswara Rao,Assistant Professor, BS&H(Mathematics)
Dr.V. Usha RamaniAssistant Professor, BS&H(English)
Dr.B. Rajesh BabuAssistant Professor, BS&H(Physics)
Dr.P. Srinivasa Rao, Assistant Professor, BS&H(Chemistry)
Mr.A. Srinivasa Rao, Assistant Professor, BS&H (Mechanical Engineering)
Dr.R. Neelima, Assistant Professor, BS&H(Management Science)

Agenda of the Meeting

- Review of proposed syllabus changes.
- Identification of additions/removals required in the Autonomous syllabus.
- Ensuring alignment with NEP 2020, Outcome-Based Education (OBE), and Programme Educational Objectives (PEOs).
- Recommendations for curriculum strengthening and resource requirements.
- Preparing the syllabus proposal for forwarding to the BoS

The Department Advisory Committee (DAC) reviewed the revised curriculum proposed for the upcoming academic year and carefully examined the additions and deletions made across various subjects under the Department of Basic Sciences and Humanities. After detailed discussions with subject experts, the committee recorded the following observations regarding the inclusion and removal of topics to enhance academic relevance, streamline course outcomes, and ensure alignment with current industry and technological requirements.

Subject	Topic Added/Removed	Reason/Justification
Physics	Removed: Hall effect	Repeated later in EDC and semiconductor subjects on the advice of ECE department.
	Removed: Magnetic materials	It was already covered in earlier academic levels.

Physics	Removed: Ultrasonics Nanophase materials	These topics are highly specialized and more suitable for advanced physics; removing them to reduces cognitive load for engineering first-years.
	Removed: Free electron theory of metals, Kronig - Penney model (qualitative treatment)	Better suited to specialized physics/electronics courses.
	Removed: Origin of energy band formation in solids, Classification of materials into conductors, semi conductors and insulators.	Repeated later in EDC and semiconductor subjects as per the suggestion of ECE Department.
	Added: Losses in optical fibres	Attenuation in optical fibers was added to introduce students to fundamental concepts in modern communication systems.
	Added: Quantum Computing	Quantum Computing was added to provide students early exposure to cutting-edge and future-oriented computing technologies."
Chemistry	Added: Electrochemical Sensors, Optical Fibre Applications	Ensures relevance to modern engineering fields like IoT, biomedical devices, and communication technologies.
	Supplementary (Not core): Next-gen catalysts, AI/ML in Green Chemistry, Circular Economy Principles	Kept as supplementary modules/seminars to expose students to modern trends without overburdening the first-year syllabus.
Mathematics	Added: Vector and Inner Product Spaces	Provides essential linear algebra foundation for AI-ML, data science, signal processing, and advanced engineering analysis.
	Removed: Fourier Series (for CSE & allied branches)	Advanced topic mainly required in signal processing and control systems
	Removed: Mass, Centre of Gravity, Moment/Product of Inertia	Branch-specific (Civil/Mechanical); not relevant for all engineering branches.
	Removed: Beta & Gamma Functions	Advanced functions with limited use in early engineering years.
	Removed: Euler's Theorem & Mean Value Theorems	Already covered at intermediate level; removing avoids redundancy.

Mathematics	Removed: Linear & Bernoulli Differential Equations	Covered in intermediate education; avoids repetition.
	Removed: Cauchy's Homogeneous LDE & LDELegendre's	Too advanced for first-year curriculum.
	Removed: Simultaneous Linear Differential Equations	Higher-level concept
	Removed: Gauss–Seidel Method	Numerical method taught in later Numerical Methods course.
	Removed: Area of curved surface, Mass, Moment of inertia etc.	Branch-specific applications; removed for uniformity across branches.
	Removed: Complex Matrices	Advanced linear algebra; introduced later.
	Removed: Cauchy's Linear Equation	Advanced topic suited for higher semesters.
	Removed: Legendre's Linear Equation	Applicable mainly in physics-oriented mathematics.
	Removed: Simultaneous Linear Differential Equations	Too advanced for first-year.
	Removed: Permutations & Combinations	Covered earlier at intermediate level.
	Removed: Boolean Algebra, Relations	Moved to Discrete Mathematics; avoids overlap.
	Removed: Modelling Computation	Advanced CSE topic; not needed in foundational year.
English	"English Wordsworth" software has been purchased .	To enhance listening comprehension and pronunciation.

DAC Suggestions

- Committee agreed with the rationalization of the syllabus to avoid duplication of topics studied at intermediate level.
- Supported branch-specific customization to ensure relevance.
- Recommended that application-oriented topics such as "Electrical Circuit Calculations" be expanded with engineering examples.
- Suggested confirming mathematical prerequisites for second-year courses before final deletion of any topic.

General Recommendations:

- Ensure CO–PO alignment for all subjects after syllabus restructuring.
- Avoid overloading first-year students by balancing advanced and foundational topics.
- Strengthen laboratory components wherever new applications or equipment are introduced.
- Provide orientation for faculty on NEP, OBE, and autonomous assessment structures.

Conclusion:

- The DAC reviewed the proposed Autonomous syllabus and provided the above recommendations. The Committee authorizes forwarding the revised and refined syllabus proposal to the Board of Studies (BoS) for further review and approval.

Members Present:

Sl.No.	Name	Signature
1	Dr.K.L.Sai Prasad	
2	Dr.G.Sudheer	
3	Dr.A.Suseelatha	
4	Dr.A.Kameswara Rao	
5	Dr.V.Usha Ramani	
6	Dr.B.Rajesh Babu	
7	Dr.P.Srinivasa Rao	
8	Mr.A.Srinivasa Rao	
9	Dr.R.Neelima	

HoD, BS&H

HEAD
DEPARTMENT OF
BASIC SCIENCES & HUMANITIES
GVP COLLEGE OF ENGINEERING FOR WOMEN
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DEPARTMENT ADVISORY COMMITTEE (DAC) REPORT

Department of Basic Sciences & Humanities

For Proposed II year Autonomous Syllabus (2025–2026)

The Department Advisory Committee (DAC) meeting was conducted on 26-03-2025 to review the proposed II year syllabus for the upcoming Autonomous academic year. The committee examined all BS&H-related courses—Management, Environmental Science, Professional Ethics & Human Values, Discrete Mathematical Structures, Probability & Statistics, Complex Variables & Statistical Methods, and Complex & Fourier Analysis—to ensure alignment with academic standards, regulatory guidelines, and student learning outcomes.

DAC Members :

Dr. K.L. Sai Prasad , Professor, HoD, BS&H
Dr.G. Sudheer, Professor, BS&H(Mathematics)
Dr.A. Suseelatha, Assistant Professor, First Year Coordinator, BS&H(Mathematics)
Dr.A. Kameswara Rao,Assistant Professor, BS&H(Mathematics)
Dr.V. Usha RamaniAssistant Professor, BS&H(English)
Dr.B. Rajesh BabuAssistant Professor, BS&H(Physics)
Dr.P. Srinivasa Rao, Assistant Professor, BS&H(Chemistry)
Mr.A. Srinivasa Rao, Assistant Professor, BS&H (Mechanical Engineering)
Dr.R. Neelima, Assistant Professor, BS&H(Management Science)

Agenda of the Meeting

- Review of proposed syllabus changes.
- Identification of additions/removals required in the Autonomous syllabus.
- Ensuring alignment with NEP 2020, Outcome-Based Education (OBE), and Programme Educational Objectives (PEOs).
- Recommendations for curriculum strengthening and resource requirements.
- Preparing the syllabus proposal for forwarding to the BoS

Observations:

After detailed evaluation of the newly framed syllabus, the DAC made the following common observations across all BS&H courses:

Subject	Topic Added/Removed	Action	Justification
Managerial Economics	Environmental Analysis	Removed	Overlaps with Environmental Science; removed to reduce non-core content load.
	Sales Promotion	Removed	Considered a management/marketing topic, not essential for engineering curriculum.
	Sales Forecasting	Removed	Advanced commerce topic not required for engineering outcomes; removed based on regulatory guidelines.
Environmental Science	Outcome-based components	Added	AICTE requires integration of sustainability outcomes and practical relevance in EVS.
Professional Ethics & Human Values	Outcome-based modules	Added	To align with AICTE's focus on ethical reasoning and professional responsibility.
Discrete Mathematical Structures	Counting Principles	Removed	Overlaps with Probability & Statistics; removed to avoid duplication.
	Boolean Algebra	Removed	Already covered in Digital Logic/Computer Organization courses on the advice of CSE Department.
	Modelling Computation	Removed	Excluded as they will learn in core syllabus on the advice of CSE Department.
	Chinese Remainder Theorem	Added	Valuable for security, algorithms, and number theory applications; industry-relevant (cryptography) based on inputs by CSE Department.
Probability & Statistics	Descriptive Statistics	Added	Needed for data analysis, machine learning readiness, and outcome-based learning based on inputs by CSE Department.
	Queuing Theory	Removed	Specialized operations research topic; reserved for higher electives on the advice of CSE Department.
	Negative Binomial Distribution	Removed	Less application in core engineering; simplifies course.
	Uniform & Exponential Distributions	Removed	Advanced statistical distributions; streamlined for clarity and manageable load.

Complex Variables & Statistical Methods (EEE)	Entire course introduction	Added	Enhances analytical skills for signal processing, control systems, and electrical design on the advice of EEE Department.
Complex & Fourier Analysis	Conformal Mapping	Removed	Advanced mathematical topic with limited direct engineering application; removed to prioritize essential concepts.
Operations Research	Demand Rate Uniform, Finite Production Rate	Removed	Reduces complexity; these EOQ variants have limited relevance for multidisciplinary engineering audiences.
	Sequencing	Added	Enhances practical industrial applicability; sequencing problems align with real-world scheduling, manufacturing, and service operations.

DAC Recommendations:

The Department Advisory Committee provides the following recommendations for implementation:

- The revised syllabus is appropriate for adoption under the Autonomous curriculum and aligns with NEP and OBE principles.
- Additions such as **Descriptive Statistics** and **Chinese Remainder Theorem** should be retained, as they enhance analytical and problem-solving skills.
- The removal of advanced or less essential topics (e.g., Conformal Mapping, Queuing Theory, redundant management topics) is appropriate and reduces cognitive load on students.
- Faculty are encouraged to supplement core subjects with seminars, guest lectures, and industry interactions to strengthen practical understanding.
- The introduction of **Complex Variables & Statistical Methods** for EEE students is well-justified and recommended for approval.
- AICTE-mandated course structures should be followed without deviation.
- The DAC approves the revised syllabus with the above recommendations and recommends forwarding it to the Board of Studies (BoS) for further processing.
- By removing the topics *"demand rate uniform"* and *"finite production rate"* and adding the topic *"Sequencing,"* the Operations Research course achieves better alignment with practical industrial applications and offers simplified, relevant content suitable for multi-disciplinary audiences.

General Recommendations:

- Ensure CO–PO alignment for all subjects after syllabus restructuring.
- Avoid overloading first-year students by balancing advanced and foundational topics.
- Provide orientation for faculty on NEP, OBE, and autonomous assessment structures.

Conclusion:

- The DAC reviewed the upcoming Autonomous II year syllabus and provided the above recommendations.
  The Committee authorizes forwarding the revised and refined syllabus proposal to the Board of Studies (BoS) for further review and approval.

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Members Present:

Sl.No.	Name	Signature
1	Dr.K.L.Sai Prasad	
2	Dr.G.Sudheer	
3	Dr.A.Suseelatha	
4	Dr.A.Kameswara Rao	
5	Dr.V.Usha Ramani	
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HoD-BS&H

HEAD
DEPARTMENT OF
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GVP COLLEGE OF ENGINEERING FOR WOMEN
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 02-06-24

INTERNAL NOTE

This is to inform all the Faculty of CSE that Department Advisory Committee is revised. I thank all the previous members for their continuous support in making decisions for improvement of the Department. Following is the New Committee

DEPARTMENT ADVISORY COMMITTEE MEMBERS

1. Dr. PVS Lakshmi Jagadamba HoD, CSE ... In the chair
2. Dr. N.Sharmili, Associate Professor, CSE
3. Dr.V.Lakshamana Rao, Assistant Professor, CSE
4. Mrs. K. Suneetha, Assistant Professor, CSE
5. Mrs. V Gowtami Annapurna, Assistant Professor, CSE

Copy to:

Principal
Vice Principal
Mr.S.Sumahasan
Dr. V.Lakshamana Rao

GVP COLLEGE OF ENGG FOR WOMEN * VISAKHAPATNAM *

HoD-CSE
Head of Department
Dept. of Computer Science & Engineering
GVP College of Engineering for Women
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 02-06-24

DEPARTMENT ADVISORY COMMITTEE MEMBERS

1. Dr. PVS Lakshmi Jagadamba HoD, CSE … In the chair
2. Dr. N.Sharmili, Associate Professor, CSE
3. Dr.V.Lakshamana Rao, Assistant Professor, CSE
4. Mrs. K. Suneetha, Assistant Professor, CSE
5. Mrs. V Gowtami Annapurna, Assistant Professor, CSE

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MINUTES OF THE MEETING OF THE DEPARTMENT ADVISORY COMMITTEE HELD ON 26th JULY 2024 IN THE HOD'S CHAMBER

Members present:

1. Dr. PVS Lakshmi Jagadamba HoD, CSE … In the chair
2. Dr. N.Sharmili, Associate Professor, CSE
3. Dr.V.Lakshman Rao, Assistant Professor, CSE
4. Mrs. K. Suneetha, Assistant Professor, CSE
5. Mrs. V Gowtami Annapurna, Assistant Professor, CSE

Agenda:

1. Elective subjects to offer for IV B. Tech CSE, Semester-I, AY: 2023-24
2. Planning of training and placement activities.
3. Planning of Academic and Co-Circular activities.
4. Any other issues with the permission of chair.

The members discussed and resolved the following:

1. The chairman welcomed all members and briefed about the compulsory courses, elective courses, and lab courses in R20 for IV BTech to consider in the odd semester 2024-25
2. From II, III years GVPCEW has been affiliated to ANDHRA UNIVERSITY, VISAKHAPATNAM. DAC members provided feedback on the contents of new curriculum in AU CSE. HoD then requested the DAC members to submit the detailed feedback report on the II,III CSE Courses
3. In JNTUK R20 Regulations (IV-I) DAC decided to take options to choose one from the following courses for IV CSE students.

   Elective III for IV CSE: 1. Cloud Computing
   2. Cyber Security Forensics

   Elective IV for IV CSE: 1. Deep Learning Techniques
   2. Computer Vision

Elective V for IV CSE: 1. Block Chain Technologies
2. Ethical Hacking

Open Elective III/Job Oriented Course for IV CSE: DAC members recommended to go for Job Oriented Course API Micro Services to all the students.

Open Elective IV: ECE Department will handle Open Elective IV. They recommended to choose one form the following courses for IV CSE students

1.Data Communications

2.Digital Logic Design

SKILL COURSES: 1.Mean Stack Technologies2
2.Python Deep Learning

HOD informed DAC members that Cloud Computing and Deep Learning Techniques are opted by the most of the Students as Elective III, Elective IV respectively. Hence it is decided to offer the above courses to all the students

Elective III for IV CSE: 1. Cloud Computing
Elective IV for IV CSE: 2. Deep Learning Techniques

4 As per JNTU R20 Regulations, DAC recommended the following courses as Open Electives

Open Elective III: AI tools and Techniques for IV ECE & IV EEE students

Open Elective IV: Block Chain Technologies for IV ECE students

5. In AU Regulations (III-I) DAC decided to offer Data Warehousing and Data Mining as Professional Elective-I to all students as it is necessary course to learn in III year.

Professional Elective-I for III CSE: 1.Data Warehousing and Data Mining

6. AU offers a Provision to obtain MINOR degree in ECE to the 2022 Admitted Batch only.In this regard student have to complete 2 of the 4 following courses as Open Electives.

Open Electives

1. Digital Logic Design(I-II Compulsory Subject)

2. Microprocessors (II-II Compulsory Subject)

3. Mobile Cellular Communication(III-I Open Elective)

4. GPS Principles And Its Applications(IV-I Open Elective)

DAC recommended to offer MCC as Open Elective I to III CSE students

Open Elective I for III CSE: Mobile Cellular Communications

7. As per JNTUK R20 regulation the project work must be submitted in IV-II semester. DAC members discussed and recommended the Project Coordinators to start the Project Batches Division and Guide Allocation

8. As per JNTUK R20 regulation, Internship which is done by the students at the end of III-II semester must be submitted in the IV-I semester. DAC recommended Internship Coordinator to monitor the Internship status.

9. HOD requested DAC members to verify course files and lab files of the previous semester as part of Academic audit.

10. DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the gap.

(a) DAC recommended to conduct workshops/training for 3rd and 2nd year students on Problem solving skills and latest trends on topics such as Quantum Computing, and UI Development.

(b) DAC recommended to conduct workshops/training for 3rd and 2nd year students on DEVOPS and Python courses to bridge the gap as they are not there in the curriculum of Andhra University

(c) DAC recommended to conduct Faculty Development Programs on latest technologies like Agile Methodologies, DEVOPS, Microsoft Azure AI

(d) DAC recommended to conduct student activities under COSCENGERS and CSI professional body chapters.

(e) In this regard, DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus in their respective subjects for pertaining POs.

11. As GVP College of Engineering for Women has been granted Autonomous Status from the Academic Year 2024–25, the I B.Tech and I M.Tech Course Structure and Syllabus are to be approved by the Board of Studies. The HOD has requested DAC members to review and provide suggestions on the tentative course structure and syllabus, to be finalized in the BoS meeting scheduled on 03-08-2024 at the GVPCEW (A) premises.

Members Present:

S.No.	Name	Signature
1	Dr. PVS Lakshmi Jagadamba HoD, CSE	
2	Dr. N Sharmilli, Associate Professor, CSE	
3	Dr.V.Lakshman Rao, Assistant Professor, CSE	
4	Mrs. K. Suneetha, Assistant Professor, CSE	
5	Mrs. V.Gowtami, Assistant Professor, CSE	

Date: 26-07-2024

GVP COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM *

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MINUTES OF THE MEETING OF THE DEPARTMENT ADVISORY COMMITTEE HELD ON 11th December 2024 IN THE HOD'S CHAMBER

Members present:

1. Dr. PVS Lakshmi Jagadamba HoD, CSE … In the chair
2. Dr. N.Sharmili, Associate Professor, CSE
3. Dr.V.Lakshman Rao, Assistant Professor, CSE
4. Mrs. K. Suneetha, Assistant Professor, CSE
5. Mrs. V Gowtami Annapurna, Assistant Professor, CSE

Agenda:

1. Ensuing Electives of III B. Tech for Semester-II, AY: 2024-25
2. Planning of Academic and Co-Circular activates.
3. Any other issues with the permission of chair.

The members discussed and resolved the following:

1. The chairman welcomed all members and reviewed the minutes of previous DAC meeting, briefed about the compulsory courses, elective courses, and lab courses in AU regulation to consider in the even semester 2024-25

2. In AU Regulations (III-II) DAC decided to take options to choose one from the following courses for III CSE students.

Professional Elective II for III CSE: 1. Cloud Computing
2. Software Project Management

Open Elective II for III CSE : 1.Data Science
2.Block Chain Technologies

3. As per AU Regulations, DAC recommended the following courses as Open electives/Minor in CSE for other branches.

Data Science for III ECE and III EEE Students.

4. As per orders given by AU and APSCHE, all students of 2nd and 3rd years have to do 6-week internship during summer vacation and will be evaluated in 2025-26 odd semester. In this regard, HOD sensitized all DAC members about the internship given in AU Regulations. HOD requested DAC members to submit recommendations on the internship project.

5. HOD requested DAC members to verify course files and lab files of the previous semester as part of Academic audit.

6.DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the gap.

(a) DAC recommended to conduct workshops/training for 3rd and 2nd year students on Problem solving skills and latest trends on topics such as Data Structures, Machine Learning Fundamentals Using Python. HOD informed that some of the activities such as UI Development, DEVOPS planned in the previous semester will be conducted in current semester.

(b) HOD informed to conduct another Faculty Development Program also which is planned in previous semester will be conducted in the current semester.

(c) DAC recommended to conduct student activities under COSCENGERS, CSI professional body chapters.

(d) In this regard, DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus in their respective subjects for pertaining POs.

7. DAC has discussed the PO/PSO attainment levels for 20-24 Admitted Batch(R20 Regulation).Basing on the results of 2020-24 Batch, DAC has finalized the CO Attainment as 45% and PO target is increased to 68%. Since students performed well owing to the activities conducted by the department, all POs were attained.

8. The HOD has requested the DAC members to provide suggestions for the preparation of the II, III, and IV B.Tech and II M.Tech Course Structure and Syllabus for the 2024–25 batch onwards, as GVPCEW (A) is planning to conduct the Board of Studies (BoS) meeting in the month of February/March 2025.

Members Present:

S.No.	Name	Signature
1	Dr. PVS Lakshmi Jagadamba HoD, CSE	
2	Dr. N Sharmilli, Associate Professor, CSE	
3	Dr.V.Lakshman Rao, Assistant Professor, CSE	
4	Mrs. K. Suneetha, Assistant Professor, CSE	K.Suneetha
5	Mrs. V.Gowtami, Assistant Professor, CSE	

HoD-CSE

Date: 11-12-2024

GVP COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM

Head of Department
Dept. of Computer Science & Engineering
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

Kommadi, Madhurawada, Visakhapatnam 530 048
(Approved by AICTE, New Delhi, Affiliated to Andhra University, Visakhapatnam)
(Accredited by National Board of Accreditation [NBA] for B.Tech CSE, ECE and IT - valid from 2019-22 and 2022-25)
(Accredited by National Assesment and Accreditation Council [NAAC] with A Grade - valid from 2022-2027)
Phone: +91-891-2739144, 2739124, 2719125, 2719127 Email id: gvpcew@gmail.com, info@gvpcew.ac.in

EAPCET Councelling Code
GVPW

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Date: 29/07/2024

MINUTES OF THE MEETING

Members present:

1. Dr. Dwiti Krishna Bebarta, HoD, CSE(AI&ML) … In the chair
2. Dr. K Purushottam Naidu, CSE(AI&ML)
3. Ms. D. Balasantoshimata, CSE (AI&ML)

Agenda:

1. Discussion on 4-1 course structure and detailed syllabus of R-20 regulation, JNTUK.
2. Elective subject to offer for IV-1 B. Tech CSE (AI&ML) students, R-20 regulation. AY: 2024-25
3. Planning of Academic and Co-Circular activities during AY: 2024-2025, odd semester.
4. Any other issues with the permission of chair

The members discussed and resolved the following:

1. The chairman welcomed all members of the DAC.
2. Members of the committee discussed about the course structure and syllabus content of 4-1 in detail proposed by the University.
3. The chairman has briefed about the compulsory courses, elective courses, and lab courses for IV-I B. Tech CSE (AI&ML) for the AY-2024-25.
4. DAC members decided three elective courses based on the merit from the pool of five listed courses mentioned in the JNTUK R-20 regulation. Later let students prefer any one choice which may benefit in their professional life.

Professional Elective-III

1. Reinforcement Learning
2. Soft Computing
3. Cryptography and Network Security
4. Block Chain Technologies
5. Speech Processing

The three courses proposed by the committee are given below:

1. Reinforcement Learning
2. Cryptography and Network Security
3. Speech Processing

Professional Elective-IV

1. Robotic Process Automation
2. Cloud Computing
3. Big Data Analytics
4. NOSQL Databases
5. Video Analytics

The three courses proposed by the committee are given below:

1. Cloud Computing
2. Big Data Analytics
3. Video Analytics

Professional Elective-V

1. Social Network Analysis
2. Recommender Systems
3. AI Chatbots
4. Object Oriented Analysis and Design
5. Semantic Web

The three courses proposed by the committee are given below:

1. Social Network Analysis
2. AI Chatbots
3. Object Oriented Analysis and Design

Open Elective-III

Open Electives offered by other departments

1. Principles of Communications (ECE)
2. Fundamentals of Electric Vehicle (EEE)

API and Microservices (Job Oriented Course)

Open Elective-IV

Open Electives offered by other departments

Options

1. Concepts of Smart Grid Technologies (EEE)
2. Data Communications (ECE)

Secure Coding Techniques (Job Oriented Course)

5. HoD requested DAC members to verify course files and lab related files of the previous semester as part of Academic audit.
6. HoD requested the members to plan the academic calendar (2024-2025 odd sem) for the Department about teaching-learning activities and inform the same to concern coordinator for preparation.

Members Present:

Sl. No.	Name of the Staff Member	Designation	Signature
1	Dr. Dwiti Krishna Bebarta	Associate Professor & HoD	
2	Dr. K Purushotam Naidu	Assistant Professor	
3	Ms. D. Balasantoshimata	Assistant Professor	

Date: 29-07-2024

HoD-CSE (AI&ML)
Head of Department
Dept. of Computer Science & Engineering (AIML)
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

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EAPCET Counselling Code
GVPW

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Date: 19/08/2024

MINUTES OF THE MEETING

Members present:

1. Dr. Dwiti Krishna Bebarta, HoD, CSE(AI&ML) ... In the chair
2. Dr. K Purushottam Naidu, CSE(AI&ML)
3. Ms. D. Balasantoshimata, CSE (AI&ML)

Agenda:

1. Discussion on 3-1 course structure and detailed syllabus of R-22 regulation, Andhra University (AU).
2. Elective subjects to offer for III-1 for B. Tech CSE (AI&ML) students AY: 2024-25
3. Any other issues with the permission of chair

The members discussed and resolved the following:

1. The chairman welcomed all members of the DAC.
2. The chairman has briefed about the compulsory courses, elective courses, and lab courses for III-I, B. Tech CSE (AI&ML) for the AY-2024-25 (R-22 regulations, AU)
3. DAC members decided three elective courses based on the merit from the pool of listed professional and open elective courses mentioned in the AU, R-22 regulation. Later let students prefer their choice which may benefit in their professional life.

Professional Elective-I:
The three courses proposed by the committee are given below:

1. Software Project Management
2. Compiler Design
3. Cloud Computing

Open Elective-I
The three courses proposed by the committee are given below:

1. Python Programming
2. Python for Data Science
3. NoSQL Database

4. DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the curriculum gap.

   (a) DAC recommended for conducting workshops/training activities for the students on problem solving skills and latest trends on Machine Learning, Block Chain, and PySpark, etc.

   (b) DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus for pertaining POs.

Members Present:

Sl. No.	Name of the Staff Member	Designation	Signature
1	Dr. Dwiti Krishna Bebarta	Associate Professor & HoD	
2	Dr. K Purushotam Naidu	Assistant Professor	
3	Ms. D. Balasantoshimata	Assistant Professor	

Date: 19-08-2024

HoD-CSE (AI&ML)
Head of Department
Dept. of Computer Science & Engineering (AIML)
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

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EAPCET Councelling Code GVPW

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Date: 10/09/2024

MINUTES OF THE MEETING

Members present:

1. Dr. Dwiti Krishna Bebarta, HoD, CSE(AI&ML) ... In the chair
2. Dr. K Purushottam Naidu, CSE(AI&ML)
3. Ms. D. Balasantoshimata, CSE (AI&ML)

Agenda:

1. Discussion on 2-1 course structure and detailed syllabus of R-22 regulation, Andhra University (AU).
2. Any other issues with the permission of chair

The members discussed and resolved the following:

1. The chairman welcomed all members of the DAC.
2. The chairman has briefed about the compulsory theory courses, lab courses, and skill course for II-I, B. Tech CSE (AI&ML) for the AY-2024-25 (R-22 regulations, AU)
3. DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the curriculum gap.
   (a) DAC recommended for conducting workshops/training activities for the students on problem solving skills and latest trends on CSE (AI&ML).
   (b) DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus for pertaining POs.

Members Present:

Sl. No.	Name of the Staff Member	Designation	Signature
1	Dr. Dwiti Krishna Bebarta	Associate Professor & HoD	
2	Dr. K Purushotam Naidu	Assistant Professor	
3	Ms. D. Balasantoshimata	Assistant Professor	

Date: 10-09-2024

HOD-CSE (AI&ML)
Dept. of Computer Science & Engineering (AIML)
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

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EAPCET Counselling Code GVPW

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Date: 07/01/2025

MINUTES OF THE MEETING

Members present:

1. **Dr. Dwiti Krishna Bebarta, HoD, CSE(AI&ML)** **... In the chair**
2. Dr. K Purushottam Naidu, CSE(AI&ML)
3. Ms. D. Balasantoshimata, CSE (AI&ML)

Agenda:

1. Discussion on 3-2 course structure and detailed syllabus of R-22 regulation, Andhra University (AU).
2. Elective subjects to offer for III-II for B. Tech CSE (AI&ML) students, R-22 regulation. AY: 2024-25
3. Any other issues with the permission of chair

The members discussed and resolved the following:

1. The chairman welcomed all members of the DAC.
2. The chairman has briefed about the compulsory courses, elective courses, and lab courses for IV-II, III-II, and II-II of B. Tech CSE (AI&ML) for the AY-2023-24 (R-20 and R-22 regulations).
3. DAC members have decided three elective courses based on the merit from the pool of listed in the AU R-22 regulation. Later let students prefer their choice which may be benefited in their professional life.

Professional Elective-II

The following three courses are proposed by the committee are given below:

1. Morden Cryptography and Network Security
2. Cloud Computing
3. Software Engineering
4. Game DEvelopment

Open Elective-II

The following three courses are proposed by the committee are given below:

1. AI Chatbot
2. Mobile Computing
3. Internet of Things
4. Renewable Energy Source

4. DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the curriculum gap.

   (a) DAC recommended to conduct workshops/training for 3rd year students on problem solving skills and latest trends in computer science.

   (b) DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus for pertaining POs.

Members Present:

Sl. No.	Name of the Staff Member	Designation	Signature
1	Dr. Dwiti Krishna Bebarta	Professor & HoD	
2	Dr. K Purushotam Naidu	Associate Professor	
3	Ms. D. Balasantoshimata	Assistant Professor	

Date: 07-01-2025

HoD-CSE(AI&ML)

Head of the Department
Dept. of Computer Science & Engineering (AIML)
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

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EAPCET Counselling Code
GVPW

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI&ML)

Date: 17/02/2025

MINUTES OF THE MEETING

Members present:

1. **Dr. Dwiti Krishna Bebarta, HoD, CSE(AI&ML)** **... In the chair**
2. Dr. K Purushottam Naidu, CSE(AI&ML)
3. Ms. D. Balasantoshimata, CSE (AI&ML)

Agenda:

1. Discussion on 2-2 course structure and detailed syllabus of R-22 regulation, Andhra University (AU).
2. Any other issues with the permission of chair

The members discussed and resolved the following:

1. The chairman welcomed all members of the DAC.
2. The chairman has briefed about the compulsory courses, skill course, and lab courses for II-II of B. Tech CSE (AI&ML) for the AY-2024-25 (R-22 regulations).
3. DAC members have decided three elective courses based on the merit from the pool of listed in the AU R-22 regulation. Later let students prefer their choice which may be benefited in their professional life.
4. DAC members discussed about the academic and co-curricular activities to conduct in this semester. Keeping in view the Gap Analysis, the Academic plan for this session has been prepared to bridge the curriculum gap.
   (a) DAC recommended for conducting workshops/training for 2nd year students on problem solving skills and latest trends in computer science.
   (b) DAC recommended course-coordinators to coordinate with subjects handling faculty to identify content beyond syllabus for pertaining POs.
5. The chairman has briefed about the Major Project Work, Seminar, Internship which is mentioned in IV-I B. Tech CSE (AI&ML) students under JNTUK syllabus.
6. The chairman has instructed the coordinator for planning internal reviews to monitor the progress of the project work. Also informed the all project batches must work on research articles and try to publish their work in reputed journals.

Members Present:

Sl. No.	Name of the Staff Member	Designation	Signature
1	Dr. Dwiti Krishna Bebarta	Professor & HoD	
2	Dr. K Purushotam Naidu	Associate Professor	
3	Ms. D. Balasantoshimata	Assistant Professor	

Date: 17-02-2025

HoD-CSE (AI&ML)
Head of Department
Dept. of Computer Science & Engineering (AIML)
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
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(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION[NBA] FOR B.TECH EEE VALID FROM 2023-24 TO 2025-2026)
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DEPARTMENT OF INFORMATION TECHNOLOGY

Date: 05/08/2024

DEPARTMENT OF ADVISORY COMMITTEE (DAC) MEMBERS

ACADEMIC YEAR 2024-25

1. Dr. M. Bhanu Sridhar, Professor & HOD … In the chair
2. Mrs. R. Sridevi, Asst. Professor
3. Mr. G. Tirupati, Asst. Professor

Agenda:

1. Ensuring subjects, Project-I for IV B. Tech and Electives of II, III, IV B. Tech, Semester-I, A.Y: 2024-2025.
2. Preparation of Course Outcomes, CO-PO Mapping, and justification for the odd semester subjects of R-20 regulations (JNTUK) and R-22 regulations (AU).
3. Planning of Academic and Co-Circular activates.
4. Any other issues with the permission of chair.

The members discussed and resolved the following:

1. The chairman welcomed all members and briefed about the compulsory courses, elective courses, and lab courses in two regulations (R-20 for IV B. Tech, JNTUK) and R-22 (AU) for III and II B. Tech to consider in this semester 2024-25 odd semester.
2. In R-20 Regulations (IV-I, JNTUK) and R-22 Regulations-AU (III-I and II-I) DAC decided to take options to choose one from the following courses for IV IT, III IT and II IT students.

Open Elective- III for IV IT: Electronic Measurements and Instrumentation
Open Elective-IV for IV IT: Digital Logic Design/Data Communications
Professional Elective-III for IV IT: Cloud Computing
Professional Elective-IV for VI IT: Deep Learning Techniques
Open elective-I for III-IT: Mobile and Cellular Communication
Professional elective-I for III-IT: Compiler Design
Skill course for III-IT: Soft Skills
Skill course for II-IT: Web Technologies

3. DAC members requested the course-coordinators to coordinate with subjects handling faculty in preparation of the COs, CO-PO/PSO mapping and its justification for the subjects of R-20 (4-2 and 3-2 courses) & R22-AU (2-2) regulations.
4. DAC members discussed about the academic and co-curricular activities to be conducted in this semester. The Academic plan for this academic session has been prepared keeping in view the following
    a. DAC recommended to increase student activities under SPIKE, IEEE professional body chapters.
5. HOD requested DAC members to verify course files and lab files of the previous semester as part of Academic audit.

Members Present:

S.No.	Name	Signature
1	Dr. M. Bhanu Sridhar, Assoc. Professor & HOD	
2	Ms. R. Sridevi, Assistant Professor	
3	Mr. G. Tirupati, Assistant Professor	

HOD-IT

Date: 05-08-2024

Head of Department
Dept. of Information Technology
GVP College of Engineering for W
Madhurawada, Visakhapatnam-

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
Kommadi, Madhurawada, Visakhapatnam - 530 048
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(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION[NBA] FOR B.TECH EEE VALID FROM 2023-24 TO 2025-2026)
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DEPARTMENT OF INFORMATION TECHNOLOGY

Date: 20/01/2025

DEPARTMENT OF ADVISORY COMMITTEE (DAC) MEMBERS

ACADEMIC YEAR 2024-25

1. Dr. M. Bhanu Sridhar, Professor & HOD … In the chair
2. Mrs. R. Sridevi, Asst. Professor
3. Mr. G. Tirupati, Asst. Professor

Agenda:

1. Ensuing Major Project Work, seminar and Internship for IV B. Tech (JNTUK) and Electives of II and III B. Tech (AU), Even Semester, A.Y: 2024-2025.
2. Preparation of Course Outcomes, CO-PO Mapping, and justification for the even semester project/subjects of R-20 regulations (JNTUK) and R-22 regulations (AU).
3. Planning of Academic and Co-Circular activates.
4. Any other issues with the permission of chair.

The members discussed and resolved the following:

1. The chairman welcomed all members and briefed about the compulsory courses, elective courses, and lab courses in two regulations (R-20 for IV B. Tech, R-20 for III & R-22 (AU) for II B. Tech) to consider in this semester 2023-24 odd semester.
2. In R-20 Regulations (IV-II) and R-22 Regulations-AU (II-II, III-II) DAC decided to take options to choose one from the following courses for III IT and II IT students.

Open Elective II for III IT: Fundamentals of Utilization of Electrical Engineering

Professional Elective II for III IT: Mobile Computing

Skill course for III-IT: Data Science: Natural Language Processing

Skill course for II-IT: Web Technologies

3. DAC members requested the course-coordinators to coordinate with subjects handling faculty in preparation of the COs, CO-PO/PSO mapping and its justification for the subjects of R-20 (4-2) & R22-AU (3-2 and 2-2) regulations.
4. DAC members discussed about the academic and co-curricular activities to be conducted in this semester. The Academic plan for this academic session has been prepared keeping in view the following
    a. DAC recommended to increase student activities under SPIKE, IEEE professional body chapters.
5. HOD requested DAC members to verify course files and lab files of the previous semester as part of Academic audit.

Members Present:

S.No.	Name	Signature
1	Dr. M. Bhanu Sridhar, Assoc. Professor & HOD	
2	Ms. R. Sridevi, Assistant Professor	
3	Mr. G. Tirupati, Assistant Professor	

Date: 20-01-2025

HOD-IT

Head of Department
Dept. of Information Technology
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

GAYATRI VIDYA PARISHAD
COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)

Madhurawada :: Visakhapatnam – 530 048

(Approved by AICTE, New Delhi and Affiliated to Andhra University)

Accredited by NAAC with "A" grade from 2022 to 2027

CSE, ECE and IT Courses Accredited by NBA (2019-2022) and Re-accredited by NBA (2022-2025)

EEE Course Accredited by NBA (2023-2026)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Date: 06-07-2024

Minutes of the DAC meeting held on 8th July, 2024 in HOD cabin

Members Present:

1. Dr R V S Lakshmi Kumari HoD, EEE … In the chair
2. Dr P Devendra, Associate Professor, EEE
3. Dr A S V Vijayalakshmi, Assistant Professor, EEE
4. Dr M Krishna, Assistant Professor, EEE

Agenda:

1. Elective subjects to be offered for 4-1 and 3-1 EEE students for the academic year 2024-25 for semester 1.
2. Preparation of course outcomes for 3-1 EEE syllabus
3. Planning of Academic activities during the first semester for the academic year 2024-25
4. Planning of Board of Studies meeting 1 in the month of August 2024

The members discussed and resolved the following

1. The chairman has welcomed all the members of DAC and briefed about the subjects which are to be opted for professional electives and open electives.
2. DAC has informed the faculty who are handling final year EEE subjects (both theory and labs) to submit the course outcomes by 16th August 2024 for the approval of DAC.
3. Based on faculty specialization and experience, Dr ASV Vijayalakshmi is nominated as **Lab In-charge** for the laboratory which was introduced in III year AU syllabus as skill oriented course and she is instructed to look into the syllabus and obtain quotations from authorized suppliers and initiate procurement procedures in consultation with the HoD.

4. DAC has finalized the proposed syllabus for Board of Studies meeting 1 for first year EEE courses and informed the same to the faculty of the Department. The meeting is planned to conduct in the month of August 2024 for finalizing the first year syllabus.
5. DAC has discussed and planned the activities planned for the academic year 2024-25 for semester 1.
6. DAC has suggested giving two subjects for professional Elective 1 and two subjects for Open Elective 1 for 3-1 EEE (as per AU regulations) students and two subjects for Professional Elective 3, 4 and 5, two subjects for Open Elective 3 and 4 for 4-1 EEE (R20 Regulations – JNTUK) students after the detailed discussion with the concerned faculty of the Departments and HoDs, for the benefit of the students in making them as industry ready. The list of subjects along with the names of the faculty are as follows:

E.E.E OF IV B TECH - 1 SEMESTER (R20) OPEN ELECTIVE III, IV AND PROFESSIONAL ELECTIVES III, IV AND V for AY 2024-25

		Name of the Faculty	Offered by the Department
List of PROFESSIONAL ELECTIVES I offered by the Dept.	FACTS	Dr ASV Vijayalakshmi	EEE
	Renewable and Distributed Energy Technologies	Mrs V Sreevidya	EEE
List of PROFESSIONAL ELECTIVES IV offered by the Dept.	Hybrid Electric Vehicles	Dr P Devendra	EEE
	High Voltage Engineering	Dr R V S Lakshmi Kumari	EEE
List of PROFESSIONAL ELECTIVES V offered by the Dept.	Power System Operation and Control	Dr M Krishna	EEE
	AI Applications to Electrical Engineering	Dr ASV Vijayalakshmi	EEE
List of OPEN ELECTIVES III offered by the Dept.	AI Tools and Techniques	Mrs A Gauthami	CSE
	Data Science	Mr H Gauthami	CSM
List of OPEN ELECTIVES IV offered by the Dept	Cloud Computing with AWS	Mr P Siva	CSM
	Deep Learning Techniques	Dr K P Naidu	CSM

E.E.E OF III B TECH - 1 SEMESTER OPEN ELECTIVE I AND PROFESSIONAL ELECTIVE I for AY 2024-25

		Name of the Faculty	Offered by the Department
List of PROFESSIONAL ELECTIVES I offered by the Dept.	Utilization of Electrical Energy	Mrs B Kusuma Kumari	EEE
	Electrical Distribution Systems	Ms P Sai Jyothi	EEE
List of OPEN ELECTIVE I	Artificial Intelligence and Machine Learning	Dr ASV Vijayalakshmi	EEE
	Computer Architecture and Organization	Mrs P Sowmya	CSE

Members Present:

S.No	Name	Signature
1	Dr R V S Lakshmi Kumari (Associate Professor & HoD(EEE))	
2	Dr P Devendra (Associate Professor)	
3	Dr ASV Vijayalakshmi (Assistant Professor)	
4	Dr M Krishna (Assistant Professor)	

Date: 08-07-24

HEAD OF THE DEPARTMENT
Head
Dept. of Electrical & Electronics Engineering
G.V.P. College of Engineering for Women
Madhurawada
VISAKHAPATNAM-530 048

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

KOMMADI, MADHURAWADA, VISAKHAPATNAM - 530 048

(APPROVED BY AICTE, NEW DELHI, AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM)

(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION [NBA] FOR B.TECH CSE, ECE AND IT - VALID FROM 2019-22 AND 2022-25)

(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION[NBA] FOR B.TECH EEE VALID FROM 2023-24 TO 2025-2026)

(ACCREDITED BY NATIONAL ASSESMENT AND ACCREDITATION COUNCIL [NAAC] WITH A GRADE- VALID FROM 2022-27)

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EAPCET CODE GVPW

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

III B.TECH-1 SEMESTER OPEN ELECTIVE I AND PROFESSIONAL ELECTIVE I for AY 2024-25

		Name of the Faculty	Offered by the Department
List of PROFESSIONAL ELECTIVES I offered by the Dept.	1. Utilization of Electrical Energy (UEE)	Mrs B Kusuma Kumari	EEE
	2. Electrical Distribution Systems (EDS)	Ms P Sai Jyothi	EEE
List of OPEN ELECTIVE I	1. Artificial Intelligence and Machine Learning (AI & ML)	Dr ASV Vijayalakshmi	EEE
	2. Computer Architecture and Organization (CA & O)	Mrs P Sowmya	CSE

S.NO.	H.T.NO.	NAME	PROF. ELECTIVE 1	OPEN ELECTIVE 1	SIGNATURE
1	322103214001	AMPOLU MADHURI	UEE	AI & ML	A.Madhuri
2	322103214002	BADHA MEGHANA	UEE	AI & ML	Meghana
3	322103214003	BATTINI SAIKRUPA	UEE	AI & ML	Saikrupa
4	322103214004	BONU ANURADHA	UEE	AI & ML	B.Anuradha
5	322103214005	BORA HARIKA	UEE	AI & ML	B.Harika
6	322103214006	BUDUMURU RAMYA	UEE	AI & ML	B.Ramya
7	322103214007	CHALLA LAVANYA	UEE	AI & ML	Ch.Lavanya

8	322103214008	CHINTALA POOJITHA	UEE	AI&ML	ch.poojitha
9	322103214009	DASARI SRAVANI			
10	322103214010	DULLA MANJUSHA	UEE	AI&ML	D.Manjusha
11	322103214011	GUNTREDDI MOUNIKA	UEE	AI&ML	G.mounika
12	322103214012	JYOTSHNA VEGI	UEE	AI&ML	V. Jyothna
13	322103214013	KANAPARTHI INDUMATHI	UEE	AI&ML	K. Indumathi
14	322103214014	KARRI TANUSHA	UEE	AI&ML	K. Thanusha
15	322103214015	YALLAMILLI SATHWIKA	UEE	AI&ML	Y. Sathwika
16	322103214016	KUMANDURI USHA VEDA VARDHINI	UEE	AI&ML	K. Vardhini
17	322103214017	KUMARI BABY	UEE	AI&ML	Y. Bhavani
18	322103214018	YANDRAPU BHAVANI	UEE	AI&ML	Y. Bhavani
19	322103214019	MUGUTHI SPANDANA	UEE	AI&ML	M. Spandana
20	322103214020	PEDIREDDILA GIRIJA	UEE	AI&ML	P. Girija
21	322103214021	PENAGANTI LALITHA	UEE	AI&ML	p. Lalitha
22	322103214023	POLAVARAPU LAVANYA	UEE	AI&ML	P. Lavanya
23	322103214024	SENAPATHI ARCHANA	UEE	AI&ML	S. Archana
24	322103214026	THAMIREDDI SARADHA	UEE	AI&ML	T. Saradha.
25	322103214027	TURPATI NEEHARIKA	UEE	AI&ML	T. Neeharika
26	322103214028	VADAVALASA GEETHA	UEE	AI&ML	V. geetha
27	322103214029	VASUPALLI DHARANI	UEE	AI&ML	V. Dharani
28	322103214030	ADAPA VAANI PADMA SUPRIYA	UEE	AI&ML	AVP Supriya
29	322103214031	ADARI RAJESWARI	UEE	AI&ML	Rajeswari.
30	322103214032	ADHIKARI SHRUTHI	UEE	AI&ML	A. Shruthi.

31	322103214033	DEVARAPALLI ANJALI	UEE	AI & ML	
32	322103214034	DURGA DEVIKA	UEE	AI & ML	D. Devika
33	322103214035	GATHUM NOOKARATNAM	UEE	AI & ML	G. N. Ratnam
34	322103214036	GONAPA SAIPRIYA	UEE	AI & ML	G. saipriya
35	322103214037	GUDLA JYOSHNA	UEE	AI & ML	G. Jyoshna
36	322103214038	KADIRI SRUJANA	UEE	AI & ML	K. Srujana.
37	322103214040	KOPPISETTI PAVANI	UEE	AI & ML	k. pavani
38	322103214041	KORUPOLU SUSRITHA	UEE	AI & ML	k. susritha
39	322103214042	KUDUMULA KOMALI	UEE	AI & ML	K. Komali
40	322103214043	LINGALA YERNIVENKATA LAKSHMI	UEE	AI & ML	venkatalakshmi
41	322103214044	MAILAPALLI DIVYA	UEE	AI & ML	M. Divya
42	322103214045	METTA SRIVALLI	UEE	AI & ML	M. SriValli
43	322103214046	PADALA SRI DEEKSHA	UEE	AI & ML	P. SriDeekshaa
44	322103214047	PAIDI BHAGYA SRI	UEE	AI & ML	P. Bhagyasri
45	322103214048	PILLA GAYATHRI AKSHAYA	UEE	AI & ML	Gayathri
46	322103214050	REDDI DIVYA	UEE	AI & ML	Akshaya Divya
47	322103214051	SAYED ASHEERA SULTHANA	UEE	AI & ML	Asheera
48	322103214052	YANDAPALLI MEENA KUMARI	UEE	AI & ML	Y. Meenakumari
49	322103214053	DABBIRU LASYA PRIYA	UEE	AI & ML	D. lasya
50	322103214054	YAGATI NIRUPAMA	UEE	AI & ML	Y. Nirupama

GAYATRI VIDYA PARISHAD
COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)

Madhurawada :: Visakhapatnam – 530 048

(Approved by AICTE, New Delhi and Affiliated to Andhra University)

Accredited by NAAC with "A" grade from 2022 to 2027

CSE, ECE and IT Courses Accredited by NBA (2019-2022) and Re-accredited by NBA (2022-2025)

EEE Course Accredited by NBA (2023-2026)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Date: 16-12-2024

Minutes of the DAC meeting held on 13th December, 2024 in HOD cabin

Members Present:

1. Dr R V S Lakshmi Kumari HoD, EEE … In the chair
2. Dr P Devendra, Associate Professor, EEE
3. Dr A S V Vijayalakshmi, Assistant Professor, EEE
4. Dr M Krishna, Assistant Professor, EEE

Agenda:

1. Elective subjects to be offered for 4-1 and 3-1 EEE students for the academic year 2024-25 for semester 1.
2. Preparation of course outcomes for 3-1 EEE syllabus
3. Planning of Academic activities during the first semester for the academic year 2024-25
4. Planning of Board of Studies meeting 1 in the month of August 2024

The members discussed and resolved the following

1. The chairman has welcomed all the members of DAC and briefed about the subjects which are to be opted for professional electives and open electives.
2. DAC has informed the faculty who are handling third year EEE subjects (both theory and labs) to submit the course outcomes by 26th December 2024 for the approval of DAC.
3. The Department Academic Committee (DAC) has organized the faculty into groups based on their teaching experience, subjects handled in the previous semester, and their area of specialization. This grouping has been carried out to facilitate the preparation and

restructuring of the syllabus for 2nd year to 4th year Electrical and Electronics Engineering students, in accordance with the Autonomous Regulations.

4. DAC has suggested giving two subjects for professional Elective 2 and two subjects for Open Elective 2 for 3-2 EEE students after the detailed discussion with the concerned faculty of the Departments and HoDs, for the benefit of the students in making them as industry ready. The list of subjects along with the names of the faculty are as follows:

E.E.E OF III B TECH – II SEMESTER OPEN ELECTIVE II AND PROFESSIONAL ELECTIVE II for AY 2024-25

		Name of the Faculty	Offered by the Department
List of PROFESSIONAL ELECTIVES I offered by the Dept.	Electrical Drives and Traction	Dr P Devendra	EEE
	HVDC Transmission	Dr M Krishna	EEE
List of OPEN ELECTIVE I	Data Science	Mr H Gauthami	CSM
	Digital Control Systems	Mr D Srinivasa Reddy	EEE

Members Present:

S.No	Name	Signature
1	Dr R V S Lakshmi Kumari (Associate Professor & HoD(EEE))	
2	Dr P Devendra (Associate Professor)	
3	Dr ASV Vijayalakshmi (Assistant Professor)	
4	Dr M Krishna (Assistant Professor)	

Date: 16-12-24

HEAD OF THE DEPARTMENT

Head
Dept. of Electrical & Electronics Engineering
G.V.P. College of Engineering for Women
Madhurawada
VISAKHAPATNAM-530 048

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

KOMMADI, MADHURAWADA, VISAKHAPATNAM - 530 048

(APPROVED BY AICTE, NEW DELHI, AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM)

(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION [NBA] FOR B.TECH CSE, ECE AND IT - VALID FROM 2019-22 AND 2022-25)

(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION[NBA] FOR B.TECH EEE VALID FROM 2023-24 TO 2025-2026)

(ACCREDITED BY NATIONAL ASSESMENT AND ACCREDITATION COUNCIL [NAAC] WITH A GRADE- VALID FROM 2022-27)

(Phone: +91-891-2739144, 2739124, 2719125, 2719127 Email Id: gvpcew@gmail.com , info@gvpcew.ac.in)

EAPCET CODE GVPW

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

III B.TECH-2 SEMESTER OPEN ELECTIVE II AND PROFESSIONAL ELECTIVE II for AY 2024-25

		Name of the Faculty	Offered by the Department
List of PROFESSIONAL ELECTIVES II offered by the Dept.	1. Electrical Drives and Traction (ED & T)	Dr P Devendra	EEE
	2. HVDC Transmission (HVDC)	Dr M Krishna	EEE
List of OPEN ELECTIVE II	1. Data Science (DS)	Mr H Gauthami	CSM
	2. Digital Control Systems (DCS)	Mr D Srinivasa Reddy	EEE

S.NO.	H.T.NO.	NAME	PROF. ELECTIVE 2	OPEN ELECTIVE 2	SIGNATURE
1	322103214001	AMPOLU MADHURI	EDET	DS	A. Madhuri
2	322103214002	BADHA MEGHANA	EDET	DS	B. Meghana
3	322103214003	BATTINI SAIKRUPA	EDET	DS	B. Saikrupa
4	322103214004	BONU ANURADHA	EDET	DS	B. Anuradha
5	322103214005	BORA HARIKA	EDET	DS	B. Harika
6	322103214006	BUDUMURU RAMYA	EDET	DS	B. Ramya
7	322103214007	CHALLA LAVANYA	EDET	DS	Ch. Lavanya
8	322103214008	CHINTALA POOJITHA	EDET	DS	Ch. Poojitha

9	322103214009	DASARI SRAVANI			
10	322103214010	DULLA MANJUSHA	ED&T	DS	D. Manjusha
11	322103214011	GUNTREDDI MOUNIKA	ED&T	DS	G. mounika
12	322103214012	JYOTSHNA VEGI	ED&T	DS	V. Jyotshna
13	322103214013	KANAPARTHI INDUMATHI	ED&T	DS	K. Indumathi
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15	322103214015	YALLAMILLI SATHWIKA	ED&T	DS	Y. Sathwika
16	322103214016	KUMANDURI USHA VEDA VARDHINI	ED&T	DS	Vardhini
17	322103214017	KUMARI BABY	ED&T	DS	Kumari
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21	322103214021	PENAGANTI LALITHA	ED&T	DS	P Lalitha
22	322103214023	POLAVARAPU LAVANYA	ED&T	DS	Lavanya
23	322103214024	SENAPATHI ARCHANA	EDET	DS	S. Archana
24	322103214026	THAMIREDDI SARADHA	ED&T	DS	T. Saradha
25	322103214027	TURPATI NEEHARIKA	EDET	DS	T. Neeharika
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27	322103214029	VASUPALLI DHARANI	EDET	DS	V. Dharani
28	322103214030	ADAPA VAANI PADMA SUPRIYA	EDET	DS	A Sup Supriya
29	322103214031	ADARI RAJESWARI	EDET	DS	Rajeswari
30	322103214032	ADHIKARI SHRUTHI	EDET	DS	A. Shruthi
31	322103214033	DEVARAPALLI ANJALI	EDET	DS	

32	322103214034	DURGA DEVIKA	ED & T	DS	D. Devika
33	322103214035	GATHUM NOOKARATNAM	ED & T	DS	G. N. Ratnam
34	322103214036	GONAPA SAIPRIYA	ED&T	DS	G. saipriya
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37	322103214040	KOPPISETTI PAVANI	ED&T	DS	P. Pavani
38	322103214041	KORUPOLU SUSRITHA	ED& T	DS	K. Susritha
39	322103214042	KUDUMULA KOMALI	ED&T	DS	K. Komali
40	322103214043	LINGALA YERNIVENKATA LAKSHMI	ED&T	DS	Venkata Lakshmi
41	322103214044	MAILAPALLI DIVYA	ED&T	DS	Divya
42	322103214045	METTA SRIVALLI	ED & T	DS	M. Srivalli
43	322103214046	PADALA SRI DEEKSHA	ED & T	DS	P. Sri Deeksha
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47	322103214051	SAYED ASHEERA SULTHANA	ED&T	DS	Asheera
48	322103214052	YANDAPALLI MEENA KUMARI	ED&T	DS	Y. Meena kumari
49	322103214053	DABBIRU LASYA PRIYA	ED & T	DS	D. Lasya
50	322103214054	YAGATI NIRUPAMA	ED&T	DS	Y. Nirupama

Gayatri Vidya Parishad College of Engineering for Women

Madhurawada :: Visakhapatnam – 530 048

(Affiliated to Andhra University, Approved by AICTE, New Delhi, accredited by NBA)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MINUTES OF THE MEETING OF THE DEPARTMENT ADVISORY COMMITTEE HELD ON 28th JUNE 2024 IN THE HOD'S CHAMBER

DAC Members:

1. Dr. P.M.K. Prasad, Associate Professor, HoD, ECE … In the chair
2. Dr. L. Ganesh, Associate Professor, ECE
3. Dr. B. Vijaya Lakshmi, Associate Professor, ECE
4. Dr. D.V.A.N Ravi Kumar, Associate Professor, ECE
5. Ms. B.V.S. Renuka Devi, Assistant Professor, ECE
6. Ms. Ch. Sirisha, Assistant Professor, ECE

Agenda:

1. Discussion on ensuing subjects and electives of II, III, and IV B.Tech, Semester-I for AY 2024–25.
2. Planning of academic and co-curricular activities for the forthcoming semester.
3. Progress review of NBA and NAAC-related documentation and activities.
4. Discussion on the First-Year Autonomous course structure and courses.
5. Any other issues with the permission of the Chair.

The members discussed and resolved the following:

1. The meeting commenced with a warm welcome by **Dr. P.M.K. Prasad**, who chaired the session. He briefed the members about the agenda items and emphasized the importance of timely preparation for the forthcoming **Academic Year 2024–25**.
2. He outlined the course structure for **II Year (AU syllabus), III Year (AU syllabus), and IV Year (R-20 JNTUK syllabus)** for Semester–I, detailing the inclusion of **core subjects, professional and open electives, skill-oriented courses-OOPs through JAVA, and laboratory components**.
3. With the introduction of the new III-I AU syllabus, the Chairperson requested the DAC members to ensure that the Course Outcomes are finalized in alignment with AU guidelines and framed as per the requirements of NBA.

4. The committee discussed the **need for equipment and consumables** for various labs and skill courses in the upcoming semester.

   In the III year AU syllabus, Digital communication and Internet of Things labs were available. The committee discussed on the need of any additional instruments and software tools.

5. Based on faculty specialization and experience, the following members were nominated as **Lab In-charges** for the laboratories which were introduced in III year AU syllabus.

   Digital Communication Lab: Ms. N Roopavathi

   Internet of Things Lab: Ms. Ch. Sirisha

   It is finalized that lab in charges should look into the syllabus and obtain quotations from authorized suppliers and initiate procurement procedures in consultation with the HoD.

6. Detailed discussions were held to finalize options for **Professional and Open Electives** for **III and IV Year** students.

   It was unanimously decided to collect **student preferences** before finalizing the electives for offering.

The elective options are as follows:

III ECE

- **Open Elective–I:**

1. Artificial Intelligence and Machine Learning

- **Professional Elective–I:**

1. Electronic Measurements and Instrumentation
2. Computer Networks

IV ECE

- **Professional Elective–III:**

1. Digital Image Processing

- **Professional Elective–IV:**

1. Satellite Communications

- **Professional Elective–V:**

1. Radar Engineering
2. Internet of Things

- **Open Elective–III:**

1. Data Science
2. AI Tools & Techniques

- **Open Elective–IV:**

1. Blockchain Technologies
2. Cloud Computing using AWS

7. The DAC reviewed academic and co-curricular activities conducted during the previous semester. It was resolved to organize **guest lectures, workshops, and seminars** on industry-relevant topics, and to promote participation in **professional bodies such as IETE, IEEE, and the student association ECLAT-A.**

   Members also proposed conducting **hands-on technical sessions** in emerging domains such as AI, VLSI, IoT, and embedded systems.

8. The Chairman instructed the DAC members to **verify course files and lab records** of the previous semester as part of the **internal academic audit process.**

9. The Chairman highlighted the progress of framing the **Autonomous course structure** for the **First-Year (2024 batch) for both B.Tech and M. Tech courses.**

   He encouraged the committee to ensure that the syllabus is outcome-based and aligned with **AICTE and industry guidelines.**

10. Since there were no further points for discussion, the meeting concluded with a note of appreciation from the Chair.

    The HoD thanked all members for their active participation, valuable inputs, and commitment towards continuous improvement of academic standards in the department.

Members Present:

S.No.	Name	Signature
1	Dr. P.M.K. Prasad, Associate Professor, ECE	
2	Dr. L. Ganesh, Associate Professor, ECE	
2	Dr. B.Vijaya Lakshmi, Associate Professor, ECE	
4	Dr. D.V.A .N Ravi Kumar, Associate Professor, ECE	
5	Ms. B.V.S. Renuka Devi, Assistant Professor, ECE	
6	Ms. Ch. Sirisha, Assistant Professor, ECE	

HoD-ECE

Date: 28.06.2024

HEAD
DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
G V P COLLEGE OF ENGINEERING FOR WOMEN
MADHURAWADA, VISAKHAPATNAM – 530 048

Gayatri Vidya Parishad College of Engineering for Women
Madhurawada :: Visakhapatnam – 530 048
(Affiliated to Andhra University, Approved by AICTE, New Delhi, accredited by NBA)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MINUTES OF THE MEETING OF THE DEPARTMENT ADVISORY COMMITTEE HELD ON 22nd NOVEMBER 2024 IN THE HOD'S CHAMBER

DAC Members:

1. Dr. P.M.K. Prasad, Associate Professor, HoD, ECE … In the chair
2. Dr. L. Ganesh, Associate Professor, ECE
3. Dr. B. Vijaya Lakshmi, Associate Professor, ECE
4. Dr. D.A.V.N Ravi Kumar, Associate Professor, ECE
5. Ms. B.V.S. Renuka Devi, Assistant Professor, ECE
6. Ms. Ch. Sirisha, Assistant Professor, ECE

Agenda:

1. Ensuing subjects and electives of II, III, and IV B.Tech. Semester–II, AY 2024–25.
2. Preparation for **NAAC AQAR** report submission.
3. Preparation of **II, III, and IV Year course structure and syllabus** for the **Autonomous batch.**
4. Any other issues with the permission of the Chair.

The members discussed and resolved the following:

1. The Chairman, **Dr. P.M.K. Prasad**, welcomed all the members and briefed them on the subjects, electives, skill-oriented courses, and laboratory components pertaining to **II Year (AU syllabus), III Year (AU syllabus), and IV Year (JNTUK R-20 syllabus)** for **Semester–II, AY 2024–25.** He emphasized maintaining consistency between theoretical and practical components and aligning the electives with industry requirements.
2. The syllabus for **III-II (AU curriculum)** was reviewed. Members discussed improvements in lab experiments, introduction of soft skills as skill course and course content delivery to strengthen students' conceptual understanding and hands-on experience. The Chairperson requested the DAC members to review and finalize the Course Outcomes in alignment with the AU-specified outcomes and to adhere to the prescribed guidelines while framing them.

3. Based on faculty specialization and experience, the following members were nominated as **Lab In-charges** for the laboratories which were introduced in III year AU syllabus.

   Antenna Simulation lab: Mr. N Maheswara Rao
   Digital Signal Processing Lab: Dr. D V A N Ravi Kumar
   Microwave Engineering Lab: Ms. L Sarika

4. The committee deliberated on the selection of electives for **III Year ECE** and decided to collect student preferences before finalizing one subject under each elective category.

   Proposed Elective Options – III Year ECE

   - **Professional Elective–II:**

   1. VLSI Design
   2. Cellular Mobile Communication

   - **Open Elective–II:**

   1. Data Science

   The HoD emphasized offering electives that align with current technological trends and ensure adequate faculty expertise for course delivery.

5. It was decided to assign **Ms. M. Mani Kumari** and **Ms. B.V.R. Gowri** as **Project Coordinators** for **IV-II (R20) 2021 batch** students to monitor project progress, internal reviews, and documentation.
6. The Chairman informed members about the **NAAC Annual Quality Assurance Report (AQAR)** submission deadline and instructed faculty to ensure timely updates and completion of all required departmental files and supporting documents.
7. The committee discussed the ongoing work related to the **framing of II, III & IV year B.Tech and II year M. Tech course structure and syllabus** for the **Autonomous Regulation** applicable to upcoming batches. The Chairman advised members to align the syllabus with **AICTE guidelines** and Andhra University curriculum by incorporating **emerging technologies, interdisciplinary courses, and skill-oriented components**.
8. There being no further points for discussion, the meeting concluded with a vote of thanks to the Chair. The Chairman appreciated the active participation and contributions of all members.

Members Present:

S.No.	Name	Signature
1	Dr. P.M.K. Prasad, Associate Professor, ECE	
2	Dr. L. Ganesh, Associate Professor, ECE	
2	Dr. B.Vijaya Lakshmi, Associate Professor, ECE	
4	Dr. D.V.A .N Ravi Kumar, Associate Professor, ECE	
5	Ms. B.V.S. Renuka Devi, Assistant Professor, ECE	
6	Ms. Ch. Sirisha, Assistant Professor, ECE	

Date: 22.11.2024

HoD-ECE

HEAD
DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
G V P COLLEGE OF ENGINEERING FOR WOMEN
MADHURAWADA, VISAKHAPATNAM – 530 048

Gayatri Vidya Parishad College of Engineering for Women

Madhurawada :: Visakhapatnam – 530 048

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MINUTES OF THE MEETING OF THE DEPARTMENT ADVISORY COMMITTEE HELD ON 17th JANUARY 2025 IN THE HOD'S CHAMBER

DAC Members:

1. Dr. P.M.K. Prasad, Professor, HoD, ECE … In the chair
2. Dr. L. Ganesh, Associate Professor, ECE
3. Dr. B. Vijaya Lakshmi, Associate Professor, ECE
4. Dr. D.A.V.N Ravi Kumar, Associate Professor, ECE
5. Ms. B.V.S. Renuka Devi, Assistant Professor, ECE
6. Ms. Ch. Sirisha, Assistant Professor, ECE

Agenda

1. Discussion on the existing syllabus and course structure for II, III, and IV year B.Tech & II year M.Tech.
2. Streamlining and defining subjects into specific domains/streams.
3. Formation of research groups for each stream.
4. Allocation of subjects to respective research teams for syllabus preparation.
5. Ensuring alignment of the revised syllabus with Andhra University norms.
6. Any other matters with the permission of the Chair.

The following items were discussed and the committee resolved to forward the same to the Board of Studies for consideration and necessary action.

1. **Review of Existing Course Structure**
   - The committee reviewed the current course structure of II, III, and IV year programs.
   - It was decided to revise and update the syllabus to reflect the latest industry trends and AU guidelines.
2. **Definition of Streams**
   - The subjects were categorized into specific **streams**, such as:
     - *Core Engineering Stream*
     - *Interdisciplinary/Research Stream*
     - *Open Electives and Professional Electives*

- Each stream will focus on specialized areas to strengthen students' technical knowledge and research orientation.

3. **Responsibility of Research Groups**
   - It was decided to assign to the existing **Research Groups**, the responsibility of preparing and revising the syllabus for subjects under their respective streams, in line with AU norms and industry needs.
   - Research groups will draft the syllabus in alignment with Andhra University guidelines, credit structures, and outcome-based education (OBE) framework.
   - Cross-verification with latest Regulation approved by the academic council of GVPCEW(A) was recommended.
4. **Timeline for Submission**
   - All research groups are required to submit their proposed syllabus drafts by **[15.02.2025]** for departmental review before forwarding to the Board of Studies.
5. **Other Discussions**
   - Suggestions for incorporating skill-based and value-added courses were noted.
   - The committee emphasized integrating modern tools, laboratory components,and industry-aligned mini projects.

Conclusion

The HoD thanked all the members for their active participation. The meeting concluded with the decision to reconvene after the initial draft of the revised syllabus is prepared for further review and approval.

Members Present:

S.No.	Name	Signature
1	Dr. P.M.K. Prasad, Professor, ECE	
2	Dr. L. Ganesh, Associate Professor, ECE	
2	Dr. B.Vijaya Lakshmi, Associate Professor, ECE	
4	Dr. D.V.A .N Ravi Kumar, Associate Professor, ECE	
5	Ms. B.V.S. Renuka Devi, Assistant Professor, ECE	
6	Ms. Ch. Sirisha, Assistant Professor, ECE	

Date: 17.01.2025

HoD-ECE
DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING
G V P COLLEGE OF ENGINEERIING FOR WOM...
MADHURAWADA, VISAKHAPATNAM – 530 048

G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT COMPUTER SCIENCE & ENGINEERING

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairperson)	Dr.P.V.S.L.Jagadamba
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. Siba Kumar Udgata Professor School of Computer and Information Sciences University of Hyderabad Hyderabad, 500046 email: udgata@uohyd.ac.in Mob: 9705395136
		Dr.Jyothi Vedurada Assistant Professor IIT-Hyderabad
		Dr.R Padmavathy Professor, Dept of CSE NIT – Warangal
4	Vice-Chancellor's Nomination	Dr. B Prajna, Professor, Dept. of Computer Science & Systems Engineering AU College of Engineering (A) Andhra University Mobile:9848750033 Email: prajna.mail@gmail.com
5	Industry Representative	Dr.P.Gayatri Senior Technical Director / Scientist-F National Informatics Centre (NIC) Govt. of India
6	College Alumni	Ms. Sandeep Kaur Senior Software Developer Infinite Computer Solutions Visakhapatnam
7	Expert from outside the Autonomous College for Special Course	Mr.Narra Suresh Delivery Centre Head Infosys Visakhapatnam

Head of the Department
Computer Science & Engineering

Chairman
Academic Council

Principal
G.V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT COMPUTER SCIENCE & ENGINEERING (Artificial Intelligence & Machine Learning) (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.D.K.Bebarta
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.Debi Prosad Dogra Associate Professor IIT-Bhubaneswar
		Dr.Anjali Mahapatra Associate Professor IIIT - Bhubaneswar
4	Vice-Chancellor's Nomination	Dr. S. Vizianandа Row, Professor Dept of Computer Science & Systems Engineering AU College of Engineering, Visakhapatnam
5	Industry Representative	Dr.M Subrahmanya Sarma Vice President Accenture Bangalore
6	College Alumni	Ms. Vivekitha Sagi Lead Quality Engineer Persistent Systems Hyderabad
7	Expert from outside the Autonomous College for Special Course	Mr.Rajesh Srinivasan Vice-President – Consulting Delivery CGI India : IT and Business Consulting Services Hyderabad

Head of the Department
Computer Science & Engineering (AIML)

Chairman
Academic Council

Principal
G.V.P College of Engineering for Women
Madhurawada
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT INFORMATION TECHNOLOGY

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.M Bhanu Sridhar
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. Rashmi Ranjhan Rout Professor, Dept of CSE NIT-Warangal
		Dr.N. Rukma Rekha Associate Professor, Dept of CSE University of Hyderabad Hyderabad
4	Vice-Chancellor's Nomination	Dr. Kunjam Nageswara Rao Professor Dept of Information Technology AU College of Engineering, Visakhapatnam
5	Industry Representative	Mr. Sasidhar Maruvada Managing Director nu Vizz Software Solutions Bangalore
6	College Alumni	Ms. G Dhana Lakshmi Assistant Professor Dept of CSE, JNTUKCE JNTUK-Kakinada
7	Expert from outside the Autonomous College for Special Course	Mr.Ayyalasomayajula Siva Sankar Principal Consultant / Key Product Manager Sposea B.V. Bangalore

Head of the Department
Information Technology

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT ELECTRICAL & ELECTRONICS ENGINEERING (2024-2025 to 2027-2028)

1.	Head of the Department (Chairperson)	Dr.R.V.S.L.Kumari
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.K Srikumar Professor, Dept of EEE JNTU-GV Vizianagaram
		Dr.A Hemachender Assistant Professor, Dept of EEE NIT-Puducherry Puducherry
4	Vice-Chancellor's Nomination	Dr. P Mallikarjuna Rao Professor Dept of Electrical & Electronics Engineering AU College of Engineering, Visakhapatnam
5	Industry Representative	Dr. M Santhosh Kumar System Design Engineer Sensata Technologies Pune
6	College Alumni	Ms. CH Vijayalakshmi Junior Electrical Engineer ACUTRONIC India Pvt Ltd Hyderabad.
7	Expert from outside the Autonomous College for Special Course	Ms. I Kavya Associate Senior Electrical Engineer Burnsand Mc Donnells India Pvt Ltd Bangalore

Head of the Department
Electrical & Electronics Engineering

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT ELECTRONICS & COMMUNICATION ENGINEERING

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.P.M.K.Prasad
2	All Faculty Members of the Department	
3		Dr. Tapan Kumar Gandhi (Ph.D.) FNAE, SMIEEE Professor, Department of Electrical Engineering Indian Institute of Technology Delhi Cadence Chair Professor in Artificial Intelligence & Automation Convener, Computer Technology Chairperson, Project Prakash Charitable Trust Adjunct Faculty, School of AIDE, IIT Jodhpur Email: tgandhi@ee.iitd.ac.in, Ph. : 011-26591153
		Dr. Venkata Mani V Professor, Department of ECE NIT – Warangal
4	Vice-Chancellor's Nomination	Dr. P Rajesh Kumar Professor Dept. of Electronics & Communication Engineering AU College of Engineering (A) Visakhapatnam
5	Industry Representative	Sri A Venkata Krishna CEO Ascentsemi R & D Pvt Limited Bangalore
6	College Alumni	Ms. Krishna Deepika Chittela Staff Engineer - Synopsys Bangalore
7	Expert from outside the Autonomous College for Special Course	Sri Amal Raj Pukkella Founder Digifac Services Pvt Ltd., & COO, Headfitted Pvt Ltd Visakhapatnam

Head of the Department
Electronics & Communication Engineering

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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Visakhapatnam-530048

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - ENGLISH

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.G Survana Lakshmi Professor, Dept of ELT School of English Language Education, EFL University, Hyderabad
		Dr.Chandreie Mukherjee Assistant Professor Department of English IIM Visakhapatnam
4	Vice-Chancellor's Nomination	Dr. N Solomon Benny Assistant Professor & Head of the Department Dept of English, College of Arts & Commerce AU College of Engineering, Visakhapatnam
5	Industry Representative	Ms. Shameem Bhanu Executive Business Administrator, The Quantum AI, Hi-Tech City, Hyderabad
6	College Alumni	Ms. Sai Sindhura Kuppili Guidewire Developer PWC, Hyderabad
7	Expert from outside the Autonomous College for Special Course	Mr. Prasad Boya Director – Operations Quantum AI, Hi-tech City Hyderabad

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - CHEMISTRY (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.Someswara Rao S Associate Professor Department of Chemistry IIT-Tirupathi
		Dr.Suresh Babu Kalidindi Associate Professor Dept of Chemistry Central Tribal University of AP Vizianagaram
4	Vice-Chancellor's Nomination	Dr. K Basavaiah Professor, Dept of Chemistry College of Science & Technology Andhra University Visakhapatnam
5	Industry Representative	Ms. M Santhoshi Rupa Associate Manager Department of Manufacturing Compliance Pfizer Health Care India Pvt Ltd Lemarthy Village, Parawada Mandal Visakhapatnam
6	College Alumni	Ms. Syed Suhana Amazon Web Services Bangalore
7	Expert from outside the Autonomous College for Special Course	Mr.Akasapu Raviteja Senior Chemist Titanish Laboratories, Chodavaram Vizianagram

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - MATHEMATICS (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. P A Lakshmi Narayana Professor, Dept of Mathematics IIT – Hyderabad
		Dr.Kasi Viswanadham K N S Professor, Dept of Mathematics NIT - Warangal
4	Vice-Chancellor's Nomination	Dr. Ch.Santhi Sundar Raj Professor Dept of Engineering Mathematics AU College of Engineering (A) , Visakhapatnam
5	Industry Representative	Dr. A R J Srikanth Director Databrew Technologies Pvt Ltd
6	College Alumni	Ms. Anitha Chiluvuri Senior Member of Technical Staff (SMTS) Oracle
7	Expert from outside the Autonomous College for Special Course	Mr. Anil Kumar Paluri Assistant Vice President Bank of America

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - PHYSICS (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.G. Padmaja Rani Professor & HOD Dept of Physics University College of Engineering JNTUK-Kakinada
		Dr.Arun Kumar R Assistant Professor & HOD School of Sciences NIT-AP
4	Vice-Chancellor's Nomination	Dr. S Srinivasa Rao Professor, Dept of Physics College of Science & Technology Andhra University Visakhapatnam
5	Industry Representative	Dr. Y Purushotham Scientist Centre for Materials for Electronics Technology (C-MET) IDA Phase-III, Cherlapally HCL (PO) Hyderabad
6	College Alumni	Ms. K Hrudaya Team Lead CAPGEMINI
7	Expert from outside the Autonomous College for Special Course	Dr.K.V.Ramesh Sr. Professor Department of Physics GITAM Institute of Sciences GITAM University Visakhapatnam

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES – MANAGEMENT STUDIES (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.A.Narasimha Rao Department of Commerce and Management Studies Andhra University, South Campus, Waltair Junction, Visakhapatnam, Andhra Pradesh, India – 530003 Ph. No. 98483 77644 Email: addada@rediff.com
		Dr.P.Venkata Rao Professor GVP College of Engineering (A) Visakhapatnam 8885043433 pvenkataro@gvpce.ac.in
4	Vice-Chancellor's Nomination	Dr. P Venkateswarlu Professor Dept of Commerce & Management Studies College of Arts & Commerce Andhra University Visakhapatnam
5	Industry Representative	Sri P Rama Krishna IIM Udaipur Founder, Think plus.
6	College Alumni	Tsapala Srujana TCS Human Resource Business Partner
7	Expert from outside the Autonomous College for Special Course	Dr.K.V.V.Murali Someswararao Professor GVP college for Degree and PG courses

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

MINUTES OF THE **FIRST MEETING OF THE ACADEMIC COUNCIL OF GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)** HELD ON 27th July 2024 AT 11.00 AM IN THE COLLEGE CAMPUS, MADHURAWADA, VISAKHAPATNAM

Members present:

1.	Prof. Dr. Raj Kumar Goswami, Principal, GVPCEW (A)	Chairman
2.	Dr. G. Sudheer, Professor & Vice-Principal, GVPCEW (A)	
3.	Dr. P. V. S. L. Jagadamba, Chairperson, BoS & Head, Dept of CSE, GVPCEW (A)	
4.	Dr. D. K. Bebarta, Chairman, BoS, & Head, Dept of CSE (AIML), GVPCEW (A)	
5.	Dr. M Bhanu Sridhar, Chairman, BoS, & Head, Dept of IT, GVPCEW (A)	
6.	Dr. P. Murali Krishna Prasad, Chairman, BoS, & Head, Dept of ECE, GVPCEW (A)	
7.	Dr. R. V. S.Lakshmi Kumari, Chairperson, BoS, & Head, Dept of EEE, GVPCEW (A)	
8.	Dr. K. L. Sai Prasad, Chairman, BoS, & Head, Dept of BSH, GVPCEW (A)	
9.	Dr. P Devendra, Associate Prof., Dept of EEE, GVPCEW (A)	(Teacher of the College)
10.	Dr. K. Purushotam Naidu, Asst Prof., Dept of CSE (AIML), GVPCEW (A)	(Teacher of the College)
11.	Dr. D.V.A.N Ravi Kumar, Associate Prof., Dept of ECE, GVPCEW (A)	(Teacher of the College)
12.	Dr. N Sharmili, Associate Professor., Dept of CSE, GVPCEW (A)	(Teacher of the College)
13.	Dr. V. Sujatha, MD, DM (Cardiology)	(Expert – Medicine)

14.	Ms. Pooja Vidya Shankar, Head-Strategic Planning NASCOMM Centre of Excellence IoT & AI	(Expert – Engineering)
15.	Sri P Prabhakar, Superintending Engineer, APTRANSCO	(Expert-Industry)
16.	Prof. Dr. P. Mallikarjuna Rao, Dept of Electrical & Electronics Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
17.	Prof. Dr. S. Vizianandа Row Dept of Computer Science & Systems Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
18.	Prof. Dr. G. Sasibhusana Rao Dept of Electronics & Communication Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
19.	Dr. C. Srinivas, Associate Professor, Dept of IT, GVPCEW (A)	Controller of Examinations
20.	Ms. Ch. Sirisha, Asst Prof, Dept of ECE, GVPCEW (A)	Member Secretary

Leave of absence : The following members/special invitees of Academic Council have obtained prior permission from the Chair to excuse their absence from the meeting

1. Ms. Lakshmi Mukkavalli, Managing Director, Patra India	(Expert – Industry)
2. Sri Pavan Kumar Allu, Technology Head at AI.Cloud for Lifesciences, TCS	(Expert-Industry)

Item- 1 : Welcome Address by Chairman of Academic Council, GVPCEW (A)

Dr. R.K.Goswami, Principal & Academic Council, Chairman, GVPCEW(A) extended a cordial welcome to all the members of the Academic Council of Gayatri Vidya Parishad College of Engineering for Women (Autonomous), and introduced the members present to the Academic Council. He also informed the names of those who have taken prior permission for their inability to attend the meeting.

He made a brief presentation about the credentials of the college and gave a broad idea about the academic plan of the college as it foresees from the academic year 2024-25 post autonomy.

Item-2- Ratification of experts onto Board of Studies of each department

The Member Secretary brought to the notice of the members; the list of experts nominated by the Chairman onto various Board of Studies. The Finalized lists were presented and sought ratification.

Resolution No.GVPCEW (A)-AC-I/07/24/1

The lists of members in the Board of Studies of various departments w.e.f 2024 as presented in Annexure I are ratified.

Item-3- Proposed Academic Regulations for approval

The Member Secretary laid out the proposed Academic Rules and Regulations of the Institution for approval. The members of the council discussed each of the points presented in the Academic Rules and Regulations (R24) and suggested

1. The Rules and Regulations regarding Minors and Honors programs, paper valuation and grading be adopted as per the Affiliating University (Andhra University) procedure.

All the suggestions were incorporated and the rules and regulations redrafted and presented.

Members have gone through the rules and regulations and resolved the following:

Resolution No.GVPCEW (A)-AC-I/07/24/2

1. The Academic Rules and Regulations (R24) with effective from 2024 for B.Tech Programmes including Minors and Honors as presented in Annexure II are approved.
2. The Academic Rules and Regulations (R24) with effective from 2024 for M.Tech Programmes as presented in Annexure III are approved

Item-4. Any other matter

Members have suggested the following:

- Conduct of FDPs in the thrust areas such as DevOps, AI/ML and Quantum Computing
- Explore the possibility of linking with the industry for value added courses.

The members appreciated the way of conduct of proceedings.

The meeting concluded with a Vote of Thanks by the Vice-Principal

Chairman of the Meeting
Academic Council
G.V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

ANNEXURE - I

G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT COMPUTER SCIENCE & ENGINEERING

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairperson)	Dr.P.V.S.L.Jagadamba
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. Siba Kumar Udgata Professor School of Computer and Information Sciences University of Hyderabad Hyderabad, 500046 email: udgata@uohyd.ac.in Mob: 9705395136
		Dr.Jyothi Vedurada Assistant Professor IIT-Hyderabad
		Dr.R Padmavathy Professor, Dept of CSE NIT – Warangal
4	Vice-Chancellor's Nomination	Dr. B Prajna, Professor, Dept. of Computer Science & Systems Engineering AU College of Engineering (A) Andhra University Mobile:9848750033 Email: prajna.maiha@gmail.com
5	Industry Representative	Dr.P.Gayatri Senior Technical Director / Scientist-F National Informatics Centre (NIC) Govt. of India
6	College Alumni	Ms. Sandeep Kaur Senior Software Developer Infinite Computer Solutions Visakhapatnam
7	Expert from outside the Autonomous College for Special Course	Mr.Narra Suresh Delivery Centre Head Infosys Visakhapatnam

Head of the Department
Computer Science & Engineering

Chairman
Academic Council

Principal
G.V.P. College of Engineering for Women
Madhurawada
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G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT COMPUTER SCIENCE & ENGINEERING (Artificial Intelligence & Machine Learning) (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.D.K.Bebarta
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.Debi Prosad Dogra Associate Professor IIT-Bhubaneswar
		Dr.Anjali Mahapatra Associate Professor IIIT - Bhubaneswar
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5	Industry Representative	Dr.M Subrahmanya Sarma Vice President Accenture Bangalore
6	College Alumni	Ms. Vivekitha Sagi Lead Quality Engineer Persistent Systems Hyderabad
7	Expert from outside the Autonomous College for Special Course	Mr.Rajesh Srinivasan Vice-President – Consulting Delivery CGI India : IT and Business Consulting Services Hyderabad

Head of the Department
Computer Science & Engineering (AIML)

Chairman
Academic Council

Principal
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G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT INFORMATION TECHNOLOGY

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.M Bhanu Sridhar
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. Rashmi Ranjhan Rout Professor, Dept of CSE NIT-Warangal
		Dr.N. Rukma Rekha Associate Professor, Dept of CSE University of Hyderabad Hyderabad
4	Vice-Chancellor's Nomination	Dr. Kunjam Nageswara Rao Professor Dept of Information Technology AU College of Engineering, Visakhapatnam
5	Industry Representative	Mr. Sasidhar Maruvada Managing Director nu Vizz Software Solutions Bangalore
6	College Alumni	Ms. G Dhana Lakshmi Assistant Professor Dept of CSE, JNTUKCE JNTUK-Kakinada
7	Expert from outside the Autonomous College for Special Course	Mr.Ayyalasomayajula Siva Sankar Principal Consultant / Key Product Manager Sposea B.V. Bangalore

Head of the Department
Information Technology

Chairman
Academic Council

Principal
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		Dr.A Hemachender Assistant Professor, Dept of EEE NIT-Puducherry Puducherry
4	Vice-Chancellor's Nomination	Dr. P Mallikarjuna Rao Professor Dept of Electrical & Electronics Engineering AU College of Engineering, Visakhapatnam
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT ELECTRONICS & COMMUNICATION ENGINEERING

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.P.M.K.Prasad
2	All Faculty Members of the Department	
3		Dr. Tapan Kumar Gandhi (Ph.D.) FNAE, SMIEEE Professor, Department of Electrical Engineering Indian Institute of Technology Delhi Cadence Chair Professor in Artificial Intelligence & Automation Convener, Computer Technology Chairperson, Project Prakash Charitable Trust Adjunct Faculty, School of AIDE, IIT Jodhpur Email: tgandhi@ee.iitd.ac.in, Ph. : 011-26591153
		Dr. Venkata Mani V Professor, Department of ECE NIT – Warangal
4	Vice-Chancellor's Nomination	Dr. P Rajesh Kumar Professor Dept. of Electronics & Communication Engineering AU College of Engineering (A) Visakhapatnam
5	Industry Representative	Sri A Venkata Krishna CEO Ascentsemi R & D Pvt Limited Bangalore
6	College Alumni	Ms. Krishna Deepika Chittela Staff Engineer - Synopsys Bangalore
7	Expert from outside the Autonomous College for Special Course	Sri Amal Raj Pukkella Founder Digifac Services Pvt Ltd., & COO, Headfitted Pvt Ltd Visakhapatnam

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Electronics & Communication Engineering

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - ENGLISH

(2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.G Survana Lakshmi Professor, Dept of ELT School of English Language Education, EFL University, Hyderabad
		Dr.Chandreie Mukherjee Assistant Professor Department of English IIM Visakhapatnam
4	Vice-Chancellor's Nomination	Dr. N Solomon Benny Assistant Professor & Head of the Department Dept of English, College of Arts & Commerce AU College of Engineering, Visakhapatnam
5	Industry Representative	Ms. Shameem Bhanu Executive Business Administrator, The Quantum AI, Hi-Tech City, Hyderabad
6	College Alumni	Ms. Sai Sindhura Kuppili Guidewire Developer PWC, Hyderabad
7	Expert from outside the Autonomous College for Special Course	Mr. Prasad Boya Director – Operations Quantum AI, Hi-tech City Hyderabad

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

G.V.P. COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

(Approved by AICTE, New Delhi and Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - CHEMISTRY (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.Someswara Rao S Associate Professor Department of Chemistry IIT-Tirupathi
		Dr.Suresh Babu Kalidindi Associate Professor Dept of Chemistry Central Tribal University of AP Vizianagaram
4	Vice-Chancellor's Nomination	Dr. K Basavaiah Professor, Dept of Chemistry College of Science & Technology Andhra University Visakhapatnam
5	Industry Representative	Ms. M Santhoshi Rupa Associate Manager Department of Manufacturing Compliance Pfizer Health Care India Pvt Ltd Lemarthy Village, Parawada Mandal Visakhapatnam
6	College Alumni	Ms. Syed Suhana Amazon Web Services Bangalore
7	Expert from outside the Autonomous College for Special Course	Mr.Akasapu Raviteja Senior Chemist Titanish Laboratories, Chodavaram Vizianagram

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - MATHEMATICS (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr. P A Lakshmi Narayana Professor, Dept of Mathematics IIT – Hyderabad
		Dr.Kasi Viswanadham K N S Professor, Dept of Mathematics NIT - Warangal
4	Vice-Chancellor's Nomination	Dr. Ch.Santhi Sundar Raj Professor Dept of Engineering Mathematics AU College of Engineering (A) , Visakhapatnam
5	Industry Representative	Dr. A R J Srikanth Director Databrew Technologies Pvt Ltd
6	College Alumni	Ms. Anitha Chiluvuri Senior Member of Technical Staff (SMTS) Oracle
7	Expert from outside the Autonomous College for Special Course	Mr. Anil Kumar Paluri Assistant Vice President Bank of America

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES - PHYSICS (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.G. Padmaja Rani Professor & HOD Dept of Physics University College of Engineering JNTUK-Kakinada
		Dr.Arun Kumar R Assistant Professor & HOD School of Sciences NIT-AP
4	Vice-Chancellor's Nomination	Dr. S Srinivasa Rao Professor, Dept of Physics College of Science & Technology Andhra University Visakhapatnam
5	Industry Representative	Dr. Y Purushotham Scientist Centre for Materials for Electronics Technology (C-MET) IDA Phase-III, Cherlapally HCL (PO) Hyderabad
6	College Alumni	Ms. K Hrudaya Team Lead CAPGEMINI
7	Expert from outside the Autonomous College for Special Course	Dr.K.V.Ramesh Sr. Professor Department of Physics GITAM Institute of Sciences GITAM University Visakhapatnam

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

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COMPOSITION AND MEMBERS OF BOARD OF STUDIES IN THE DEPARTMENT BASIC SCIENCES & HUMANITIES – MANAGEMENT STUDIES (2024-2025 to 2027-2028)

1.	Head of the Department (Chairman)	Dr.K L Sai Prasad
2	All Faculty Members of the Department	
3	Subject Experts from outside the College	Dr.A.Narasimha Rao Department of Commerce and Management Studies Andhra University, South Campus, Waltair Junction, Visakhapatnam, Andhra Pradesh, India – 530003 Ph. No. 98483 77644 Email: addada@rediff.com
		Dr.P.Venkata Rao Professor GVP College of Engineering (A) Visakhapatnam 8885043433 pvenkataro@gvpce.ac.in
4	Vice-Chancellor's Nomination	Dr. P Venkateswarlu Professor Dept of Commerce & Management Studies College of Arts & Commerce Andhra University Visakhapatnam
5	Industry Representative	Sri P Rama Krishna IIM Udaipur Founder, Think plus.
6	College Alumni	Tsapala Srujana TCS Human Resource Business Partner
7	Expert from outside the Autonomous College for Special Course	Dr.K.V.V.Murali Someswararao Professor GVP college for Degree and PG courses

Head of the Department
Basic Sciences & Humanities

Chairman
Academic Council

Principal
G V.P College of Engineering for Women
Madhurawada
Visakhapatnam-530048

ANNEXURE - II

ACADEMIC RULES AND REGULATIONS (R-24)

FOR B.TECH. PROGRAMMES INCLUDING HONORS AND MINORS

[Under Choice Based Credit System in line with NEP 2020]

[Effective from 2024-25 admitted batch]

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

MADHURAWADA, VISAKHAPATNAM 530048

AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM

ACADEMIC REGULATIONS

FOR B.TECH. PROGRAMMES INCLUDING HONORS AND MINORS

(Under Choice Based Credit System effective from 2024-25 admitted batch)

These Regulations shall be called the **"GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS) - REGULATIONS 2024 (R-24) FOR THE AWARD OF B.TECH. DEGREE".** These regulations shall be applicable for students enrolling for B.Tech. degree programmes at the Institute from Academic Year 2024-25.
The admission of students shall be as per Govt. of Andhra Pradesh rules.
The medium of instruction for course work and examinations at the Institute shall be English.

1. **Award of the Degree/ Degree with Minor specialization/ Degree with Honors Specialization:**

(a) Award of the B.Tech. Degree / B.Tech. Degree with a Minor if she fulfils the following:

(i) Pursues a course of study for not less than four academic years and not more than eight academic years. However, for the students availing Gap year facility this period shall be extended by two years at the most and these two years would in addition to the maximum period permitted for graduation (Eight years).

(ii) Registers for 160 credits and secures all 160 credits.

(b) Award of B.Tech. degree with Honors if she fulfils the following:

(i) Student secures an additional 15 credits fulfilling all the requisites of a B.Tech. program i.e., 160 credits.

(ii) Honors is to be completed simultaneously with B.Tech. programme.

2. **Structure of the B.Tech. program:**

S. No.	Category	Code	Credits breakup
1	Humanities and Social science including Management courses	HSMC	10.5
2	Basic Science courses	BSC	16 -18*
3	Engineering Science courses	ESC	22 – 27*
4	Professional Core Courses	PCC	51 – 54*
5	Open Elective Courses	OEC	12
6	Professional Elective courses	PEC	15
7	Project work, Internship, Seminar	PROJ	18
8	Mandatory courses (Non-credit)	MC	-
9	Skill oriented Courses	SoC	10
		Total Credits	**160**

*The actual value is based on the Department's breakup for the courses.

The credits are allotted as:
1 Hr. Lecture (L) per week - 1 credit
1 Hr. Tutorial (T) per week - 1 credit
1 Hr. Practical (P) per week - 0.5 credits.

2.1 Semester-wise structure:

<table>
<tr><th>Semester</th><th colspan="2">Composition</th><th>Credits</th></tr>
<tr><td>0</td><td colspan="2">Induction Programme (2-3 weeks)</td><td>0 Credits</td></tr>
<tr><td>I</td><td>5 Theory + 3 Labs
[19.5 Credits]</td><td rowspan="2"></td><td rowspan="2">39 Credits</td></tr>
<tr><td>II</td><td>5 Theory + 3 Labs
[19.5 Credits]</td></tr>
<tr><td>III</td><td>5 Theory + 2/ 3 Labs + 1 skill lab
[20-21.5 Credits]</td><td rowspan="2">Includes
Non-Credit Mandatory Courses
PEUHV& NCC/NSS/Social Activities/ Life skills/ ES</td><td rowspan="2">41.5 Credits</td></tr>
<tr><td>IV</td><td>5 Theory + 2/3 Labs + 1 skill lab
[20-21.5 Credits]</td></tr>
<tr><td colspan="4">Intern-I: 2 Months Community oriented Internship (CSP-Mandatory) during summer vacation</td></tr>
<tr><td>V</td><td>3 Theory + 2/3 Labs + 1 PE+ 1 OE + 1 skill course + Internship-I
[22-23.5 Credits]</td><td rowspan="2">Includes
Non-Credit Mandatory Courses</td><td rowspan="2">43.5 Credits</td></tr>
<tr><td>VI</td><td>3 Theory + 2/3 Labs + 1 PE + 1 OE + 1 skill course
[20-21.5 Credits]</td></tr>
<tr><td colspan="4">Intern-II: 2 Months Industrial/Research Internship (Mandatory) during summer vacation</td></tr>
<tr><td>VII</td><td>3 PE + 2 OE +1 HSSE+1 skill course + Industrial Internship-II
[22 credits]</td><td></td><td>22 Credits</td></tr>
<tr><td>VIII</td><td>Project work / Internship in Industry
[14 credits]</td><td></td><td>14 Credits</td></tr>
<tr><td colspan="3">TOTAL CREDITS FOR REGULAR PROGRAMME</td><td>160 Credits</td></tr>
</table>

Non-credit mandatory courses: Environmental Sciences, Human Values & Professional Ethics, Indian Constitution, Essence of Indian Traditional Knowledge

Students opting for Minors shall complete 4 courses from the prescribed list during IV to VII Semesters by registering for a minimum of one course in each semester and earn 12 credits.

Students opting for Honors shall complete 5 courses from the prescribed list during IV to VII Semesters by registering for a minimum of one course in each semester and earn 15 credits.

3. **Student Induction Programme:** There will be mandatory student induction programme for freshers for two to three weeks before the commencement of first semester. Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations etc.

4. A student shall register for courses in each semester offered by the concerned department under Choice Based Credit System (CBCS). The Open Electives are offered to students of all branches in general. However, a student shall choose an open elective from the list in such a manner that she has not studied the same course during the Programme.

5. All the students shall register for NCC/NSS/Social activities/life skills. A student will be required to participate in an activity for two hours in a week during Third/ Fourth/ Fifth semesters. Grade shall be awarded as Satisfactory or Unsatisfactory in the mark sheet on the basis of participation, attendance, performance and behavior. If a student gets an unsatisfactory Grade, she shall repeat the above activity in the subsequent years, in order to complete the degree requirements.

6. A student shall be permitted to pursue up to a maximum of 20% of total credits (i.e., 32 Credits out of a total 160 credits) from elective courses (from Professional, HSS and Open Electives only) under MOOCs during B.Tech. programme. Every student shall mandatorily complete a minimum one course under MOOCs. Each of the courses must be of a minimum 8 weeks/ 12 weeks in duration. One faculty in-charge is nominated for each course to monitor the registration and progression of the student. Attendance will not be counted for courses under MOOCs. The Head of the department shall notify the list of such courses at the beginning of the semester. The student has to pursue and acquire a certificate for a course under MOOCs (NPTEL/SWAYAM) from the organizations/agencies approved by the BoS in order to earn the 2 credits/ 3 credits within the same semester.

7. The students shall register for professional and open elective courses at the beginning of the semester. There shall be a limit on the minimum and maximum number of registrations based on class / section strength.

8. Students shall undergo mandatory summer internships for a minimum of six weeks duration each at the end of second and third year of the Programme. There shall also be mandatory full internship in the final semester of the Programme. (implementation shall be in line with the guidelines of APSCHE / affiliating University).

9. **Attendance Requirements:**

   i) A student shall be eligible to appear for end semester examinations if she acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.
   - In the case of students who participate in activities like NSS, NCC, sports, intercollegiate tournaments conducted at National level/State Level/ University Level with prior approval of the Principal, the candidate may be deemed to have attended the college during the actual period of such activity, solely for the purpose of attendance.
   - Participating in the seminar, workshop, conference with prior approval of the Principal, the candidate may be deemed to have attended the college during the actual period of

such activity, solely for the purpose of attendance permission. The maximum period of such events is limited to 10 days.

- In the case of students admitted under special circumstances (late admission / transfer etc.,), the candidate shall attend at least 50% of the total classes held during semester and shall have attended at least 75% of the total classes held from the date of admission of the student.

ii) Condonation for shortage of attendance in aggregate up to 10% (greater than 65% and less than 75%) in each semester may be granted on medical grounds. A stipulated fee shall be payable to the college towards condonation of shortage of attendance.

iii) Students whose shortage of attendance is not condoned in any semester are detained and are not eligible to take their end semester examination of that class and their registration shall stand cancelled.

iv) A student will not be promoted to the next semester unless she satisfies the attendance requirements of the present semester, as applicable. They shall seek readmission and continue her course of study from that semester when offered next.

10. Method of Evaluation:

The performance of a student in each semester shall be evaluated through Continuous Internal Evaluation and End Semester Examination. The student shall earn the credits in the respective courses by obtaining at least the marks as specified in the pass criteria given below:

S. No	Type of Course	Continuous Internal Evaluation	End Semester Examination (3 hours)		Pass Criteria
			Max Marks	Evaluation	
1.	Theory Courses	30 Marks Evaluation process: 20 marks (Two internal tests each for 20 marks.) 10 marks (Four assessments 2 before mid1 and 2 before mid-2 by at least any two of the following methods each for 05 marks. (Assessment Methods: Assignment / Quiz / Term paper / Surprise test / seminar / Open book test / Case study / Projects /Any other Teacher specific method). The final internal score is [4*(best of the two out of 30) +1*(the other mark)]/5	70 Marks	Double Valuation	**40% (28 marks) from End semester and 40% (40 marks) on aggregate from Internal and End semester Examination put together.**

S. No	Type of Course	Continuous Internal Evaluation	End Semester Examination (3 hours)		Pass Criteria
			Max Marks	Evaluation	
2.	Professional Elective/ Open Elective	30 Marks (same as that for Theory course in S. No. 1)	70 Marks	Double Valuation	**40% (28 marks) from End semester and 40% (40 marks) on aggregate from Internal and End semester Examination put together.**
3.	Practical Courses Including CAD/e-CAD and Engg. Workshop	50 Marks 20 marks (15 marks for day-wise performance including observation and viva, 5 marks for record.) 30 marks (from the best of the two internal examinations, each being conducted at the end of a cycle/mid semester).	50 Marks	Single Valuation	**50% (25 marks) from End semester Examination and 50% (50 marks) on aggregate from Internal and End semester Examinations put together.**
4.	Design Thinking & Innovation Courses	50 Marks Design thinking phase-wise performance assessment	50 Marks	Single Valuation	**50% (25 marks) from End semester Examination and 50% (50 marks) on aggregate from Internal and End semester Examinations put together.**
5.	Skill Oriented Courses	50 Marks 20 marks (day-wise performance including observation and viva) 30 marks (from internal examinations at the end of the semester).	50 Marks	Single Valuation (Based on report and viva voce examination conducted by concerned teacher and a senior expert in the subject from the same department)	**50% (25 marks) from End semester Examination and 50% (50 marks) on aggregate from Internal and End semester Examinations put together.**

S. No	Type of Course	Continuous Internal Evaluation	End Semester Examination (3 hours)		Pass Criteria
			Max Marks	Evaluation	
6.	Non-Credit Mandatory courses	-	100 Marks	Single Valuation	**40% (40 Marks) from End Semester Examination. No marks or letter grade shall be allotted for all the non- credit mandatory courses.**
7.	Summer Internships / Community Service Project	-	100 Marks	Single Valuation Through an Internal committee (comprising of HoD, Supervisor and a senior faculty of the department) based on Report (50%), Presentation and Viva-voce (50%).	**50% (50 Marks) from End Semester Examination.**
8.	Project Work	50 Marks 25 marks (Two reviews each for 25 Marks based on the progress, through an Internal committee comprising of HoD, Project Supervisor and a senior faculty of the department. The final score is 1/3rd of the I Review and 2/3rd of the II Review) 25 marks (Given by the guide according to the given rubric	150 Marks	Single Valuation (based on the report, Presentation and Viva-voce examination).	**50% (75 marks) from End semester Examination and 50% (100 marks) on aggregate from Internal and End semester Examinations put together.**

Note 1: If a student misses both the mid examinations in an ongoing semester, then on satisfactory medical grounds, she is permitted to take a re-test before external examination of that semester based on either mid-I or mid-II syllabus and 80% of the marks will only be considered.

11. Valuation of Scripts:

For both single and double valuation, a chief examiner shall be appointed for each theory course to monitor the valuation process and evaluate at least 10% of scripts per bundle at random for which the marks awarded by the chief examiner shall be final.
In case of double valuation, in addition to the above,

i) If the difference between the first and second valuations is less than or equal to 10 marks (15% of 70 marks), the better of the two valuations shall be awarded.

ii) If the difference between the first and second valuations is more than 10 marks (15% of 70 marks), the chief examiner shall value the script. Out of the three valuations, the average of marks obtained in third valuation and the marks obtained nearer to third valuation out of first two valuations shall be considered.

12. Supplementary Examinations:

Supplementary examinations will be conducted only with the corresponding regular examinations.
If a student fails in Design Thinking and Innovation courses/Internship (Industrial or Research or Community Service Project) / Comprehensive Viva/ final semester Project Work, the student shall appear for supplementary examination as and when conducted.

13. Revaluation:

i) Revaluation of any theory subject shall be entertained within a stipulated period on payment of specified fee.

ii) There is no revaluation for any lab subjects/practical subjects/skill-oriented courses.

14. Withholding of Result:

The result of a student in a semester shall be withheld and not declared if the student has disciplinary action pending against her.

15. Promotion Rules:

A student shall fulfill the minimum attendance requirements in every semester for promotion to next semester, as mentioned in point 9.

16. Grading:

The marks obtained in each subject (out of 100 marks) will be converted to a corresponding letter grade as given below, depending on the range in which the marks obtained by the student fall.
Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.
Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

Grades and Grade Points

Marks Range		Letter Grade		Grade Point
Theory (including Mandatory courses)	Practical, Drawing, Design Thinking, SoCs, Internships, Project			
> 90 to ≤ 100	> 90 to ≤ 100	O	Outstanding	10
> 80 to ≤ 90	> 80 to ≤ 90	A+	Excellent	9
> 70 to ≤ 80	> 70 to ≤ 80	A	Very Good	8
> 60 to ≤ 70	> 60 to ≤ 70	B+	Good	7
> 55 to ≤ 60	> 55 to ≤ 60	B	Above Average	6
≥ 50 to ≤ 55	≥ # 50 to ≤ 55	C	Average	5
≥ *40 to < 50	-	P	Pass	4
< 40	-	F	Fail	0
		Ab	Absent	0

* Pass mark for Theory courses, # Pass mark for all other courses

Calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i) The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

$$SGPA = \Sigma (C_i \times G_i) / \Sigma C_i$$

where, C_i is the number of credits of the i^{th} subject and G_i is the grade point scored by the student in the i^{th} course

ii) The CGPA will be computed in the same manner as taking into account all the courses undergone by a student over all the semesters of a program, i.e.

$$CGPA = \Sigma (C_i \times S_i) / \Sigma C_i$$

where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester. CGPA is calculated from II semester onwards up to the final semester, considering all the courses offered from the First semester onwards.

iii) Both SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. CGPA is calculated for those who clear all the courses including present semester.

iv) While computing the SGPA/CGPA, the subjects in which the student is awarded Zero grade points will also be included.

v) A candidate has to secure a minimum of 5.0 SGPA for a pass in each semester.

17. Award of Degree:

A. Eligibility for the award of Degree/ Degree with Minor:

A student shall be eligible for the award of the B.Tech. Degree/ B.Tech. Degree with Minor if she fulfills the following conditions:

i) Register and successfully complete all the courses prescribed within the stipulated period.

ii) Earn 160 credits for B.Tech. degree/ earn 12 credits within 160 credits for B.Tech. with Minor degree and pass in all non-credit mandatory courses.
iii) Secure satisfactory grade in social activity.
iv) No disciplinary action is pending against her.
v) Pays the prescribed fee for all the years.

B. Eligibility for the award of degree with Honors:
A student shall be eligible for the award of degree with Honors in a specific specialization if she satisfies conditions i, iii, iv, v cited above (17.A) and earns 15 credits in addition to 160 Credits.

The student eligible for award of B.Tech. degree, shall be placed in one of the following:

Class Awarded	CGPA Secured
First Class with Distinction	**≥ 7.0** (within four years for regular and three years for lateral entry without any supplementary appearance in any semester)
First Class	**≥ 6.0 and < 7.0**
Second Class/ Pass	**≥ 5.0 and < 6.0**

CGPA to Percentage of Marks: Equivalent percentage of marks = **CGPA*10**

18. Gap Year - concept of Student Entrepreneur in Residence:

Outstanding students who wish to pursue entrepreneurship are allowed to take a break of one year at any time after I year / II year / III year to pursue entrepreneurship full time. This period shall be counted for the maximum time for graduation. An evaluation committee at the college level shall be constituted to evaluate the proposal submitted by the student and the committee shall decide on permitting the student for availing the Gap Year.

19. Curricular Framework for Mandatory Internships:

i) Two summer internships each with a minimum of six weeks duration, done at the end of IV and VI semesters, respectively are mandatory. The internship can be done by the students at local industries, Govt. Organizations, Construction agencies, Hydel and thermal power projects and in software MNCs.
ii) Evaluation of the summer internships shall be through the Departmental Committee comprising the Head of the Department as chairman and two faculty of the department including the Supervisor. A student will be required to submit a summer internship report to the concerned department and appear for an oral presentation before the departmental committee. The report and the oral presentation shall carry 40% and 60% weightages, respectively.
iii) In the final semester, the student shall mandatorily undergo internship and parallelly she shall work on a project with well-defined objectives. At the end of the semester the candidate shall submit an internship completion certificate and a project report on the work carried out. The project work shall be evaluated with an external examiner.
iv) The student internship programs shall be facilitated and monitored through a college level

committee with three senior faculty members including supervisor. Completion of internships is mandatory, if any student fails to complete internship, she will not be eligible for the award of degree. In such cases, the student shall repeat and complete the internship.

20. Curricular Framework for Skill oriented Courses (SoCs):

i) Out of the five skill courses two shall be skill-oriented courses from the same domain and shall be completed in the second year. Of the remaining 3 skill courses, one shall necessarily be a soft skill course and the remaining 2 shall be skill-advanced courses either from the same domain or Job oriented skill courses, which can be of inter disciplinary nature.

ii) The student can choose either the skill courses being offered by the department or to choose a certificate course being offered by industries / Professional bodies / APSSDC or any other accredited bodies as approved by the concerned BoS.

iii) If a student chooses to take a Certificate Course offered by Industries / Professional bodies / APSSDC or any other accredited bodies, in lieu of the skill advanced course offered by the department, the credits shall be awarded to the student upon producing the Course Completion Certificate from the agency / professional bodies as approved by the BoS.

iv) If a student prefers to take a certificate course offered by external agency, attendance shall be computed by excluding the skill course in all the calculations of mandatory attendance requirements upon producing a valid certificate as approved by the concerned HoD. The student is deemed to have fulfilled the attendance requirement of the course and acquire the credits assigned to the course.

v) The grades / marks given for a course by external agencies will be converted to the equivalent grades / marks of GVPCEW(A).

21. Community Service Project (Experiential learning through community engagement):

i) Every student should put in a minimum of 180 hours for the Community Service Project during the summer vacation.

ii) Each class/section should be assigned with a mentor

iii) Specific Departments concentrate on their major areas of concern.

iv) A log book has to be maintained by each of the student, where the activities undertaken / involved to be recorded.

v) The log book has to be countersigned by the concerned mentor/faculty incharge.

vi) Evaluation will be done based on the active participation of the student and grade will be awarded by the mentor/faculty member.

vii) The final evaluation will be reflected in the grade memo of the student.

viii) The Community Service Project should be different from the regular programmes of NSS / NCC / Green Corps/Red Ribbon Club, etc.

ix) Minor project report should be submitted by each student. An internal Viva will be conducted by a committee constituted by the principal of the college.

22. Curricular Framework for Minor Programme:

To promote interdisciplinary knowledge among the students, the students admitted into B.Tech. in a major stream/branch are eligible to obtain degree in Minor in another stream.

i) The Minor program requires completion of 12 credits in Minor stream chosen.

ii) Two courses for 06 credits related to Minor are to be pursued compulsorily for the minor degree, but maybe waived for students who have done similar/equivalent courses. If waived for a student, then the student must take an extra elective course in its place. It is recommended that students should complete the compulsory courses (or equivalents) before registering for the electives.

iii) Electives (minimum of 2 courses) to complete a total of 12 credits.

Note: A total of 4 (four) Open Electives are offered in the curriculum. A student can complete the requirement for Minor by opting for the courses offered through various verticals/tracks under Open Electives.

- **No entry conditions on CPGA/ backlogs.**

23. Curricular Framework for Honors:

i) Students of a department / discipline are eligible to opt for Honors Programme offered by the same department / discipline and can select the additional and advanced courses from their respective branch.

ii) The enrolment of student into Honors is based on the CGPA obtained in the major degree program. CGPA shall be taken up to III semester in case of regular entry students and only III semester in case of lateral entry students. Students having 7.0 CGPA without any backlog subjects will be permitted to register for Honors.

iii) A student is permitted to register for Honors in IV semester after the results of III Semester are declared and students may be allowed to take maximum two subjects per semester pertaining to the Honors from IV Semester onwards.

iv) Attendance will not be monitored for MOOC courses. Students have to acquire a certificate from the agencies approved by the BoS with grading or marks or pass/fail. If the MOOC course is a pass/fail course without any grades, the grade shall be assigned as per the recommendations of the Academic Council.

v) It is the responsibility of the student to acquire / complete prerequisites before taking the respective course. The courses offered in each pool shall be domain specific courses and advanced courses. Each pool can have theory as well as laboratory courses. If a course comes with a lab component, that component has to be cleared separately.

vi) If a student has already studied any course from the list prescribed for B.Tech (Honors), she shall be permitted to choose any other course listed under professional electives of the respective B.Tech. programme.

vii) If a student drops or is terminated from the Honors program, the additional credits so far earned cannot be converted into open or core electives; they will remain extra. However, such students will receive a separate grade sheet mentioning the additional courses completed by them.

viii) Transfer of credits from Honors to regular B. Tech degree and vice-versa will not be permitted.

ix) Honors is to be completed simultaneously with a Major degree program.

Registration for Honors:

i) The students having **7.0 CPGA** without backlog subjects will be permitted to register for Honors.

ii) The eligible and interested students shall apply through the Head of the Department (HOD) of her parent department. The whole process should be completed within one week before the start of every semester. Selected students shall be permitted to register for the courses under Honors.

iii) The selected students shall submit their willingness to the principal through her parent department offering Honors. The parent department shall maintain the record of student pursuing the Honors.

iv) The students enrolled in the Honors courses will be monitored continuously. An advisor/mentor from parent department will be assigned to a group of students to monitor the progress.

v) If a student is detained due to lack of attendance either in major or in Honors, registration shall be cancelled.

vi) Honors is to be completed simultaneously with B.Tech. programme.

24. Other Common guidelines for Honors / Minor Programme:

i) A student shall be permitted only to register either for Honors or for Minor programme.

ii) Administration reserves the right to decide on the minimum enrolments for offering Honors / Minor program by the department. If a minimum enrolments criterion is not met, then the students may be permitted to register for the equivalent MOOC courses as approved in BoS.

iii) A student shall be permitted to register for Honors program at the beginning of IV semester subject to a maximum of two additional courses per semester, provided that the student must have acquired 7.0 CGPA upto the end of II semester without any backlogs. In case the III semester results are declared after the commencement of the IV semester, and if a student fails to acquire 7.0 CGPA upto III semester or failed in any of the courses, her registration for Honors program stands cancelled and she shall continue with the regular Programme. The CGPA of 7.0 has to be maintained in the subsequent semesters of regular B.Tech. programme, without any backlog in order to keep the registration for Honors programme active.

iv) The admission into Honors / Minor shall be strictly on the merit basis only. In case of a tie the GPA secured in the core courses shall be taken into consideration.

v) A student shall be permitted to appear for the end semester examinations, provided she puts up a minimum attendance of 75% in each course registered. However, condonation for shortage of attendance between 65-74% may be given on medical grounds. The student concerned will be permitted to take the end semester examination, on payment of condonation fee.

vi) The internal and end semester evaluation for Theory, Practical and Mini-Project shall be same as that of similar type of courses in regular B.Tech. programme.

vii) The Honors / Minor degree will be awarded only after successfully acquiring stipulated

Credits. A separate CGPA will be given for the Honors / Minor programme and no Class / Division will be awarded. Withdrawal from Honors / Minor programme is allowed in any semester.

viii) If a student drops or is terminated from the Honors program, the additional credits so far earned cannot be converted into free or core electives; they will remain extra. These additional courses will find mention in the transcript (but not in the degree certificate).
In such cases, the student may choose between the actual grade or a "pass (P)" grade and choose to omit the mention of the course as per the following:

a) All the courses done under the dropped Honor will be shown in the transcript and
b) None of the courses done under the dropped Honor will be shown in the transcript (implementation shall be in line with the guidelines of APSCHE / affiliating University)

ix) In case a student
a) fails to meet attendance requirement in any subject registered under Honors programme or (ii) fails in any subject registered under Honors programme or
b) fails to meet the 7.0 CGPA requirement at any point after registration,
she will be dropped from the list of students eligible for degree with Honors and they will receive B.Tech. degree only. However, such students will receive a separate grade sheet mentioning the additional courses completed by them (implementation shall be in line with the guidelines of APSCHE / affiliating University).

x) If a student gets detained due to attendance shortage / credit shortage in the regular programme, her admission in Honors shall stand cancelled.

xi) The Honors must be completed simultaneously with regular B.Tech. program within four years.

xii) The nomenclature and mention of title on the degree certificate for Honors / Minor will be in accordance with guidelines from the affiliating University.

25. Credit Transfer Policy and guidelines for courses under MOOCs (including SoCs):

i) Adoption of MOOCs is mandatory, as envisaged in the NEP 2020. As per University Grants Commission (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2016, the Institution allows up to a maximum of 20% of the total credits (i.e., 32 Credits out of a total 160 credits) from elective courses under MOOCs during B.Tech. programme. Every student shall mandatorily complete a minimum of one course under MOOCs.

ii) Each of the 2 credit / 3 credit courses under MOOCs shall be of minimum 12 weeks duration, respectively. One faculty in-charge will be nominated for each course to monitor the registration and progression of the student. Attendance will not be counted for courses under MOOCs.

iii) The Head of the Department shall notify the list of such courses in advance. The student has to pursue and acquire a certificate for a course under MOOCs from the organizations / agencies approved by the BoS in order to earn the credits.

iv) The students may also be permitted to register for a course under MOOCs ahead of the corresponding regular semester based on the start dates of course by external agencies.

v) If a course under MOOCs is not offered during the specified semester, the same or equivalent course under MOOCs may be offered in blended mode.

vi) If the external agency is unable to conduct examination or give grades/marks due to any unavoidable circumstances, the college shall conduct examination and give grades/marks.

vii) In case a student fails in any course under MOOCs offered by college in blended mode, she shall appear in supplementary examination as and when conducted by the college.

viii) In case a student fails in any course under MOOCs offered by external agency, she may be permitted to register for the same or equivalent or any other course approved in BoS.

ix) The grades / marks given for a course under MOOCs by external agencies will be converted to the equivalent grades / marks of GVPCEW(A).

x) If the external agency declares only Pass without any grade / marks for a course under MOOCs, the college will award minimum grade corresponding to Pass criteria.

26. Academic Bank of Credits (ABC):

The Institution will implement Academic Bank of Credits (ABC) inline with the Affiliating University to promote flexibility in curriculum as per NEP 2020 to

i) provide option of mobility for learners across the universities of their choice. In case of students seeking admission through transfer from other institutes, for the credits earned so far and available in the ABC, equivalences will be drawn with the Course structure in force as per the prevailing regulations and will be considered for transfer of credits as per the approvals of BoS and Academic Council. The decision of the Academic Council is final in case of any ambiguity.

ii) provide option to gain the credits through MOOCs from approved digital platforms.

iii) facilitate award of certificate/diploma/degree in line with the accumulated credits in ABC

iv) execute Multiple Entry and Exit system with credit count, credit transfer and credit acceptance from students' account.

27. Multiple Entry / Exit Option:

(a) **Exit Policy:**

The students can choose to exit the four-year programme at the end of the first / second / third year.

i) UG Certificate in (Field of study/discipline) - Programme duration: First year (first two semesters) of the undergraduate programme, 40 credits (39 credits at the end of I year and another course for 1 credit), followed by an additional exit 10-credit bridge course(s) lasting two months, including at least 6- credit job-specific internship/ apprenticeship that would help the candidates acquire job-ready competencies required to enter the workforce.

ii) UG Diploma (in Field of study/discipline) - Programme duration: First two years (first four semesters) of the undergraduate programme, 80.5 credits followed by an additional exit 10- credit bridge course(s) lasting two months, including at least 6- credit job-specific internship/ apprenticeship that would help the candidates acquire job-ready competencies required to enter the workforce.

iii) Bachelor of Science (in Field of study/discipline) i.e., B.Sc. Engineering in (Field of study/discipline)- Programme duration: First three years (first six semesters) of the undergraduate programme, 124 credits.

(b) Entry Policy:

Modalities on multiple entry by the student into the B.Tech. programme will be as per the directions of the affiliating University and regulatory authorities from time to time.

28. Student Transfers:

Student transfers shall be as per the guidelines issued by the Government of Andhra Pradesh and the concerned Universities from time to time.

General:

i) The academic regulations should be read as a whole for the purpose of any interpretation.

ii) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.

iii) The College may change or amend the Academic regulations or syllabi at any time as per the directions of the Academic Council and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College.

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ACADEMIC REGULATIONS
FOR STUDENTS ADMITTED THROUGH LATERAL ENTRY

The duration of the programme for the degree of B.Tech. for lateral entry students will be three academic years, with two semesters in each year. However, if a student cannot complete within 3 years, she can do so by taking more time but not more than 6 years from the year of first admission.

1. Structure of the Programme:

<table>
<tr><th>Semester</th><th colspan="2">Composition</th><th>Credits</th></tr>
<tr><td>III</td><td>5 Theory + 3 Labs + 1 skill Lab
[20-21.5 Credits]</td><td rowspan="2">Includes
Non-Credit Mandatory Courses
PEUHV & NCC/NSS/ES</td><td rowspan="2">41.5 Credits</td></tr>
<tr><td>IV</td><td>5 Theory + 2 Labs + 1 skill Lab
[20-21.5 Credits]</td></tr>
<tr><td colspan="4">Intern-I: 2 Months Community oriented Internship (CSP-Mandatory) during summer vacation</td></tr>
<tr><td>V</td><td>3 Theory + 2 Labs +
1 PE+ 1 OE + 1 skill course +
Internship-I [22-23.5 Credits]</td><td rowspan="2">Includes
Non-Credit Mandatory
Courses</td><td rowspan="2">43.5 Credits</td></tr>
<tr><td>VI</td><td>3 Theory + 3 Labs
+ 1 PE + 1 OE + 1 skill course
[20-21.5 Credits]</td></tr>
<tr><td colspan="4">Intern-II: 2 Months Industrial/Research Internship (Mandatory) during summer vacation</td></tr>
<tr><td>VII</td><td>3 PE + 2 OE +1 HSSE+1 skill
course + Industrial Internship-II
[22 credits]</td><td></td><td>22 Credits</td></tr>
<tr><td>VIII</td><td>Project work / Internship in
Industry
[14 credits]</td><td></td><td>14 Credits</td></tr>
<tr><td colspan="3">Total Credits for Lateral programme</td><td>121Credits</td></tr>
</table>

Non-credit Mandatory Courses: Environmental Sciences, Human Values & Professional Ethics, Indian Constitution, Essence of Indian Traditional Knowledge

2. Promotion Rules:

A student shall fulfill the minimum attendance requirements in every semester for promotion to next semester.

3. Minimum Academic Requirement for the award of degree:

A. Eligibility for the award of degree:

A student shall be eligible for the award of the B.Tech. degree/ B.Tech. degree with Minor if

she fulfills the following conditions:

i) Register and successfully complete all the courses prescribed within the stipulated period.
ii) Earn 121 credits for B.Tech. degree/ earn 12 credits within 121 credits for B.Tech. with Minor degree and pass in all non-credit mandatory courses
iii) Secure satisfactory grade in social activity
iv) No disciplinary action is pending against her
v) Pays the prescribed fee for all the years.

B. Eligibility for the award of degree with Honors:

A student shall be eligible for the award of degree with Honors in a specific specialization if she satisfies conditions i, iii, iv, v cited above (3.A) and earns 15 credits in addition to 121 Credits.

4. All other regulations shall be same as that of the regulations applicable to regular students.

General:

i) The academic regulations should be read as a whole for the purpose of any interpretation.
ii) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.
iii) The College may change or amend the Academic regulations or syllabi at any time as per the directions of the Academic Council and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College.

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TRANSITORY REGULATIONS
FOR RE-ADMITTED STUDENTS

i) When a student is detained due to lack of credits / shortage of attendance, she may be re-admitted after fulfillment of academic requirements and as and when the semester is offered. In such case, she will be in the academic regulations into which she is readmitted.

ii) Credit equivalences will be drawn for the students re-admitted into latest regulations from the earlier regulations. A Student has to register for the substitute / compulsory / pre-requisite courses identified by the respective Boards of Studies.

iii) The student has to register for substitute courses, attend the classes and pass in examination and earn the credits.

iv) The student has to register for compulsory courses, attend the classes and pass in examination

v) For the subject(s) failed in earlier semesters (before re-admission), the student has to acquire credits from the supplementary examinations as and when conducted.

vi) In the case of transferred students from other University / College, an equivalent course structure shall be prepared by the BoS of the respective department considering the suitable credits already acquired at the previous institution.

vii) The students detained in earlier Regulations (under JNTU-K affiliation) and to be readmitted into R-24 Regulations (under AU affiliation) shall also follow the above guidelines subject to the approval from both the Universities.

viii) The decision of the Principal is final on any other clarification in this regard.

General:

i) The academic regulations should be read as a whole for the purpose of any interpretation.

ii) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.

iii) The College may change or amend the Academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College.

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MALPRACTICES RULES
DISCIPLINARY ACTION FOR - IMPROPER CONDUCT IN EXAMINATIONS

S No	Nature of Malpractices/Improper conduct *If the candidate:*	Suggested Punishment
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which she is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellationof the performance in that subject only.
1. (b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, she will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled.
3.	Impersonates any other candidate in connectionwith the examination.	The candidate who has impersonated shall be expelledfrom examination hall. The candidate is also debarredand forfeits the seat. The performance of the originalcandidate who has been impersonated, shall be cancelledin all the subjects of the examination (includingpracticals and project work) already appeared and shall not be allowed to appear for examinations of theremaining subjects of that semester/year. The candidateis also debarred for two consecutive semesters from classwork and all examinations. The continuation of thecourse by the candidate is subject to the academic regulations in connection with forfeiture of seat. If theimposter is an outsider, she will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation ofperformance in that subject and all the other subjects thecandidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjectsof that semester/year. The candidate is also debarred fortwo consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.

S No	Nature of Malpractices/Improper conduct If the candidate:	Suggested Punishment
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requestinghim to award pass marks.	Cancellation of the performance in that subject.
.6	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in- charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects thecandidate(s) has (have) already appeared and shall notbe permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.

S No	Nature of Malpractices/Improper conduct If the candidate:	Suggested Punishment
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the college expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Committee appointed by the Principal for further action and impose suitable punishment.	

Suitable punishment shall be awarded based on the recommendations of a committee constituted in this regard.

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Principal
G V.P College of Engineering (a)
Madhurawada
Visakhapatnam-530

Ragging

Prohibition of ragging in educational institutions Act 26 of 1997

Salient Features

- Ragging within or outside any educational institution is prohibited.
- Ragging means doing an act which causes or is likely to cause Insult or Annoyance of Fear or Apprehension or Threat or Intimidation or outrage of modesty or Injury to a student.

	Imprisonment upto		Fine Upto
Teasing, Embarrassing and Humiliation	6 Months	+	Rs. 1,000/-
Assaulting or Using Criminal force or Criminal intimidation	1 Year	+	Rs. 2,000/-
Wrongfully restraining or confining or causing	2 Years	+	Rs. 5,000/-
Causing grievous hurt, kidnapping or Abducts or rape or committing unnatural offence	5 Years	+	Rs. 10,000/-
Causing death or abetting suicide	10 Months	+	Rs. 50,000/-

Ragging

ABSOLUTELY NO TO RAGGING

1. Ragging is prohibited as per Act 26 of A.P. Legislative Assembly, 1997.
2. Ragging entails heavy fines and/or imprisonment.
3. Ragging invokes suspension and dismissal from the College.
4. Outsiders are prohibited from entering the College and Hostel without permission.
5. Girl students must be in their hostel rooms by 7.00 p.m.
6. All the students must carry their Identity Cards and show them when demanded
7. The Principal and the Wardens may visit the Hostels and inspect the rooms any time.

ANNEXURE - III

ACADEMIC RULES AND REGULATIONS (R-24)

FOR M.TECH. PROGRAMMES

[Under Choice Based Credit System in line with NEP 2020]

[Effective from 2024-25 admitted batch)

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)
MADHURAWADA, VISAKHAPATNAM 530048
AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM

ACADEMIC REGULATIONS

FOR M.TECH. PROGRAMMES

(Under Choice Based Credit System effective from 2024-25 admitted batch)

These Regulations shall be called the "Gayatri Vidya Parishad College of Engineering for Women (Autonomous) Regulations- 2024 for the Award of M. Tech. Degree".

These regulations shall be applicable for students enrolling for M.Tech. Degree programmes at the Institute from Academic Year 2024-25.

Admission to the above program shall be made subject to the eligibility, qualifications and specialization as per the guidelines prescribed by the APSCHE, AICTE and Andhra University from time to time. The medium of instruction for course work and examinations at the Institute shall be English.

The duration of the programme for the Master of Technology degree will be two academic years, with two semesters in each year. However, if a student cannot complete within 2 years, she can do so by taking more time but not more than 4 years from the year of first admission.

1. Structure of the Programme:

Semester	No. of courses & Corresponding Credits		Credits
I	2 Theory + PE-I + PE-II + Research Methodology & IPR + Audit course+2 Core Lab	2*3 + 3 + 3 + 2 + 2*1.5	17
II	2 Theory + PE-III + PE-IV + Audit course + 2 Core Lab + 1 Mini Project with Seminar	2*3 + 3 + 3 + 2 *2+1.5	17
III	PE-V+OE+ Dissertation (Phase-I) + Industrial Training	1*3 + 1*3 + 10+2	18
IV	Dissertation (Phase-II)	16	16
		TOTAL	68

PE: Professional Elective; **OE**: Open Elective

The credits are allotted as:
1 Hr. Lecture (L) per week - 1 credit
1 Hr. Practical (P) per week - 0.5 credits.
Audit Courses carry no credits.

2. Registration:

A student shall register for courses in each semester at the beginning, from I semester onwards according to the choice provided and courses offered by the concerned department.

3. Attendance Requirements:

i) A student shall be eligible to appear for end semester examinations if she acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.

- In the case of students who participate in activities like NSS, NCC, sports, intercollegiate tournaments conducted at National level/State Level/ University Level with prior approval of the Principal, the candidate may be deemed to have attended the college during the actual period of such activity, solely for the purpose of attendance.
- Participating in the seminar, workshop, conference with prior approval of the Principal, the candidate may be deemed to have attended the college during the actual period of such activity, solely for the purpose of attendance permission. The maximum period of such events is limited to 10 days.
- In the case of students admitted under special circumstances (late admission / transfer etc.,), the candidate shall attend at least 50% of the total classes held during semester and shall have attended at least 75% of the total classes held from the date of admission.

ii) Condonation for shortage of attendance in aggregate up to 10% (greater than 65% and less than75%) in each semester may be granted on medical grounds. A stipulated fee shall be payable to the college towards condonation of shortage of attendance.

iii) Students whose shortage of attendance is not condoned in any semester are detained and are not eligible to take their end semester examination of that class and their registration shall stand cancelled.

iv) A student will not be promoted to the next semester unless she satisfies the attendance requirements of the present semester, as applicable. They shall seek readmission and continue her course of study from that semester when offered next.

4. Method of Evaluation:

The performance of a student in each semester shall be evaluated through Continuous Internal Evaluation and End Semester Examination. The student shall earn the credits in the respective courses by obtaining at least the marks as specified in the pass criteria given below:

S.No	Type of Course	Continuous Internal Evaluation	End Semester Examination (3 hours)		Pass Criteria
			Max Marks	Evaluation	
1.	Professional core/ Professional Elective/ Open Elective/ Research Methodology & IPR Courses	30 Marks Evaluation process: 20 marks (Two internal tests each for 20 marks.) 10 marks (Two assessments 1 before mid1 and 1 before mid2 by at least any	70 Marks (Through a panel of paper setters)	Professional core (Double Valuation) and Professional Elective/ Open Elective/ Research Methodology & IPR Courses (Single Valuation)	**40% (28 marks) from End semester and 50% (50 marks) on aggregate from Internal and End semester Examination**

		two of the following methods each for 10 marks. (Assessment Methods: Assignment / Term paper / / seminar / Case study / Projects /Any other Teacher specific method). 2:1 weighted averaged marks with the higher score carrying a weightage of 2 shall be considered.			**put together.**
5.	Practical Courses	50 Marks 20 marks (day-wise performance including observation, viva & record) 30 marks (from internal examinations at the end of the semester).	50 Marks (Internal)	Single Valuation (Based on report of a lab activity-based project on the course conducted by concerned teacher and a senior expert in the subject from the same department)	**50% (25 marks) from End semester Examination and 50% (50 marks) on aggregate from Internal and End semester Examinations put together.**
6.	Non-credit Audit courses	100 Marks	-	Single Valuation	**40% (40 Marks) from End Semester Examination.** **No marks or letter grade shall be allotted for all the non-credit Audit courses.**

7.	Mini Project with Seminar	100 Marks	-	Single Valuation Through an Internal committee (comprising of HoD, Supervisor and a senior faculty of the department) based on Report (50%), Presentation and Viva-voce (50%).	**50% (50 Marks) from Report, Presentation and Viva-voce.**
8.	Dissertation work Phase I & II	Phase I (100 marks) Phase II (30 marks) (details mentioned in point 5 g & h)	Phase II (70 marks)	Single Valuation Through a board consisting of the supervisor, Head of the Department and the external examiner	**PASS in both Phase I & II**

Note 1: If a student misses both the mid examinations in an ongoing semester, then on satisfactory medical grounds, she is permitted to take a re-test before external examination of that semester based on either mid-I or mid-II syllabus and 80% of the marks will only be considered.

4.1 (a) Valuation of scripts:

For both single and double valuation, a chief examiner shall be appointed for each theory course to monitor the valuation process and evaluate atleast 10% of scripts per bundle at random for which the marks awarded by the chief examiner shall be final.
In case of double valuation, in addition to the above,

i) If the difference between the first and second valuations is less than or equal to 10 marks (15% of 70 marks), the better of the two valuations shall be awarded.

ii) If the difference between the first and second valuations is more than 10 marks (15% of 70 marks), the chief examiner shall value the script. Out of the three valuations, the average of marks obtained in third valuation and the marks obtained nearer to third valuation out of first two valuations shall be considered.

4.1 (b) Revaluation:

i) Revaluation of any theory subject shall be entertained within a stipulated period on payment of specified fee.

ii) There is no revaluation for any lab subjects/practical subjects/skill-oriented courses.

4.2 Audit Courses:

A student shall register for the audit courses (as approved in BoS) in online (MOOCs) / offline mode and appear for examination to be conducted by the college.

i) The students may be permitted to register for audit course under MOOCs ahead of the corresponding regular semester based on the start dates of course by external agencies.

ii) If the audit course is not offered under MOOCs during the specified semester, the same or its

equivalent course under MOOCs may be offered in blended mode.

4.3 Pedagogy training / Industrial training:

Training shall be for a period of at least 4 weeks during III semester and a report has to be submitted. The assessment shall be carried out for 100 marks by an internal evaluation committee comprising Head of the Department, Faculty advisor and another faculty of the department.

4.4 Supplementary examinations:

Supplementary examinations will be conducted only with the corresponding regular examinations.

If a student fails in final semester Project Work, the student shall appear for supplementary examination as and when conducted.

5. EVALUATION OF DISSERTATION WORK:

Every candidate shall be required to submit the dissertation work after taking up a topic approved by the Departmental Research Committee (DRC).

i) A Departmental Research Committee (DRC) shall be constituted with HoD as Chairman, two senior faculty (at least one from each specialization) as members along with the supervisor to oversee the progress of the dissertation work from selection of topic to submission.

ii) A Central Research Committee (CRC) shall be constituted with a Professor as Chair Person and one representative from each department nominated by the Principal.

iii) Registration of Dissertation Work: A candidate shall register for the Dissertation work at the beginning of the second year, only after satisfying the attendance requirement of all the courses up to II semester. The duration of the dissertation work is for two semesters.

iv) After satisfying 5c, a candidate has to submit, in consultation with the supervisor, the title, objective and plan of action of dissertation work to the DRC for its approval. Only after obtaining the approval of DRC, the student can initiate the dissertation work.

v) Change of topic of the dissertation work or supervisor, if necessary, shall be with the approval of the DRC. In such case, the date of registration for the dissertation work shall be the date of change of Supervisor or topic.

vi) Evaluation of the dissertation work shall be done in two phases, one at the end of the III Semester and the other during the IV Semester.

vii) The evaluation of the dissertation work (Phase-I) at the end of III semester shall be carried out through DRC1 for 100 marks based on the presentation made by the student on the topic selected, literature survey and the progress of the work. The student shall PASS in dissertation work (Phase-I) by securing at least 50 marks. Otherwise, the student shall reappear for DRC1 with improvised work to secure PASS. Only those students who secure a PASS in dissertation work (Phase-I) shall be permitted to proceed for the dissertation work (Phase-II) in IV semester.

viii) The evaluation of the dissertation work (Phase-II) during IV semester shall be carried out for a total of 100 marks through DRC2 (10 marks), DRC3 (10 marks), CRC (10 marks) and final viva-voce examination (70 marks).

ix) A candidate shall be permitted to submit her dissertation only after acquiring credits of

all theory and practical course with the approval of CRC but not earlier than 40 weeks from the date of registration of the Dissertation work. The candidate shall make an oral presentation before the CRC and after the approval by CRC, plagiarism check shall be conducted for the Dissertation (Similarity Index shall not exceed 30%) and shall submit a draft copy to the Principal through the concerned Head of the Department.

x) Three copies of the dissertation certified by the Supervisor shall be submitted in the department after approval by the CRC.

xi) For the purpose of adjudication of the dissertation, an external examiner shall be selected by the Principal or his nominee from a panel of examiners in the program specialization proposed and approved in the BoS meeting.

xii) The final evaluation of dissertation (Phase-II), i.e., viva-voce examination, for 50 marks, shall be conducted by a board consisting of the supervisor, Head of the Department and the external examiner.

xiii) A student is deemed to be passed in dissertation (Phase-II) of IV semester, if he secures at least 25 marks (50%) in the final viva-voce examination and at least 50 marks (50%) out of a total 100 marks through DRC2, DRC3, CRC, and final viva-voce examination. If a student fails in Dissertation (Phase-II), he/she shall revise and resubmit the dissertation, in a time frame prescribed by the CRC.

xiv) The overall Dissertation Grade Point Average (DGPA), shall be computed based on the grade points secured in Phase-I (III semester) and Phase-II (IV semester) as:

xv) $DGPA = \Sigma(Ci \times Gi) / \Sigma Ci$

xvi) where Ci is the number of credits of the ith phase and Gi is the grade point scored by the student in the ith phase.

6. ACADEMIC REQUIREMENTS:

i) A student shall secure a PASS in all courses (except in audit courses) and earn 68 credits to be eligible for the award of the M.Tech. degree.

ii) A student shall register for the audit courses (as approved in BoS) in online / offline mode and appear for examination to be conducted by the college.

7. GRADING SYSTEM:

Absolute grading system shall be followed for the award of grades.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.

Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

Based on the marks secured, a Letter Grade is awarded as per the following:

Grades and Grade Points

Marks Range		Letter Grade		Grade Point
Theory (including Mandatory courses)	Practical, Drawing, Design Thinking, SoCs, Internships, Project			
> 90 to ≤ 100	> 90 to ≤ 100	O	Outstanding	10
> 80 to ≤ 90	> 80 to ≤ 90	A+	Excellent	9
> 70 to ≤ 80	> 70 to ≤ 80	A	Very Good	8
> 60 to ≤ 70	> 60 to ≤ 70	B+	Good	7
> 55 to ≤ 60	> 55 to ≤ 60	B	Above Average	6
≥ 50 to ≤ 55	≥ # 50 to ≤ 55	C	Average	5
≥ *40 to < 50	-	P	Pass	4
< 40	-	F	Fail	0
		Ab	Absent	0

* Pass mark for Theory courses, # Pass mark for all other courses

Calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i) The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

$$SGPA = \Sigma (Ci \times Gi) / \Sigma Ci$$

where, Ci is the number of credits of the ith subject and Gi is the grade point scored by the student in the ith course

ii) The CGPA will be computed in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

$$CGPA = \Sigma (Ci \times Si) / \Sigma Ci$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester. CGPA is calculated from II semester onwards up to the final semester, considering all the courses offered from the First semester onwards.

iii) Both SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts. CGPA is calculated for those who clear all the courses including present semester.

iv) While computing the SGPA/CGPA, the subjects in which the student is awarded Zero grade points will also be included.

v) A candidate has to secure a minimum of 6.0 SGPA for a pass in each semester.

The award of CLASS / DIVISION is as per the following:

Class Awarded	CGPA Secured
First class with distinction	≥ 7.0 (within two years and without any supplementary appearance in any semester)
First class	≥ 6.0 and < 7.0

CGPA to Percentage of Marks: Equivalent percentage of marks = **CGPA*10**

8. AWARD OF M.TECH. DEGREE:

A student shall be declared eligible for the award of the M.Tech. degree, if she pursues the course of study and satisfies the following:

i) Earn 68 credits in not less than two academic years and not more than four academic years from the year of first admission.
ii) Earn a minimum of 6.0 CGPA from all courses.
iii) No disciplinary action pending against her.
iv) Pays the prescribed fee for all the years.

9. WITHHOLDING OF RESULT:

The result of a student in a semester shall be withheld and not declared if the student has disciplinary action pending against her.

TRANSITORY REGULATIONS

i) When a student is detained due to lack of credits / shortage of attendance, she may be re-admitted after fulfillment of academic requirements and as and when the semester is offered. In such case, she shall be in the academic regulations into which she is readmitted.

ii) Credit equivalences shall be drawn for the students re-admitted into latest regulations from the earlier regulations. A Student has to register for the substitute / compulsory / pre-requisite courses identified by the respective Boards of Studies.

iii) The student has to register for substitute courses, attend the classes and pass in examination and earn the credits.

iv) The student has to register for compulsory courses, attend the classes and pass in examination.

v) For the subject(s) failed in earlier semesters (before re-admission), the student has to acquire credits from the supplementary examinations as and when conducted.

vi) In case of transferred students from other University / College, an equivalent course structure shall be prepared by the BoS of the respective department considering the suitable credits already acquired at the previous institution.

vii) The decision of the Principal will be final on any other clarification in this regard.

General:

i) The academic regulation should be read as a whole for the purpose of any interpretation.

ii) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.

iii) The college may change or amend the academic regulations or syllabi from time to time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the college.

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MALPRACTICES RULES
DISCIPLINARY ACTION FOR - IMPROPER CONDUCT IN EXAMINATIONS

S No	Nature of Malpractices/Improper conduct	Suggested Punishment
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which she is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellationof the performance in that subject only.
1. (b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, she will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled.
3.	Impersonates any other candidate in connectionwith the examination.	The candidate who has impersonated shall be expelledfrom examination hall. The candidate is also debarredand forfeits the seat. The performance of the originalcandidate who has been impersonated, shall be cancelledin all the subjects of the examination (includingpracticals and project work) already appeared and shall not be allowed to appear for examinations of theremaining subjects of that semester/year. The candidateis also debarred for two consecutive semesters from classwork and all examinations. The continuation of thecourse by the candidate is subject to the academic regulations in connection with forfeiture of seat. If theimposter is an outsider, she will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation ofperformance in that subject and all the other subjects thecandidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjectsof that semester/year. The candidate is also debarred fortwo consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.

S No	Nature of Malpractices/Improper conduct	Suggested Punishment
	If the candidate:	
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
.6	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.

S No	Nature of Malpractices/Improper conduct If the candidate:	Suggested Punishment
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the college expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Committee appointed by the Principal for further action and impose suitable punishment.	

Suitable punishment shall be awarded based on the recommendations of a committee constituted in this regard.

* * * * *

Principal
V.P College of Engineering for Wo
Madhurawada
Visakhapatnam-530048

Ragging

Prohibition of ragging in educational institutions Act 26 of 1997

Salient Features

- Ragging within or outside any educational institution is prohibited.
- Ragging means doing an act which causes or is likely to cause Insult or Annoyance of Fear or Apprehension or Threat or Intimidation or outrage of modesty or Injury to a student.

	Imprisonment upto		Fine Upto
Teasing, Embarrassing and Humiliation	6 Months	+	Rs. 1,000/-
Assaulting or Using Criminal force or Criminal intimidation	1 Year	+	Rs. 2,000/-
Wrongfully restraining or confining or causing	2 Years	+	Rs. 5,000/-
Causing grievous hurt, kidnapping or Abducts or rape or committing unnatural offence	5 Years	+	Rs. 10,000/-
Causing death or abetting suicide	10 Months	+	Rs. 50,000/-

Ragging

ABSOLUTELY NO TO RAGGING

1. Ragging is prohibited as per Act 26 of A.P. Legislative Assembly, 1997.
2. Ragging entails heavy fines and/or imprisonment.
3. Ragging invokes suspension and dismissal from the College.
4. Outsiders are prohibited from entering the College and Hostel without permission.
5. Girl students must be in their hostel rooms by 7.00 p.m.
6. All the students must carry their Identity Cards and show them when demanded
7. The Principal and the Wardens may visit the Hostels and inspect the rooms any time.

MINUTES OF THE **SECOND MEETING OF THE ACADEMIC COUNCIL OF GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)** HELD ON 26th October 2024 AT 10.00 AM IN THE COLLEGE CAMPUS, MADHURAWADA, VISAKHAPATNAM

Members present:

1. Prof. Dr. Raj Kumar Goswami, Principal, GVPCEW (A)	Chairman
2. Dr. G. Sudheer, Professor & Vice-Principal, GVPCEW (A)	
3. Dr. P. V. S. L. Jagadamba, Chairperson, BoS & Head, Dept. of CSE	
4. Dr. D. K. Bebarta, Chairman, BoS, Head, Dept. of CSE (AIML)	
5. Dr. M Bhanu Sridhar, Chairman, BoS, Dept. of IT	
6. Dr. P. Murali Krishna Prasad, Chairman, BoS, Dept. of ECE	
7. Dr. R. V. S. Lakshmi Kumari, Chairperson, BoS, Dept. of EEE	
8. Dr. K. L. Sai Prasad, Chairman, BoS, Dept. of BSH	
9. Dr. D.V.A.N Ravi Kumar, Associate Prof., Dept. of ECE	(Teacher of the College)
10. Dr. N Sharmili, Associate Professor, Dept. of CSE	(Teacher of the College)
11. Prof. Dr. P. Mallikarjuna Rao, Dept of Electrical & Electronics Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
12. Prof. Dr. S. Vizianandа Row Dept of Computer Science & Systems Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
13. Prof. Dr. G. Sasibhusana Rao Dept of Electronics & Communication Engineering AU College of Engineering, Visakhapatnam	(University Nominee)
14. Dr. C. Srinivas, Associate Professor, Dept. of IT	Controller of Examinations
15. Ms. Ch. Sirisha, Asst Prof, Dept. of ECE	Member Secretary

Online Meeting: The following members have joined online with prior approval from the Chair.

(Video call link: https://meet.google.com/kqe-inqp-qhh)

1. Ms. Lakshmi Mukkavalli, Managing Director, Patra India (Expert – Industry)
2. Sri Pavan Kumar Allu, Technology Head at AI.Cloud for Lifesciences, TCS (Expert-Industry)
3. Ms. Pooja Vidya Shankar, Head-Strategic Planning NASCOMM Centre of Excellence IoT & AI (Expert – Engineering)
4. Sri P Prabhakar, Superintending Engineer, APTRANSCO (Expert-Industry)

Leave of absence: The following members/special invitees of Governing Body were granted prior approval from the Chair to be excused from the meeting

1. Dr. V. Sujatha, MD, DM (Cardiology) (Expert – Medicine)
2. Dr. P Devendra, Associate Prof., Dept of EEE (Teacher of the College)
3. Dr. K. Purushotham Naidu, Asst Prof., Dept of CSE (AIML) (Teacher of the College)

The meeting commenced in a hybrid format (online & offline) with a welcome note from the chairman.

Item- 1 : Confirmation of the Minutes of the Meeting of the 1st Academic Council Meet

The member Secretary informed all the distinguished members of the academic council that the minutes were circulated (both soft copy and hard copy) after incorporating the suggestions given by the esteemed members.

The members were requested to confirm the minutes of the 1st meeting.

Resolution No. GVPCEW (A)-AC-II/10/24/1

The minutes of the 1st meeting of the Academic Council held on 27.07.2024 are confirmed.

Item-2 : Chairman Address

The chairman presented the main activities of the institute and its achievements since the previous meeting.

The members expressed their satisfaction at the conduct of events and requested the chairman to convey their best wishes to all the faculty and students for their active participation. The members also requested the chairman to convey their commendations to the achievers.

Resolution No. GVPCEW (A)-AC-II/10/24/2

The members appreciated the faculty, Students and Staff for their achievements.

Item-3 : Minor changes in the Academic Rules and Regulations R24 for B. Tech Programs in line with the guidelines of AICTE

The Member Secretary presented the following proposed modifications to be brought into R24 regulation in line with the guidelines of AICTE and guidelines from the Affiliating University

- For the award of a B.Tech. Degree with Minor, a student must satisfy conditions (i), (iii), (iv), and (v) of Section 17.A in the Academic Rules and Regulations (R24) and earn an additional 12 credits beyond the required 160 credits.

Resolution No. GVPCEW (A)-AC-II/10/24/3

The members agreed to amend R24 to ensure Minor degree requirements align with AICTE and Affiliating University guidelines, as specified in Annexure-1.

Item-4 : Minutes of the meeting of the BoS of different departments held on 3rd August, 2024

The Member Secretary presented the agenda items that were discussed in the Board of Studies meeting of different departments and sought approval of the Academic Council for the minutes with the following major items:

1. Course Structure of CSE, CSE (AI&ML) & IT for B. Tech I year- I & II Sem recommended by Board of Studies of CSE, CSE (AI&ML) & IT.

2. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of CSE, CSE (AI&ML), and IT.

S.No	List of Courses	Course Code
1	Python Programming	24CT11RC06
2	Fundamentals of Computers	24CT11RC01
3	Python Programming Lab	24CT11RC07
4	Computer Engineering Workshop	24CT11RC03
5	Problem Solving using C	24CT11RC02
6	Web Technologies Fundamentals Lab	24CT11RC08
7	Problem Solving using C Lab	24CT11RC04
8	IT Essentials Lab	24CT11RC05

3. Course Structure of ECE for B. Tech I year- I & II Sem recommended by Board of Studies of ECE.

4. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies of ECE.

S.No	List of Courses	Course Code
1	Electronic Devices and Circuits	24EC11RC01
2	Electronic Devices and Circuits Lab	24EC11RC02
3	Basic Electronics Engineering	24EC11RC03
4	Elements of Electronics Engineering	24EC11RC04
5	Digital Logic Design	24EC11RC05
6	Electronic Circuit Analysis	24EC11RC06
7	Digital Logic Design Lab	24EC11RC07
8	Electronic Circuit Analysis Lab	24EC11RC08

5. Course Structure of EEE for B. Tech I year- I & II Sem recommended by Board of Studies of EEE.

6. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies of EEE.

S.No	List of Courses	Course Code
1	Fundamentals of Electrical Engineering	24EE11RC01
2	Electrical Circuits 1	24EE11RC03
3	Thermal and Hydro Prime Movers	24EE11RC04
4	Electrical Engineering Workshop	24EE11RC05
5	Network Theory and Machines	24EE11RC02

7. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies of Mathematics.

S.No	List of Courses	Course Code
1	Calculus and Differential Equations	24BM11RC01
2	Linear Algebra and Vector Calculus	24BM11RC02

8. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Boards of Studies of Physics.

S.No	List of Courses	Course Code
1	Engineering Physics	24BP11RC01
2	Engineering Physics Lab	24BP11RC02

9. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies of Chemistry.

S.No	List of Courses	Course Code
1	Green Chemistry	24BC11RC01
2	Green Chemistry Lab	24BC11RC02

10. Syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies of English.

S.No	List of Courses	Course Code
1	English	24HE11RC01
2	Communication Skills Lab	24HE11RC02

11. Course Structure for M. Tech I year- I & II Sem of CSE- Data Science recommended by Board of Studies of CSE.

12. Syllabi of the courses for M. Tech I Year (Semesters I & II), as recommended by the Board of Studies of CSE.

S.No	List of Courses	Course Code
1	Introduction to Data Science	24CS21RC01
2	Cloud Computing and Virtualization	24CS21RC02
3	Big Data Analytics	24CS21PE1A
4	Computational Linear Algebra	24CS21PE1B
5	Soft Computing	24CS21PE1C

6	Computational Biology	24CS21PE1D
7	Internet of Things	24CS21PE1E
8	Cyber Security for Data Science	24CS21PE2A
9	Optimization Techniques for Data Science	24CS21PE2B
10	Time Series data Analysis	24CS21PE2C
11	Natural Language Processing	24CS21PE2D
12	Statistical Modeling	24CS21PE2E
13	Data Science Applications with Python Lab	24CS21RC03
14	Cloud Computing and Big Data Analytics Lab	24CS21RC04
15	Machine Learning	24CS21RC05
16	Data Visualization	24CS21RC06
17	Image and Video Analytics	24CS21PE3A
18	Social Media Analytics	24CS21PE3B
19	Deep Learning	24CS21PE3C
20	Business Analytics	24CS21PE3D
21	High Performance Computing	24CS21PE3E
22	Geographic Information System	24CS21PE4A
23	Block Chain Technology	24CS21PE4B
24	Secure Software Design	24CS21PE4C
25	Data Storage Technologies and Networks	24CS21PE4D
26	Information Retrieval Systems	24CS21PE4E
27	Machine Learning Lab	24CS21RC07
28	Data visualization using Tableau Lab	24CS21RC08
29	Mini Project with Seminar	24CS21PR01

13. Course Structure for M. Tech I year- I & II Sem of VLSI Design and Embedded Systems recommended by Board of Studies of ECE.

14. Syllabi of the courses for M. Tech I Year (Semesters I & II), as recommended by the Board of Studies of ECE.

S.No	List of Courses	Course Code
1	Analog and Digital CMOS VLSI Design	24EC21RC01
2	Embedded Systems Design	24EC21RC02
3	Application Specific Integrated Circuit (ASIC)	24EC21PE1A
4	Advanced Operating Systems	24EC21PE1B
5	Parallel Processing	24EC21PE1C
6	CPLD and FPGA Architectures & Applications	24EC21PE2A
7	Electronic Design Automation Tools	24EC21PE2B
8	Digital System Design	24EC21PE2C
9	Analog and Digital CMOS VLSI Design Lab	24EC21RC03
10	Embedded system Design Lab	24EC21RC04
11	RTL Design & Verification using System Verilog	24EC21RC05
12	Internet of Things and its Applications	24EC21RC06
13	Low Power VLSI Design	24EC21PE3A
14	System on Chip Design	24EC21PE3B
15	Digital Signal and Image Processing	24EC21PE3C
16	Communication Buses and Interfaces	24EC21PE4A
17	Design for Testability	24EC21PE4B
18	DSP Processors and Architectures	24EC21PE4C
19	RTL Design & Verification using System Verilog Lab	24EC21RC07
20	Internet of Things and its Applications Lab	24EC21RC08
21	Mini Project with Seminar	24EC21PR01

15. Syllabi of the courses for M. Tech I Year (Semesters I & II), as recommended by the Board of Studies of Management Science.

S.No	List of Courses	Course Code
1	Research Methodology & IPR	24HM21AC01
2	Organizational Behavior	24HM21AC02
3	Entrepreneurship	24HM21AC03

The members were requested to confirm the minutes of the BoS meetings of different Departments.

Resolution No. GVPCEW (A)-AC-II/10/24/4.i

The academic council members resolved to approve the B.Tech Degree course structures recommended by Board of Studies(BoS) of the following Departments, as specified in the Annexure-2:

1. Computer Science and Engineering (CSE)
2. Computer Science and Engineering (Artificial Intelligence & Machine Learning) (CSE-AI&ML)
3. Information Technology (IT)
4. Electronics and Communication Engineering (ECE)
5. Electrical and Electronics Engineering (EEE)

Resolution No. GVPCEW (A)-AC-II/10/24/4.ii

The academic council members resolved to approve the M.Tech degree course structures recommended by the Board of Studies(BoS) for the following programs, as specified in the Annexure-3:

1. M.Tech in Computer Science and Engineering (Data Science)
2. M.Tech in Electronics and Communication Engineering (VLSI Design & Embedded Systems)

Resolution No. GVPCEW (A)-AC-II/10/24/4.iii

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Boards of Studies (BoS) of CSE, CSE (AI&ML), and IT, as specified in the Annexure-4.

Resolution No. GVPCEW (A)-AC-II/10/24/4.iv

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of ECE, as specified in the Annexure-5.

Resolution No. GVPCEW (A)-AC-II/10/24/4.v

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of EEE, as specified in the Annexure-6.

Resolution No. GVPCEW (A)-AC-II/10/24/4.vi

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of Mathematics, as specified in the Annexure-7.

Resolution No. GVPCEW (A)-AC-II/10/24/4.vii

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of Physics, as specified in the Annexure-8.

Resolution No. GVPCEW (A)-AC-II/10/24/4.viii

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of Chemistry, as specified in the Annexure-9.

Resolution No. GVPCEW (A)-AC-II/10/24/4.ix

The Academic Council members resolved to approve the syllabi of the courses for B. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of English, as specified in the Annexure-10.

Resolution No. GVPCEW (A)-AC-II/10/24/4.x

The Academic Council members resolved to approve the syllabi of the courses for M. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of CSE, as specified in the Annexure-11.

Resolution No. GVPCEW (A)-AC-II/10/24/4.xi

The Academic Council members resolved to approve the syllabi of the courses for M. Tech I Year (Semesters I & II), as recommended by the Board of Studies (BoS) of ECE, as specified in the Annexure-12.

Resolution No. GVPCEW (A)-AC-II/10/24/4.xii

The Academic Council approved the M.Tech I Year (Semesters I & II) syllabi, as recommended by the Board of Studies (BoS) of Management Science, as specified in the Annexure-13.

Item-5 : Any other matter

- During the discussion, members suggested that students in the CSE department be allowed to pursue a Minor degree in CSE (AI&ML).

The Vice-Principal Dr. G Sudheer concluded the meeting by thanking the members for their valuable presence and contribution.

Chairman of the Meeting
Academic Council

Annexure-1

NOTICE OF AMENDED REGULATION

October 26, 2024

Gayatri Vidya Parishad College of Engineering for Women (Autonomous)

Madhurawada, Kommadi
Visakhapatnam-530048

ACADEMIC RULES & REGULATIONS (R-24)
FOR B.TECH. PROGRAMMES INCLUDING HONORS AND MINORS

[Under Choice Based Credit System in line with NEP 2020]

[Effective from 2024-25 admitted batch]

SUMMARY

The proposed regulation amendment includes changes to the Award of B. Tech Degree with Minor, in accordance with the AICTE 2024-25 guidelines.

MEETING DATE

October 26, 2024

Academic Council

GVPCEW(A)

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)

MADHURAWADA, VISAKHAPATNAM 530048

AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM

Academic Rules & Regulations For B.Tech. Programmes Including Honors and Minors

Regulation Number: R-24
Effective Date: 26.10.2024
Subject: Award of B.Tech degree with Minor in Academic Rules & Regulations R-24
Responsible Division/Department: Academic Council
Check what type of Regulation this is:

☐New Regulation

☐Major Revision of Existing Regulation

☒Minor/Technical Revision of Existing Regulation

☐Reaffirmation of Existing Regulation

☐Repeal of Existing Regulation

OBJECTIVE & PURPOSE

This amendment pertains to the Regulations for the B.Tech Program at GVPCEW(A), effective for the 2024-25 admitted batch. In Section 17 (A-ii) of the Academic Rules & Regulations (R-24), one of the conditions for receiving the B.Tech Degree with Minor was to earn 12 credits within the 160 credits required for the B.Tech degree. This condition has now been revised to require earning 12 additional credits beyond the 160 credits.

STATEMENT FROM RULES & REGULATIONS (R-24)

Existing Clause	Changed/New Clause
17. Award of Degree: **A. Eligibility for the award of Degree/ Degree with Minor:** A student shall be eligible for the award of the B.Tech. Degree/ B.Tech. Degree with Minor if she fulfills the following conditions: i) Register and successfully complete all the courses prescribed within the stipulated period. ii) Earn 160 credits for B.Tech. degree/ earn 12 credits within 160 credits for B.Tech. with Minor degree and pass in all non-credit mandatory courses. iii) Secure satisfactory grade in social activity. iv) No disciplinary action is pending against her. v) Pays the prescribed fee for all the years.	**17. Award of Degree:** **A. Eligibility for the award of Degree/ Degree with Minor:** A student shall be eligible for the award of the B.Tech. Degree/ B.Tech. Degree with Minor if she fulfills the following conditions: i) Register and successfully complete all the courses prescribed within the stipulated period. ii) Earn 160 credits for B.Tech. degree **and an additional 12 credits beyond these 160 credits for the B.Tech. with Minor degree**, and pass all non-credit mandatory courses. iii) Secure satisfactory grade in social activity. iv) No disciplinary action is pending against her. v) Pays the prescribed fee for all the years.

Approved as amended by the Academic Council Meeting (26.10.2024)

Chairman of the Meeting
Academic Council

Annexure-2

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)

(Approved by AICTE, New Delhi and Permanently Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COURSE STRUCTURE

(Applicable for the Academic Year 2024-25 onwards)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.Tech. Computer Science and Engineering

SCHEME AND SYLLABI

(With effect from 2024-25 admitted batch)

I Year - I Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC01	BS	Calculus and Differential Equations	3	0	30	70	100	3
24BC11RC01	BS	Green Chemistry	3	0	30	70	100	3
24HE11RC01	HSS	English	3	0	30	70	100	3
24CT11RC01	ES	Fundamentals of Computers	3	0	30	70	100	3
24CT11RC02	ES	Problem Solving using C	3	0	30	70	100	3
24HE11RC02	HSS	Communication Skills Lab	0	3	50	50	100	1.5
24CT11RC03	ES	Computer Engineering Workshop	0	3	50	50	100	1.5
24CT11RC04	ES	Problem Solving using C Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

I Year - II Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC02	BS	Linear Algebra and Vector Calculus	3	0	30	70	100	3
24BP11RC01	BS	Engineering Physics	3	0	30	70	100	3
24EC11RC05	ES	Digital Logic Design	3	0	30	70	100	3
24EC11RC04	ES	Elements of Electronics Engineering	3	0	30	70	100	3
24CT11RC06	ES	Python Programming	3	0	30	70	100	3
24BP11RC02	BS	Engineering Physics Lab	0	3	50	50	100	1.5
24CT11RC07	ES	Python Programming Lab	0	3	50	50	100	1.5
24CT11RC08	ES	Web Technologies Fundamentals Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)

(Approved by AICTE, New Delhi and Permanently Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COURSE STRUCTURE

(Applicable for the Academic Year 2024-25 onwards)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING [ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING]

B.TECH. COMPUTER SCIENCE AND ENGINEERING - AIML

SCHEME AND SYLLABI

(With effect from 2024-25 admitted batch)

I Year - I Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC01	BS	Calculus and Differential Equations	3	0	30	70	100	3
24BP11RC01	BS	Engineering Physics	3	0	30	70	100	3
24EC11RC04	ES	Elements of Electronics Engineering	3	0	30	70	100	3
24CT11RC01	ES	Fundamentals of Computers	3	0	30	70	100	3
24CT11RC02	ES	Problem Solving using C	3	0	30	70	100	3
24BP11RC02	BS	Engineering Physics Lab	0	3	50	50	100	1.5
24CT11RC03	ES	Computer Engineering Workshop	0	3	50	50	100	1.5
24CT11RC04	ES	Problem Solving using C Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

I Year - II Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC02	BS	Linear Algebra and Vector Calculus	3	0	30	70	100	3
24BC11RC01	BS	Green Chemistry	3	0	30	70	100	3
24HE11RC01	HSS	English	3	0	30	70	100	3
24EC11RC05	ES	Digital Logic Design	3	0	30	70	100	3
24CT11RC06	ES	Python Programming	3	0	30	70	100	3
24HE11RC02	HSS	Communication Skills Lab	0	3	50	50	100	1.5
24CT11RC07	ES	Python Programming Lab	0	3	50	50	100	1.5
24CT11RC08	ES	Web Technologies Fundamentals Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)

(Approved by AICTE, New Delhi and Permanently Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COURSE STRUCTURE

(Applicable for the Academic Year 2024-25 onwards)

DEPARTMENT OF INFORMATION TECHNOLOGY

B.Tech. Information Technology

SCHEME AND SYLLABI

(With effect from 2024-25 admitted batch)

I Year - I Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC01	BS	Calculus and Differential Equations	3	0	30	70	100	3
24BC11RC01	BS	Green Chemistry	3	0	30	70	100	3
24HE11RC01	HSS	English	3	0	30	70	100	3
24CT11RC01	ES	Fundamentals of Computers	3	0	30	70	100	3
24CT11RC02	ES	Problem Solving using C	3	0	30	70	100	3
24HE11RC02	HSS	Communication Skills Lab	0	3	50	50	100	1.5
24CT11RC03	ES	Computer Engineering Workshop	0	3	50	50	100	1.5
24CT11RC04	ES	Problem Solving using C Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

I Year - II Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC02	BS	Linear Algebra and Vector Calculus	3	0	30	70	100	3
24BP11RC01	BS	Engineering Physics	3	0	30	70	100	3
24EC11RC05	ES	Digital Logic Design	3	0	30	70	100	3
24EC11RC04	ES	Elements of Electronics Engineering	3	0	30	70	100	3
24CT11RC06	ES	Python Programming	3	0	30	70	100	3
24BP11RC02	BS	Engineering Physics Lab	0	3	50	50	100	1.5
24CT11RC07	ES	Python Programming Lab	0	3	50	50	100	1.5
24CT11RC08	ES	Web Technologies Fundamentals Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

(Approved by AICTE, New Delhi and Permanently Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COURSE STRUCTURE

(Applicable for the Academic Year 2024-25 onwards)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. Electronics and Communication Engineering

SCHEME AND SYLLABI

(With effect from 2024-25 admitted batch)

I Year - I Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC01	BS	Calculus and Differential Equations	3	0	30	70	100	3
24BP11RC01	BS	Engineering Physics	3	0	30	70	100	3
24EE11RC02	ES	Network Theory and Machines	3	0	30	70	100	3
24CT11RC02	ES	Problem Solving using C	3	0	30	70	100	3
24EC11RC01	ES	Electronic Devices and Circuits	3	0	30	70	100	3
24BP11RC02	BS	Engineering Physics Lab	0	3	50	50	100	1.5
24CT11RC04	ES	Problem Solving using C Lab	0	3	50	50	100	1.5
24EC11RC02	ES	Electronic Devices and Circuits Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

I Year - II Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC02	BS	Linear Algebra and Vector Calculus	3	0	30	70	100	3
24BC11RC01	BS	Green Chemistry	3	0	30	70	100	3
24HE11RC01	HSS	English	3	0	30	70	100	3
24EC11RC05	ES	Digital Logic Design	3	0	30	70	100	3
24EC11RC06	ES	Electronic Circuit Analysis	3	0	30	70	100	3
24HE11RC02	HSS	Communication Skills Lab	0	3	50	50	100	1.5
24EC11RC07	ES	Digital Logic Design Lab	0	3	50	50	100	1.5
24EC11RC08	ES	Electronic Circuit Analysis Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous)

(Approved by AICTE, New Delhi and Permanently Affiliated to Andhra University, Visakhapatnam)

Madhurawada :: Visakhapatnam – 530 048

COURSE STRUCTURE

(Applicable for the Academic Year 2024-25 onwards)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

B.Tech Electrical and Electronics Engineering

SCHEME AND SYLLABI

(With effect from 2024-25 admitted batch)

I Year - I Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC01	BS	Calculus and Differential Equations	3	0	30	70	100	3
24BP11RC01	BS	Engineering Physics	3	0	30	70	100	3
24BC11RC01	BS	Green Chemistry	3	0	30	70	100	3
24EC11RC03	ES	Basic Electronics Engineering	3	0	30	70	100	3
24EE11RC01	ES	Fundamentals of Electrical Engineering	3	0	30	70	100	3
24BP11RC02	BS	Engineering Physics Lab	0	3	50	50	100	1.5
24BC11RC02	BS	Green Chemistry Lab	0	3	50	50	100	1.5
24CT11RC05	ES	IT Essentials Lab	0	3	50	50	100	1.5
							Total Credits	**19.5**

I Year - II Semester

Course Code	Category	Course Title	Hours per Week		Internal Marks	External Marks	Total Marks	Credits
			L	P				
24BM11RC02	BS	Linear Algebra and Vector Calculus	3	0	30	70	100	3
24HE11RC01	HSS	English	3	0	30	70	100	3
24CT11RC02	ES	Problem Solving Using C	3	0	30	70	100	3
24EE11RC03	ES	Electrical Circuits – 1	3	0	30	70	100	3
24EE11RC04	ES	Thermal & Hydro Prime Movers	3	0	30	70	100	3
24HE11RC02	HSS	Communication Skills Lab	0	3	50	50	100	1.5
24CT11RC04	ES	Problem Solving Using C Lab	0	3	50	50	100	1.5
24EE11RC05	ES	Electrical Engineering Workshop	0	3	50	50	100	1.5
							Total Credits	**19.5**

Annexure-3

GVP COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M. Tech -Computer Science and Engineering (Data Science)

Course Structure w.e.f. 2024-25

I SEMESTER

Code	Name of the subject	Periods/week		Max.Marks		Total	Credits
		Theory	Lab	Ext.	Int.		
24CS21RC01	Introduction to Data Science	3	-	70	30	100	3
24CS21RC02	Cloud Computing and Virtualization	3	-	70	30	100	3
24CS21PE01	Elective-I	3	-	70	30	100	3
24CS21PE02	Elective-II	3	-	70	30	100	3
24HM21RC01	Research Methodology &IPR	2	-	70	30	100	2
24HM21AC02	Organizational Behavior (Audit Course)	3	-	70	30	100	0
24CS21RC03	Data Science Applications with Python Lab		3	50	50	100	1.5
24CS21RC04	Cloud Computing and Big Data Analytics Lab		3	50	50	100	1.5
	Total	**18**	**6**	**520**	**280**	**800**	**17**

Elective-I: Big Data Analytics, Computational Linear Algebra, Soft Computing, Computational Biology, Internet of Things

Elective II: Cyber Security for Data Science, Optimization Techniques for Data Science, Time Series data Analysis, Natural Language Processing, Statistical Modeling

II SEMESTER

Code	Name of the subject	Periods/week		Max. Marks		Total	Credits
		Theory	Lab	Ext.	Int.		
24CS21RC05	Machine Learning	3	-	70	30	100	3
24CS21RC06	Data Visualization	3	-	70	30	100	3
24CS21PE03	Elective-III	3	-	70	30	100	3
24CS21PE04	Elective-IV	3	-	70	30	100	3
24HM21AC03	Entrepreneurship (Audit Course)	3	-	70	30	100	0
24CS21RC07	Machine Learning Lab	-	3	50	50	100	1.5
24CS21RC08	Data visualization using Tableau Lab	-	3	50	50	100	1.5
24CS21PR01	Mini Project with Seminar	-	4	-	100	100	2
	Total	**15**	**9**	**450**	**350**	**800**	**17**

Elective III: Image and Video Analytics, Social Media Analytics, Deep Learning, Business Analytics, High Performance Computing

Elective IV: Geographic Information System, Block Chain Technology, Secure Software Design, Data Storage Technologies and Networks, Information Retrieval Systems

GVP COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

M.Tech -VLSI DESIGN & EMBEDDED SYSTEMS
Course Structure and Scheme of Valuation w.e.f. 2024-25 admitted batch

I SEMESTER

Code	Name of the subject	Periods/week		Max. Marks		Total	Credits
		Theory	Lab	Ext.	Int.		
24EC21RC01	Analog and Digital CMOS VLSI Design	3	-	70	30	100	3
24EC21RC02	Embedded Systems Design	3	-	70	30	100	3
24EC21PE01	Elective-I	3	-	70	30	100	3
24EC21PE02	Elective-II	3	-	70	30	100	3
24HM21AC01	Research Methodology &IPR	2	-	70	30	100	2
24HM21AC02	Organizational Behavior (Audit Course)	3	-	-	100	100	0
24EC21RC03	Analog and Digital CMOS VLSI Design Lab	-	3	50	50	100	1.5
24EC21RC04	Embedded system Design Lab	-	3	50	50	100	1.5
	Total	**17**	**6**	**450**	**350**	**800**	**17**

Elective-I: Application Specific Integrated Circuit (ASIC)/ Advanced Operating Systems/ Parallel Processing

Elective II: CPLD and FPGA Architectures & Applications / Electronic Design Automation Tools/ Digital System Design

II SEMESTER

Code	Name of the subject	Periods/week		Max. Marks		Total	Credits
		Theory	Lab	Ext.	Int.		
24EC21RC05	RTL Design & Verification using System Verilog	3	-	70	30	100	3
24EC21RC06	Internet of Things and its Applications	3	-	70	30	100	3
24EC21PE03	Elective-III	3	-	70	30	100	3
24EC21PE04	Elective-IV	3	-	70	30	100	3
24HM21AC03	Entrepreneurship (Audit course)	3	-	-	100	100	0
24EC21RC07	RTL Design & Verification using System Verilog Lab	-	3	50	50	100	1.5
24EC21RC08	Internet of Things and its Applications Lab	-	3	50	50	100	1.5
24EC21PR01	Mini Project with Seminar	-	4	-	100	100	2
	Total	**15**	**10**	**380**	**420**	**800**	**17**

Elective III: Low Power VLSI Design/ System on Chip Design/ Digital Signal and Image Processing

Elective IV: Communication Buses and Interfaces / Design for Testability/ DSP Processors and Architectures

Annexure-4

Annexure-I

Python Programming
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	**Understand** the historical development, necessity, applications, and basic concepts of python programming
C02:	**Identify** and implement appropriate control structures to solve a particular programming problem
C03:	**Examine** various data structures and apply to solve real world problems.
C04:	**Build** simple functions and packages used in python for solving real world problems.
C05:	**Outline** Object Oriented concepts in python and illustrate Exception handling

UNIT-I — **8 Lectures**

Introduction: History of Python, Need of Python Programming, Applications of Python, Variables, Assignment, Comments, Keywords, Data types, Input-Output, Indentation.

TextBook-1: Chapter 3 (S-3.1 – S-3.12)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Understand the Evolution of Python [L2]
2. Recall the Need and Applications of Python [L1]
3. Outline python's Input and Output Functions[L2]

UNIT-II — **10 Lectures**

Operators and Expressions: Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations

Control Flow- if, if-elif-else, for, while, break, continue, pass

TextBook-1: Chapter 3 (S-3.12), Chapter 4 (S-4.1 – S-4.7)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Illustrate python operators: arithmetic, comparison, assignment, logical, bitwise, membership, identity [L2]
2. Make use of control flow statements: if, if-elif-else, for, while, break, continue, pass. [L3]

UNIT-III — **12 Lectures**

Data Structures: Strings, Lists, Tuples, Sets, Dictionaries. Data Structures manipulations - create, Index, Negative indexing, Slicing, update, add elements, delete or remove elements, operations, Comprehension, Membership Test, Iteration.

TextBook-1: Chapter 6 (S-6.1 – S-6.9), Chapter 8 (S-8.1 – S-8.6)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Understanding basic operations on lists, including indexing and slicing [L2]
2. Utilize methods of lists, tuples, sets, and dictionaries to solve problems [L3]
3. Compare and apply appropriate use cases for lists, tuples, sets, and dictionaries. [L2]

UNIT-IV — **10 Lectures**

Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Lambda Functions, Function Returning Values, Built-in functions, Scope of the Variables in a Function - Global and Local Variables.

Head of Department
Dept. of Computer Science & Engineering
GVP College of Engineering for Women

Modules: Creating modules, import statement, from…import statement, namespaces. **Python packages:** Introduction to PIP, Installing Packages via PIP
TextBook-1: Chapter 5 (S-5.1 – S-5.8,5.12)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understanding and implementing various types of function arguments and scopes in Python. [L2] 2. Utilize Python modules to understanding the import mechanisms [L3]

UNIT-V **11 Lectures**
Object Oriented Programming (OOP) in Python: Classes and Objects, Class Method and self Argument, The __init__() Method (The Class Constructor), Class Variables and Object Variables, Public and Private Data Members, Inheritance, Overriding Methods. **Error and Exceptions:** Introduction to Errors and Exceptions, Handling Exception, try except block, finally block, Raising Exceptions. **File Handling**: Type of files, Opening and Closing files, Reading and Writing files.
TextBook-1: Chapter 9 (S-9.1 – S-9.8), Chapter 10 (S-10.1 – S-10.3) TextBook-1: Chapter 7 (S-7.1 – S-7.5), Chapter 12 (S-12.1 – S-12.10)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understand and implement classes, methods, and the 'self' variable in Python [L2] 2. Demonstrate concepts of inheritance, method overriding, and data hiding in OOP [L2] 3. List the differences between errors and exceptions, and handle exceptions using try-except blocks [L1] 4. Illustrate file operations including reading, writing, and manipulating file pointers in Python. [L2]

Text Books:
1. Reema Thareja, "Python Programming: Using Problems Solving Approach", Oxford University Press, 2017 2. Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage.
Reference Books:
1. Fundamentals of Data Structures using Python, P Lalitha Surya Kumari, P. S. Avadhani, Lambert Academic Publishing 2. Introduction to Python Programming, Gowrishankar.S, Veena A, CRC Press. 3. Introduction to Programming Using Python, Y. Daniel Liang, Pearson.
Web References:
1. https://www.tutorialspoint.com/python3/python_tutorial.pdf 2. https://www.python.org/doc/

Head of Department
Dept. of Computer Science & Engineering
GVP College of Engineering for Women
Madhurawada, Visakhapatnam-48

Annexure-II

Fundamentals of Computers
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	Identify different I/O devices and their usage.
C02:	Compare different computer memory with their efficiency.
C03:	Relate different computer software's and programming languages for solving problems.
C04:	Summarize the use of operating system, database system, and computer network in the field of computing in engineering.
C05:	Infer the methods and applications of artificial intelligence (AI), machine learning (ML) and data science.

UNIT-I — **10 Lectures**

Introduction to computers: Computers, Stored Program Concept, Classification of Computers, Evolution and Development of Computers, Application Areas of Computers, Features/Characteristics of Computers, Basic Organization of a Computer.

Input and Output Devices: Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices, Voice Response Systems, Biometric Devices

TextBook-1: Chapter 1 (S-1.1 – S-1.7)
https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers)
TextBook-1: Chapter 2 (S-2.1 – S-2.6)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Outline characteristics and classification of computers (L2)
2. Demonstrate different configurations of software and hardware used in computer (L2)
3. Model the computer by organizing different computer peripherals such as I/O, CPU, etc. (L3)

UNIT-II — **10 Lectures**

Computer Memory: Introduction, Memory Organization, Memory Hierarchy, Sequential and Random Access, Processor Registers, Cache Memory, Primary Memory,Secondary Storage Devices, Magnetic Tapes, Floppy Disks, Hard Disks, External Hard Disks, Optical Disks, USB Flash Drives, Memory Cards, Mass Storage Devices.

TextBook-1: Chapter 3 (S-3.1 – S-3.16)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Summarize computer memory hierarchy. (L2)
2. Classify different memory w.r.t. speed and cost. (L2)
3. Illustrate different external storage devices and its applications. (L2)

UNIT-III — **10 Lectures**

Computer Software: Introduction to Computer Software, Classification of Computer Software, System Software, Application software, Graphics Software, Multimedia Software, Database Management Software, Firmware, Middleware, Procuring Computer Software.

Problem Solving Using Computers: Introduction, Program Development Life Cycle, Program Design Tools, Programming Languages, Generations of Programming Languages, Categorization of High-level Languages, Some Popular High-level Languages, Apps.

TextBook-1: Chapter 6 (S-6.1 – S-6.7)
TextBook-1: Chapter 7 (S-7.1 – S-7.7)
https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Compare different computer software's (L2)
2. Summarize different programming languages for solving problems. (L2)
3. Contrast Structured Programming Language, Logic-oriented Programming Language, and

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Object-oriented Programming. (L2)

UNIT-IV **12 Lectures**

Fundamental Operating Systems: Introduction, History of Operating Systems, Functions of Operating Systems, Types of Operating Systems, Providing User Interface, Popular Operating Systems

Database Systems: File-Oriented Approach, Database-oriented Approach, Database Views, Three-schema Architecture, Database Models, Components of Database Management, Retrieving Data Through Queries.

Computer Networks: Introduction to Computer Networks, Types of Networks, Physical Components of a Network, Wired Media, Wireless Media, Networking Devices, Network Topologies, Wireless Networks.

TextBook-2: Chapter 11 (S-11.1 / P-238 – S-11.11 / P-258)
TextBook-1: Chapter 9 (S-9.1 – S-9.7), Chapter 10 (S-10.1 – S-10.8)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Explain fundamentals of operating systems. (L2)
2. Illustrate database system applications and its design concepts. (L2)
3. Outline fundamentals of computer networks and its applications. (L2)

UNIT-V **8 Lectures**

Introduction to Artificial Intelligence & Machine Learning (AI&ML) and Data Science: Introduction to AI & ML, and Data Science, Use Cases in Business and Scope, Modelling Concepts, CRISP-DM Method

1. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)**
2. https://www.javatpoint.com/machine-learning-models **(Machine Learning)**
3. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)**
4. https://www.heavy.ai/learn/data-science **(Data Science)**
5. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**

Learning Outcomes:

At the end of the unit, the student will be able to

1. Outline the main methods and applications of artificial intelligence (AI) concepts. (L2)
2. Outline the main methods and applications of machine learning (ML) concepts. (L2)
3. Outline the main methods and applications of data science concepts. (L2)

Text Books:

1. Reema Thareja, Fundamentals of Computers, Second Edition, Oxford University Press, 2019.
2. E Balagurusamy, Fundamentals of Computers, Tata McGraw Hill Education Private Limited, 2009

Reference Books:

1. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, 4th Edition, McGraw-Hill, 2002.
2. Andrew S. Tanenbaum, Modern Operating Systems, 2nd edition, PHI, 1995.

Web References:

1. https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers)
2. https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps)
3. https://www.geeksforgeeks.org/what-is-an-operating-system/ (Operating System)
4. https://www.javatpoint.com/computer-network-tutorial (Computer Network)
5. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)**
6. https://www.javatpoint.com/machine-learning-models **(Machine Learning)**
7. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)**
8. https://www.heavy.ai/learn/data-science **(Data Science)**
9. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**

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Annexure-III

Python Programming Lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		Module No.
C01:	Understand core programming basics and various Operators of Python	1,2
C02:	Implement programs using conditional statements and loops and strings.	3,4
C03:	Develop functions and strings to perform simple tasks.	5,6
C04:	Make use of various data structures like lists, tuples, sets and dictionaries.	7,8,9
C05:	Implement Python programs with files, Classes and objects	10,11

Module-1: Basics of Python

a) Write a program to display the statements.
b) Demonstrate about fundamental Data types in Python Programming. (i.e., int, float, complex, bool and string types)
c) Write a Python program to demonstrate various type conversion functions.
d) Write a program to demonstrate the inbuilt Math function

Module-2: Operators in Python

a) Demonstrate the following Operators in Python with suitable examples.
i) Arithmetic Operators ii) Relational Operators iii) Assignment Operators iv) Logical Operators v) Bit wise Operators vi) Ternary Operator vii) Membership Operators viii) Identity Operators

Module-3: Conditional Branching Statements

a) Write a program to check whether the given number is even or odd
b) Write a program to read marks of a student and display the corresponding grade
c) Write a program to find the largest element among the given numbers (multi-way if-elif-else statements.)

Module-4: Looping/Iterative Statements

a) Implement the following programs using while loop and for loop
i. Display all prime numbers up to n.
ii. Print the nth multiplication table.
iii. Print different patterns using loops:
b) Demonstrate the following control transfer statements in Python with suitable examples.
i. break ii. continue iii. Pass

Module-5: Functions

a) Write a function to find the multiplication of two numbers and demonstrate the usage of parameters and arguments of a function.
b) Write a program to define a function using default arguments.
c) Demonstrate lambda functions in Python with suitable example programs.

Module-6: Strings

a) Write a program to manage and analyse customer feedback using string operations include:
i. Create feedback with name, email, comment
ii. Collecting feedback.
iii. Normalizing feedback (e.g., removing extra spaces, converting to lowercase).
iv. Extracting key in formation (e.g., names, email addresses, and comments).

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v. Searching for keywords.
vi. Replacing certain words.
vii. Formatting feedback for display.
viii. Summarizing feedback.

Module-7: Lists:

a) Write a program to create a list and perform the following operations:
   i. + ii. * iii. slicing iv. del
b) Inventory Management: You have a list of items in your warehouse along with their quantities. Write a program to find out which items are low in stock (quantity less than 10). (use only comprehensions)
c) Employee Performance: You have a list of employee names and their corresponding performance scores. Write a program to sort the list based on the performance scores in descending order.
d) Sales Analysis: you have a list of sales figures for the past week. Write a program to find the total sales, the highest sale, the lowest sale, and the average sale.
e) Write a program to calculate the length of each element in a list using map function in python.

Module-8: Tuples

a) Write a program to return the top n's most frequently occurring chars and their respective counts. e.g. string=aaaaaabbbbcccc, n=2 should return [(a 6) (b 4)].
b) Write a program to create n iterables of varied sizes and group the values using zip function in python.
c) Student Information: Write a program to create a list of tuples where each tuple contains the student ID, name, and grade and find the student with the highest grade.
d) Course Enrolment: Write a program to create list of tuples where each tuple contains the course ID and the number of students enrolled and find the total number of students enrolled across all courses
e) Faculty Information: Write a program to create a list of tuples where each tuple contains the faculty ID, name, and department and find all faculty members in a given department.
f) Library Book Tracking: You have a list of tuples where each tuple contains the book ID, title, and number of copies available. Write a program to find all books with fewer than 5 copies available.

Module-9: Sets & Dictionaries

a) Write a program to create two sets and perform the following operations:
   i. Union ii. Intersection iii. Difference iv. Asymmetric Difference
b) Write a program to generate a dictionary that contains numbers (between 1 and n) in the form of (x,x*x).
c) Write a program to implement a shopping cart where you can add items with their prices and quantities, and then calculate the total cost.
d) Banking System: Write a program to create dictionary with customer name and balance and Retrieve the balance for a given customer, Deposit a specified amount into a customer's account, Withdraw a specified amount from a customer's account if sufficient balance is available, Transfer a specified amount from one customer's account to another's and Remove a customer from the bank's system.

Module-10: Classes and objects

a) Create a class to represent menu items in a restaurant with attributes like name, price, and category. Implement methods to display menu details and calculate the total cost of a selected list of items.

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b) Write a program to read 3 subject marks and display pass or failed using class and object.

Module-11: Files

a) Write a program to copy the contents of a file to another file.

b) Write a program to compute the number of characters, words and lines in a file.

Case Study:

Select any one application mentioned below

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Design a Python program to manage inventory, process orders, and handle customer information for an online store.
2. Create a library system to track books, manage member accounts, and handle book loans and returns.
3. Implement a personal finance management tool to track income, expenses, and generate monthly reports.
4. Create a system to manage student grades, calculate GPAs, and generate academic reports.
5. Develop a Python-based movie recommendation system using collaborative filtering.
6. Build a to-do list application that allows users to add, update, delete, and prioritize tasks..
7. Build a patient management system to handle appointments, medical records, and billing.
8. Design a digital menu for a restaurant with options for ordering, bill generation, and inventory management.
9. Implement a fitness tracking application to log workouts, track progress, and suggest exercise plans.
10. Build a secure online voting platform with user authentication and vote tallying.
11. Create a program to manage recipes, including ingredients, instructions, and nutritional information.
12. Build a travel planning application to manage itineraries, bookings, and budget tracking.
13. Develop an e-learning application with course creation, student enrolment, and progress tracking.
14. Build a car rental management system to handle bookings, returns, and vehicle maintenance.
15. Build a budget planning application to track expenses, income, and financial goals.
16. Develop a cryptocurrency tracking application to monitor prices, market trends, and portfolio performance.

Reference Books:

1. Python Programming: Using Problem Solving Approach by Reema Theraja , Oxford publications
2. Ashok N Kamthane, Amit Ashok Kamthane, *Programming and Problem Solving with Python*, 1st Edition, McGraw Hill Education (India), 2018.

Web References:

1. https://www.python.org/doc/
2. https://www.w3schools.com/python/python_reference.asp
3. https://thepythonguru.com/
4. https://www.programiz.com/python-programming

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Annexure-IV

Computer Engineering Workshop
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		Module No.
C01:	Identify the peripherals of a computer.	1
C02:	Demonstrate the installation process of operating systems like MS Windows, LINUX.	2
C03:	Make use of MS-Office suite that comprises of various applications to create documents, organizes & analyses data and captivating presentations.	3
C04:	Categorize various UNIX/LINUX Commands to work on a modern operating system	4
C05:	Experiment with GIT Commands and make use of LaTeX to prepare research articles.	5

Module-1: Hardware Concepts

1. Identify the peripherals of a computer, components in a CPU and its functions.
2. Draw the block diagram of the CPU along with the configuration of each peripheral.
3. Disassemble and assemble the PC back to working condition.

Module-2: Software Installations

1. Install operating systems like LINUX and MS windows on a personal computer.
2. The system should be configured as dual boot with both MS windows and LINUX.

Module-3: Office Suite

1. Creating Documents: Formatting Fonts/Texts, page layout, Applying Text effects, Character Spacing, Borders and Colours, Inserting Header and Footer, equation editor.
2. Spreadsheet Orientation: Accessing, overview of toolbars, saving spreadsheet files, Using help and resources. Creating a Scheduler, Gridlines, Format Cells, Summation, auto fill, Formatting Text, Renaming and Inserting worksheets, Hyper linking.
3. Excel Calculation: Calculating Average, Cell Referencing, Excel Formula, std. deviation, Charts, Count Function, Sorting, Conditional formatting, Excel Advanced-sumif, VLOOKUP, and Pivot Table.
4. Creating Power Point: Student should work on basic power point utilities and tools to create basic power point presentation. PPT Orientation, Slide Layouts, Inserting Text, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting Images, Tables and charts.
5. Software as a service (SaaS): Usage of online office suite.

Module-4: UNIX/LINUX Commands

1. Study and practice on file system, handling files with commands, syntax, usage, application.
2. Practice on vi editor.
3. Study and practice on shells/shell programming with relevant programming constructs, syntax, usage, application.

Module-5: GIT Commands and LaTeX

1. Installation of GIT, Branch in Git Basic GIT Commands.
2. Installation of LaTeX and preparing research articles by creating overleaf account.
3. Introduction to Scratch Programming - Introduction, Stage, Sprite, Script, Block Palette.

Reference Books:

1. IT Essentials: PC Hardware and Software Companion Guide, Third Edition, David Anfinson, Ken Quamme.
2. UNIX concepts and applications by Sumitabha Das, TMH Publications.
3. Shell programming by Yashwanth Kanetkar.

Web References:

1. https://www.javatpoint.com/

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Annexure-V

Problem solving using C
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:

L	T	P	C
4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
C01:	Explain the basic constructs of C through the use of simple applications.
C02:	Demonstrate the utilization of arrays and strings in the development of C programs.
C03:	Utilize functions and pointers to construct various applications in C.
C04:	Apply concepts of structures and unions to build and implement C applications.
C05:	Develop applications using sequential and random-access file processing techniques.

UNIT-I	10 Lectures
Introduction to C: Basic structure of C program, Constants, Variables and data types, Operators and Expressions, Arithmetic Precedence and associativity, Type Conversions. Managing Input and Output Operations Formatted Input, Formatted Output.	
TextBook-1: Chapter 2 (S-2.1 – S-2.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline the Basic Structure and Components of C Programs. (L2) 2. Demonstrate Variables, Data Types, Operators, and Expressions. (L2) 3. Illustrate Input and Output Operations. (L2)	

UNIT-II	12 Lectures
Decision Making, Branching, Looping: Decision making with if statement, Simple if statement, The if...else statement, Nesting of if...else statement, the else... if ladder, switch statement, the (? :) operator, the goto statement, The while statement, the do statement, the for statement, Jumps in Loops. **Arrays & Strings:** One, Two-dimensional Arrays, multi-dimensional Arrays, Character Arrays. Declaration and Initialization of Strings, reading and writing of strings, string handling functions.	
TextBook-1: Chapter 3 (S-3.1 – S-3.8), TextBook-2:Chapter 13,14,15,16(PP:215-283)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Classify Decision Making and Branching (L2) 2. Interpretation of Looping Constructs (L2) 3. Summarize Arrays and Strings (L2)	

UNIT-III	10 Lectures
Function and Dynamic Memory Allocation: Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, passing arrays to functions, recursion. Introduction to Pointers, Pointer Arithmetic, Pointers for Inter-Function Communication, passing pointers to functions, call by reference, Dynamic Memory Allocation.	
TextBook-1: Chapter 4 (S-4.1 – S-4.11), Chapter 5 (S-5.1 – S-5.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Utilize Functions (Understand and Implement Functions, Utilize Various Function Types, Advanced Function Techniques) (L3) 2. Experiment with Pointers (Basic Pointer Operations, Pointers and Data Structures) (L3) 3. Explain Advanced Pointer Usage (Pointers in Functions, Pointers to Complex Data Types) (L2)	

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UNIT-IV	10 Lectures
Structure and Unions: Defining a structure and union, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, arrays of structures, arrays within structures, structures within structures, definition and usage of union, structures and unions using functions, size of structures and bit-fields. The Type Definition (Type def), Enumerated Types.	
TextBook-1: Chapter 6 (S-6.1 – S-6.9)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Define Structures and Build C programs using Structures. (L3) 2. Explain Complex Data Structures. (L2) 3. Explain Unions and Bit-Fields. (L2)	

UNIT-V	8 Lectures
File handling: Introduction to Files, Modes of File operations, Text and Binary Files, Defining and opening a file, closing a file, Input/ Output operations on files, Error handling during I/O operations, random access to files and Command Line Arguments, user defined header files.	
TextBook-2: Chapter 19 (PP:325-348)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline File Operations. (L2) 2. Summarize Error Handling and Random Access. (L2) 3. Utilize Command Line Arguments. (L3)	

Text Books:
1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9. 2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978-93-8728-449-4.
Reference Books:
1. N. B. Venkateswarlu, E. V. Prasad, "C and Data Structures", 1st Edition, S. Chand Publishing, 2010, ISBN: 978-93-525-3356-5. 2. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6. 3. Jacqueline A. Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9. 4. E. Balagurusamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
Web References (e-Resources):
1. https://nptel.ac.in/courses/106105171 2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/ 3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview 4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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Annexure-VI

Web Technologies Fundamentals lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to		**Module No.**
C01:	**Develop** professional web pages for an application using HTML elements like lists, navigations, tables, various form elements, and embedded media, including images, audio, and video.	**1,2**
C02:	**Build** inline, internal, and external CSS to enhance the visual presentation of web pages, including layout, fonts, colors, and backgrounds.	**3,4**
C03:	**Utilize** JavaScript to develop interactive HTML web pages and validate form data.	**5,6,7**
C04:	**Apply** JavaScript functions and events to enhance user interaction and provide a dynamic user experience.	**8,9**
C05:	**Experiment with** XML files to store and display structured data and write a DTD to perform well-formed and validated XML documents.	**10**

Module-1:
Design a web page using Basic HTML Elements – Structure of HTML, Headings, Paragraph, Division and Span, List, Link, Image, Table, Form, Input, Iframe, and Media Elements.

Module-2:
Design the following static web pages required for an online book store website.

(a) HOME PAGE:
i) The static home page must contain three frames.
Top frame: Logo and the college name and links to the Home page, Login page, Registration page, Catalogue page, and Cart page (the description of these pages will be given below). Left frame: At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link "CSE" the catalogue for CSE Books should be displayed in the Right frame. Right frame: The pages to the links in the left frame must be loaded here. Initially, this page contains a description of the website.
ii) Add media content in a frame using audio, video, and iframe elements to the Home page of an online book store website. The page should include:
1) Audio Element: An audio player to play background music or a podcast.
2) Video Element: A video player to display a promotional video about the book store.
3) Iframe Element: An iframe to embed a Google Maps location of the book store.

(b) LOGIN PAGE

(c) CATALOGUE PAGE: The catalogue page should contain the details of all the books available on the website in a table: The details should contain the following:
i) Snapshot of Cover Page. ii)Author Name. iii)Publisher.
iv) Price. v)Add to cart button.

(d) REGISTRATION PAGE: Create a "registration form "with the following fields
i) Username: Text input field
ii) Password: Password input field
iii) Email: Email input field
iv) Phone number: Text input field
v) Birthday: Date picker
vi) Favorite Color: Color picker
vii) Gender: Select an element with options (Male, Female, Other).

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Module-3:
Develop and demonstrate the usage of inline, internal, and external style sheets using CSS.

Module-4:
Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (colour, bold, and font size).

Module-5:
Develop and demonstrate JavaScript with POP-UP boxes and functions for the following problems:

a) Input: Click on the Display Date button using onclick( ) function
   Output: Display the date in the textbox.
b) Input: A number n obtained using prompt
   Output: Factorial of n number using alert.
c) Input: A number n obtained using prompt
   Output: A multiplication table of numbers from 1 to 10 of n using alert.
d) Input: A number n obtained using prompt and add another number using confirm
   Output: Sum of the entire n numbers using alert.

Module-6:
Write JavaScript to validate the following fields of the Registration page.

(a) First Name (Name should contain alphabets and the length should not be less than 6 characters).
(b) Password (Password should not be less than 6 characters in length).
(c) E-mail ID (should not contain any invalid and must follow the standard pattern name@domain.com)
(d) Mobile Number (The phone number should contain 10 digits only).
(e) Last Name and Address (should not be Empty).

Module-7:
Write an HTML page including any required JavaScript that takes a number from the text field in the range of 0 to 999 and shows it in words. It should not accept four and above digits, alphabets, and special characters.

Module-8:
Create an 'Employee' class extending from a base class 'Person'. The task should include:

(a) Create a class 'Person' with attributes 'name' and 'age', and add a constructor to initialize these values.
(b) Create a class 'Employee' that extends 'Person' and includes an additional attribute 'role,' with a constructor to initialize 'name,' 'age,' and 'role.'

Module-9:
Create an array of objects representing book details in an online book store. Each object should include the book title, author, genre, and price. Render the details of the books on the page using this array, demonstrating array creation, accessing array elements, and applying array methods.

Module-10:
Write an XML file which will display the Book information which includes the following:

a) Title of the Book b)Author Name c)ISBN Name
d)Publisher Name e)Edition f)Price

Write a Document Type Definition(DTD) to validate the above XML file.

Case Study:
Select any one practical applications mentioned below.
Note: A report has to be submitted by every student at the end of the semester, including design, coding, output, etc.

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1. **Portfolio Website:** Create a personal portfolio website showcasing projects, skills, and experience using HTML, CSS, and JavaScript for interactive features.
2. **Responsive Blog:** Design a responsive blog template with multiple pages, utilizing HTML for structure, CSS for styling, and JavaScript for dynamic content.
3. **E-commerce Site:** Develop a basic e-commerce website with product listings, shopping cart functionality, and user authentication using HTML, CSS, and JavaScript.
4. **Quiz Game:** Create an interactive quiz game with multiple-choice questions, scoring, and feedback using HTML, CSS, and JavaScript for functionality.
5. **To-Do List:** Develop a to-do list application allowing users to add, edit, and delete tasks, with data persistence using JavaScript local storage.
6. **Interactive Resume:** Design a dynamic resume with sections for education, experience, and skills, including interactive elements powered by JavaScript.
7. **Photo Gallery:** Create an interactive photo gallery with image lightbox effects, using CSS for styling and JavaScript for functionality.
8. **Recipe Finder:** Build a recipe search application that fetches and displays recipes from an API, using JavaScript for dynamic content updates.
9. **Expense Tracker:** Develop an expense tracker app to log and categorize expenses, with data visualization using charts and graphs created with JavaScript.
10. **Event Countdown:** Create a countdown timer for upcoming events with HTML structure, CSS styling, and JavaScript for the timer logic.
11. **Contact Form:** Create a contact form with validation and submission handling using JavaScript, styled with CSS to match the site's theme.
12. **Memory Game:** Develop a memory matching game with cards that flip and match, using CSS for design and JavaScript for game logic.
13. **Interactive Story:** Design an interactive storytelling website where users make choices that affect the narrative, using JavaScript for decision logic.
14. **Fitness Tracker:** Build a fitness tracker to log workouts and track progress, with dynamic charts and data visualization using JavaScript.
15. **Task Manager:** Create a task manager application with features for adding, editing, and prioritizing tasks, using JavaScript for interactivity.
16. **Interactive Timelines:** Design interactive timelines to visualize historical events or project milestones, using HTML, CSS, and JavaScript.
17. **Product Landing Page:** Develop a product landing page with animations and interactive elements, using CSS for styling and JavaScript for effects.
18. **Calculator:** Build a fully functional calculator with basic arithmetic operations, using JavaScript for logic and CSS for design.
19. **Job Board:** Develop a job board where users can post and search for jobs, with dynamic content updates using JavaScript.
20. **Interactive Form:** Create a multi-step interactive form with validation and progress indicators, using JavaScript for form handling and CSS for styling.

References:

1. Internet and Web Technologies by Raj Kamal, Tata McGraw-Hill.
2. Programming the World Wide Web by Robert W. Sebesta, Pearson Education.
3. An Introduction to Web Design and Programming by Paul S Wang, Sanda S Katila, 1st Edition, Cengage Learning.

Web Links:

1. https://onlinecourses.swayam2.ac.in/nou24_cs18/preview
2. https://infyspringboard.onwingspan.com/en/app/toc/lex_17739732834840810000_shared/overview (HTML5)
3. https://infyspringboard.onwingspan.com/en/app/toc/lex_18109698366332810000_shared/overview (Javascript)

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Annexure-VII

Problem Solving using C Lab
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Outline the use of basic constructs of C for simple applications.	**1,2,3**
C02:	Develop C programs for simple applications using Arrays and Strings.	**4**
C03:	Illustrate concepts such as functions, recursion, and pointers with suitable examples.	**5,6,7**
C04:	Build C programs involving Structures and Unions.	**8**
C05:	Develop applications using sequential and random-access file processing.	**9**

Module-1: I/O and Data Types
1. Write a C program to demonstrate Format Specifiers and Input/Output Statements.
2. Write a C program to demonstrate various Data Types.

Module-2: Operators and Expressions
1. Write a C program to demonstrate various Operators including Bitwise Operator.
2. Write a C program to demonstrate Arithmetic Expressions and Type Casting.

Module-3: Control Statements
1. Write a C program to demonstrate decision making statements.
2. Write a C program to demonstrate iterative statements.
3. Write a C program to demonstrate break and continue Statement.

Module-4: Arrays
1. Write a C program to demonstrate arrays (one-dimensional and two-dimensional).
2. Write a C program to demonstrate string handling functions using built-in and user defined functions.

Module-5: Functions
1. Write a C program to demonstrate user defined functions.
2. Write a C program to demonstrate nested functions.

Module-6: Pointers
1. Write a C program to demonstrate arithmetic expressions using pointers.
2. Write a C program to demonstrate Pointers to Arrays.
3. Write a C program to demonstrate manipulate strings using pointers.
4. Write a C program to demonstrate dynamic memory allocation.

Module-7: Advanced Pointers
1. Write a C program to demonstrate Call-by-value, Call-by-reference.
2. Write a C program to demonstrate recursive function.
3. Write a C program to demonstrate Functions with Storage Classes (Static).

Module-8: Structures
1. Write a C program to demonstrate structures.
2. Write a C program to demonstrate structures within structures.
3. Write a C program to demonstrate pointer to a structure.
4. Write a C program to demonstrate unions.

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Module-9: Files

1. Write a C program to demonstrate I/O operations on files.
2. Write a C program to demonstrate concatenating two files.
3. Write a C program to demonstrate copy content of one file to another file.

Case Study:

Select any one application mentioned below.

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Develop a library management system to add, delete, and search for books efficiently.
2. Develop an ATM system to check balance, deposit money, and withdraw funds.
3. Develop a C program to calculate salary increments using a lookup table which stores the percentage of increment based on the current salary.
4. Develop a voting system where users can vote for candidates and view results.
5. Develop a basic calculator for arithmetic operations like addition, subtraction, multiplication, and division.
6. Develop a contact management system to store and manage details like name, phone number, and email.
7. Develop a banking system supporting multiple users for account management and transactions.
8. Develop a C program to calculate SGPA and CGPA based on students' marks across semesters.
9. Develop a registration page in C using file handling to securely store usernames and passwords.
10. Develop an encryption and decryption algorithm to securely transform and restore data by using the GNU C Library: crypt.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.
2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4.
3. E. Balaguruswamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
4. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.
5. N.B. Venkateswarulu, "C programming", 1st Edition, S.Chand Publishing, 2017, ISBN: 978-93-525-3356-5.
6. Jacqueline A Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9.

Web References (e-Resources):

1. https://nptel.ac.in/courses/106105171
2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/
3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview
4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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Annexure-VIII

IT ESSENTIALS
I Year B. Tech. I semester
(Branch: Electrical & Electronics Engineering)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Identify the peripherals of a computer.	1
C02:	Demonstrate the installation process of operating systems like MS Windows, LINUX.	2
C03:	Make use of Office suite that comprises with various applications to create documents, and captivating presentations.	3
C04:	Make use of Office suite that comprises with various applications to organize & analyse data.	4
C05:	Categorize various UNIX/LINUX Commands to work on a modern operating system and Make use of LaTeX tool to prepare research articles.	5

Module-1: Hardware Concepts

1. Identify the peripherals of a computer, components in a CPU and its functions.
2. Draw the block diagram of the CPU along with the configuration of each peripheral.
3. Disassemble and assemble the PC back to working condition.

Module-2: Software Installations and configurations

1. Install operating systems like LINUX and MS windows on a personal computer.
2. The system should be configured as dual boot with both MS windows and LINUX.

Module-3: Word and PowerPoint

1. Creating Documents: Formatting Fonts/Texts, page layout, Applying Text effects, Character Spacing, Borders and Colours, Inserting Header and Footer, equation editor.
2. Creating Power Point: Student should work on basic power point utilities and tools to create basic power point presentation. PPT Orientation, Slide Layouts, Inserting Text, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting Images, Tables and charts.

Module-4: Spreadsheets

1. Spreadsheet Orientation: Accessing, overview of toolbars, saving spreadsheet files, Using help and resources. Creating a Scheduler, Gridlines, Format Cells, Summation, auto fill, Formatting Text, Renaming and Inserting worksheets, Hyper linking.
2. Excel Calculation: Calculating Average, Cell Referencing, Excel Formula, std. deviation, Charts, Count Function, Sorting, Conditional formatting, Excel Advanced-sumif, VLOOKUP, and Pivot Table.
3. Software as a service (SaaS): Usage of online office suite.

Module-5: UNIX/LINUX Commands and LaTeX

1. Study and practice on file system, handling files with commands, syntax, usage, application.
2. Installation of LaTeX and preparation of research article.

Reference Books:

1. IT Essentials: PC Hardware and Software Companion Guide, Third Edition, David Anfinson, Ken Quamme.
2. UNIX concepts and applications by Sumitabha Das, TMH Publications.

Web References:

1. **https://www.javatpoint.com/**

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Annexure-I

Python Programming
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	**Understand** the historical development, necessity, applications, and basic concepts of python programming
C02:	**Identify** and implement appropriate control structures to solve a particular programming problem
C03:	**Examine** various data structures and apply to solve real world problems.
C04:	**Build** simple functions and packages used in python for solving real world problems.
C05:	**Outline** Object Oriented concepts in python and illustrate Exception handling

UNIT-I	**8 Lectures**
Introduction: History of Python, Need of Python Programming, Applications of Python, Variables, Assignment, Comments, Keywords, Data types, Input-Output, Indentation.	
TextBook-1: Chapter 3 (S-3.1 – S-3.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the Evolution of Python [L2] 2. Recall the Need and Applications of Python [L1] 3. Outline python's Input and Output Functions[L2]	

UNIT-II	**10 Lectures**
Operators and Expressions: Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations **Control Flow-** if, if-elif-else, for, while, break, continue, pass	
TextBook-1: Chapter 3 (S-3.12), Chapter 4 (S-4.1 – S-4.7)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Illustrate python operators: arithmetic, comparison, assignment, logical, bitwise, membership, identity [L2] 2. Make use of control flow statements: if, if-elif-else, for, while, break, continue, pass. [L3]	

UNIT-III	**12 Lectures**
Data Structures: Strings, Lists, Tuples, Sets, Dictionaries. Data Structures manipulations - create, Index, Negative indexing, Slicing, update, add elements, delete or remove elements, operations, Comprehension, Membership Test, Iteration.	
TextBook-1: Chapter 6 (S-6.1 – S-6.9), Chapter 8 (S-8.1 – S-8.6)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understanding basic operations on lists, including indexing and slicing [L2] 2. Utilize methods of lists, tuples, sets, and dictionaries to solve problems [L3] 3. Compare and apply appropriate use cases for lists, tuples, sets, and dictionaries. [L2]	

UNIT-IV	**10 Lectures**
Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Lambda Functions, Function Returning Values, Built-in functions, Scope of the Variables in a Function - Global and Local Variables.	

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Modules: Creating modules, import statement, from…import statement, namespaces. **Python packages:** Introduction to PIP, Installing Packages via PIP
TextBook-1: Chapter 5 (S-5.1 – S-5.8,5.12)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understanding and implementing various types of function arguments and scopes in Python. [L2] 2. Utilize Python modules to understanding the import mechanisms [L3]

UNIT-V	**11 Lectures**
Object Oriented Programming (OOP) in Python: Classes and Objects, Class Method and self Argument, The __init__() Method (The Class Constructor), Class Variables and Object Variables, Public and Private Data Members, Inheritance, Overriding Methods. **Error and Exceptions:** Introduction to Errors and Exceptions, Handling Exception, try except block, finally block, Raising Exceptions. **File Handling**: Type of files, Opening and Closing files, Reading and Writing files.	
TextBook-1: Chapter 9 (S-9.1 – S-9.8), Chapter 10 (S-10.1 – S-10.3) TextBook-1: Chapter 7 (S-7.1 – S-7.5), Chapter 12 (S-12.1 – S-12.10)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand and implement classes, methods, and the 'self' variable in Python [L2] 2. Demonstrate concepts of inheritance, method overriding, and data hiding in OOP [L2] 3. List the differences between errors and exceptions, and handle exceptions using try-except blocks [L1] 4. Illustrate file operations including reading, writing, and manipulating file pointers in Python. [L2]	

Text Books:
1. Reema Thareja, "Python Programming: Using Problems Solving Approach", Oxford University Press, 2017 2. Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage.
Reference Books:
1. Fundamentals of Data Structures using Python, P Lalitha Surya Kumari, P. S. Avadhani, Lambert Academic Publishing 2. Introduction to Python Programming, Gowrishankar.S, Veena A, CRC Press. 3. Introduction to Programming Using Python, Y. Daniel Liang, Pearson.
Web References:
1. https://www.tutorialspoint.com/python3/python_tutorial.pdf 2. https://www.python.org/doc/

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Annexure-II

Fundamentals of Computers
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	Identify different I/O devices and their usage.
C02:	Compare different computer memory with their efficiency.
C03:	Relate different computer software's and programming languages for solving problems.
C04:	Summarize the use of operating system, database system, and computer network in the field of computing in engineering.
C05:	Infer the methods and applications of artificial intelligence (AI), machine learning (ML) and data science.

UNIT-I **10 Lectures**

Introduction to computers: Computers, Stored Program Concept, Classification of Computers, Evolution and Development of Computers, Application Areas of Computers, Features/Characteristics of Computers, Basic Organization of a Computer.

Input and Output Devices: Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices, Voice Response Systems, Biometric Devices

TextBook-1: Chapter 1 (S-1.1 – S-1.7)

https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers)

TextBook-1: Chapter 2 (S-2.1 – S-2.6)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Outline characteristics and classification of computers (L2)
2. Demonstrate different configurations of software and hardware used in computer (L2)
3. Model the computer by organizing different computer peripherals such as I/O, CPU, etc. (L3)

UNIT-II **10 Lectures**

Computer Memory: Introduction, Memory Organization, Memory Hierarchy, Sequential and Random Access, Processor Registers, Cache Memory, Primary Memory,Secondary Storage Devices, Magnetic Tapes, Floppy Disks, Hard Disks, External Hard Disks, Optical Disks, USB Flash Drives, Memory Cards, Mass Storage Devices.

TextBook-1: Chapter 3 (S-3.1 – S-3.16)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Summarize computer memory hierarchy. (L2)
2. Classify different memory w.r.t. speed and cost. (L2)
3. Illustrate different external storage devices and its applications. (L2)

UNIT-III **10 Lectures**

Computer Software: Introduction to Computer Software, Classification of Computer Software, System Software, Application software, Graphics Software, Multimedia Software, Database Management Software, Firmware, Middleware, Procuring Computer Software.

Problem Solving Using Computers: Introduction, Program Development Life Cycle, Program Design Tools, Programming Languages, Generations of Programming Languages, Categorization of High-level Languages, Some Popular High-level Languages, Apps.

TextBook-1: Chapter 6 (S-6.1 – S-6.7)

TextBook-1: Chapter 7 (S-7.1 – S-7.7)

https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Compare different computer software's (L2)
2. Summarize different programming languages for solving problems. (L2)
3. Contrast Structured Programming Language, Logic-oriented Programming Language, and

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Object-oriented Programming. (L2)

UNIT-IV **12 Lectures**

Fundamental Operating Systems: Introduction, History of Operating Systems, Functions of Operating Systems, Types of Operating Systems, Providing User Interface, Popular Operating Systems

Database Systems: File-Oriented Approach, Database-oriented Approach, Database Views, Three-schema Architecture, Database Models, Components of Database Management, Retrieving Data Through Queries.

Computer Networks: Introduction to Computer Networks, Types of Networks, Physical Components of a Network, Wired Media, Wireless Media, Networking Devices, Network Topologies, Wireless Networks.

TextBook-2: Chapter 11 (S-11.1 / P-238 – S-11.11 / P-258)
TextBook-1: Chapter 9 (S-9.1 – S-9.7), Chapter 10 (S-10.1 – S-10.8)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Explain fundamentals of operating systems. (L2)
2. Illustrate database system applications and its design concepts. (L2)
3. Outline fundamentals of computer networks and its applications. (L2)

UNIT-V **8 Lectures**

Introduction to Artificial Intelligence & Machine Learning (AI&ML) and Data Science: Introduction to AI & ML, and Data Science, Use Cases in Business and Scope, Modelling Concepts, CRISP-DM Method

1. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)**
2. https://www.javatpoint.com/machine-learning-models **(Machine Learning)**
3. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)**
4. https://www.heavy.ai/learn/data-science **(Data Science)**
5. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**

Learning Outcomes:

At the end of the unit, the student will be able to

1. Outline the main methods and applications of artificial intelligence (AI) concepts. (L2)
2. Outline the main methods and applications of machine learning (ML) concepts. (L2)
3. Outline the main methods and applications of data science concepts. (L2)

Text Books:

1. Reema Thareja, Fundamentals of Computers, Second Edition, Oxford University Press, 2019.
2. E Balagurusamy, Fundamentals of Computers, Tata McGraw Hill Education Private Limited, 2009

Reference Books:

1. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, 4th Edition, McGraw-Hill, 2002.
2. Andrew S. Tanenbaum, Modern Operating Systems, 2nd edition, PHI, 1995.

Web References:

1. https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers)
2. https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps)
3. https://www.geeksforgeeks.org/what-is-an-operating-system/ (Operating System)
4. https://www.javatpoint.com/computer-network-tutorial (Computer Network)
5. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)**
6. https://www.javatpoint.com/machine-learning-models **(Machine Learning)**
7. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)**
8. https://www.heavy.ai/learn/data-science **(Data Science)**
9. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**

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Annexure-III

Python Programming Lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

L	T	P	C
0	0	3	1.5

Course Code:

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Understand core programming basics and various Operators of Python	1,2
C02:	Implement programs using conditional statements and loops and strings.	3,4
C03:	Develop functions and strings to perform simple tasks.	5,6
C04:	Make use of various data structures like lists, tuples, sets and dictionaries.	7,8,9
C05:	Implement Python programs with files, Classes and objects	10,11

Module-1: Basics of Python

a) Write a program to display the statements.
b) Demonstrate about fundamental Data types in Python Programming. (i.e., int, float, complex, bool and string types)
c) Write a Python program to demonstrate various type conversion functions.
d) Write a program to demonstrate the inbuilt Math function

Module-2: Operators in Python

a) Demonstrate the following Operators in Python with suitable examples.
i) Arithmetic Operators ii) Relational Operators iii) Assignment Operators iv) Logical Operators v) Bit wise Operators vi) Ternary Operator vii) Membership Operators viii) Identity Operators

Module-3: Conditional Branching Statements

a) Write a program to check whether the given number is even or odd
b) Write a program to read marks of a student and display the corresponding grade
c) Write a program to find the largest element among the given numbers (multi-way if-elif-else statements.)

Module-4: Looping/Iterative Statements

a) Implement the following programs using while loop and for loop
i. Display all prime numbers up to n.
ii. Print the nth multiplication table.
iii. Print different patterns using loops:
b) Demonstrate the following control transfer statements in Python with suitable examples.
i. break ii. continue iii. Pass

Module-5: Functions

a) Write a function to find the multiplication of two numbers and demonstrate the usage of parameters and arguments of a function.
b) Write a program to define a function using default arguments.
c) Demonstrate lambda functions in Python with suitable example programs.

Module-6: Strings

a) Write a program to manage and analyse customer feedback using string operations include:
i. Create feedback with name, email, comment
ii. Collecting feedback.
iii. Normalizing feedback (e.g., removing extra spaces, converting to lowercase).
iv. Extracting key in formation (e.g., names, email addresses, and comments).

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v. Searching for keywords.
vi. Replacing certain words.
vii. Formatting feedback for display.
viii. Summarizing feedback.

Module-7: Lists:

a) Write a program to create a list and perform the following operations:
   i. + ii. * iii. slicing iv. del
b) Inventory Management: You have a list of items in your warehouse along with their quantities. Write a program to find out which items are low in stock (quantity less than 10). (use only comprehensions)
c) Employee Performance: You have a list of employee names and their corresponding performance scores. Write a program to sort the list based on the performance scores in descending order.
d) Sales Analysis: you have a list of sales figures for the past week. Write a program to find the total sales, the highest sale, the lowest sale, and the average sale.
e) Write a program to calculate the length of each element in a list using map function in python.

Module-8: Tuples

a) Write a program to return the top n's most frequently occurring chars and their respective counts. e.g. string=aaaaaabbbbcccc, n=2 should return [(a 6) (b 4)].
b) Write a program to create n iterables of varied sizes and group the values using zip function in python.
c) Student Information: Write a program to create a list of tuples where each tuple contains the student ID, name, and grade and find the student with the highest grade.
d) Course Enrolment: Write a program to create list of tuples where each tuple contains the course ID and the number of students enrolled and find the total number of students enrolled across all courses
e) Faculty Information: Write a program to create a list of tuples where each tuple contains the faculty ID, name, and department and find all faculty members in a given department.
f) Library Book Tracking: You have a list of tuples where each tuple contains the book ID, title, and number of copies available. Write a program to find all books with fewer than 5 copies available.

Module-9: Sets & Dictionaries

a) Write a program to create two sets and perform the following operations:
   i. Union ii. Intersection iii. Difference iv. Asymmetric Difference
b) Write a program to generate a dictionary that contains numbers (between 1 and n) in the form of (x,x*x).
c) Write a program to implement a shopping cart where you can add items with their prices and quantities, and then calculate the total cost.
d) Banking System: Write a program to create dictionary with customer name and balance and Retrieve the balance for a given customer, Deposit a specified amount into a customer's account, Withdraw a specified amount from a customer's account if sufficient balance is available, Transfer a specified amount from one customer's account to another's and Remove a customer from the bank's system.

Module-10: Classes and objects

a) Create a class to represent menu items in a restaurant with attributes like name, price, and category. Implement methods to display menu details and calculate the total cost of a selected list of items.

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b) Write a program to read 3 subject marks and display pass or failed using class and object.

Module-11: Files

a) Write a program to copy the contents of a file to another file.

b) Write a program to compute the number of characters, words and lines in a file.

Case Study:

Select any one application mentioned below

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Design a Python program to manage inventory, process orders, and handle customer information for an online store.
2. Create a library system to track books, manage member accounts, and handle book loans and returns.
3. Implement a personal finance management tool to track income, expenses, and generate monthly reports.
4. Create a system to manage student grades, calculate GPAs, and generate academic reports.
5. Develop a Python-based movie recommendation system using collaborative filtering.
6. Build a to-do list application that allows users to add, update, delete, and prioritize tasks..
7. Build a patient management system to handle appointments, medical records, and billing.
8. Design a digital menu for a restaurant with options for ordering, bill generation, and inventory management.
9. Implement a fitness tracking application to log workouts, track progress, and suggest exercise plans.
10. Build a secure online voting platform with user authentication and vote tallying.
11. Create a program to manage recipes, including ingredients, instructions, and nutritional information.
12. Build a travel planning application to manage itineraries, bookings, and budget tracking.
13. Develop an e-learning application with course creation, student enrolment, and progress tracking.
14. Build a car rental management system to handle bookings, returns, and vehicle maintenance.
15. Build a budget planning application to track expenses, income, and financial goals.
16. Develop a cryptocurrency tracking application to monitor prices, market trends, and portfolio performance.

Reference Books:

1. Python Programming: Using Problem Solving Approach by Reema Theraja , Oxford publications
2. Ashok N Kamthane, Amit Ashok Kamthane, *Programming and Problem Solving with Python*, 1st Edition, McGraw Hill Education (India), 2018.

Web References:

1. https://www.python.org/doc/
2. https://www.w3schools.com/python/python_reference.asp
3. https://thepythonguru.com/
4. https://www.programiz.com/python-programming

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Annexure-IV

Computer Engineering Workshop
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Identify the peripherals of a computer.	1
C02:	Demonstrate the installation process of operating systems like MS Windows, LINUX.	2
C03:	Make use of MS-Office suite that comprises of various applications to create documents, organizes & analyses data and captivating presentations.	3
C04:	Categorize various UNIX/LINUX Commands to work on a modern operating system	4
C05:	Experiment with GIT Commands and make use of LaTeX to prepare research articles.	5

Module-1: Hardware Concepts

1. Identify the peripherals of a computer, components in a CPU and its functions.
2. Draw the block diagram of the CPU along with the configuration of each peripheral.
3. Disassemble and assemble the PC back to working condition.

Module-2: Software Installations

1. Install operating systems like LINUX and MS windows on a personal computer.
2. The system should be configured as dual boot with both MS windows and LINUX.

Module-3: Office Suite

1. Creating Documents: Formatting Fonts/Texts, page layout, Applying Text effects, Character Spacing, Borders and Colours, Inserting Header and Footer, equation editor.
2. Spreadsheet Orientation: Accessing, overview of toolbars, saving spreadsheet files, Using help and resources. Creating a Scheduler, Gridlines, Format Cells, Summation, auto fill, Formatting Text, Renaming and Inserting worksheets, Hyper linking.
3. Excel Calculation: Calculating Average, Cell Referencing, Excel Formula, std. deviation, Charts, Count Function, Sorting, Conditional formatting, Excel Advanced-sumif, VLOOKUP, and Pivot Table.
4. Creating Power Point: Student should work on basic power point utilities and tools to create basic power point presentation. PPT Orientation, Slide Layouts, Inserting Text, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting Images, Tables and charts.
5. Software as a service (SaaS): Usage of online office suite.

Module-4: UNIX/LINUX Commands

1. Study and practice on file system, handling files with commands, syntax, usage, application.
2. Practice on vi editor.
3. Study and practice on shells/shell programming with relevant programming constructs, syntax, usage, application.

Module-5: GIT Commands and LaTeX

1. Installation of GIT, Branch in Git Basic GIT Commands.
2. Installation of LaTeX and preparing research articles by creating overleaf account.
3. Introduction to Scratch Programming - Introduction, Stage, Sprite, Script, Block Palette.

Reference Books:

1. IT Essentials: PC Hardware and Software Companion Guide, Third Edition, David Anfinson, Ken Quamme.
2. UNIX concepts and applications by Sumitabha Das, TMH Publications.
3. Shell programming by Yashwanth Kanetkar.

Web References:

1. https://www.javatpoint.com/

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Annexure-V

Problem solving using C
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
C01:	Explain the basic constructs of C through the use of simple applications.
C02:	Demonstrate the utilization of arrays and strings in the development of C programs.
C03:	Utilize functions and pointers to construct various applications in C.
C04:	Apply concepts of structures and unions to build and implement C applications.
C05:	Develop applications using sequential and random-access file processing techniques.

UNIT-I	10 Lectures
Introduction to C: Basic structure of C program, Constants, Variables and data types, Operators and Expressions, Arithmetic Precedence and associativity, Type Conversions. Managing Input and Output Operations Formatted Input, Formatted Output.	
TextBook-1: Chapter 2 (S-2.1 – S-2.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline the Basic Structure and Components of C Programs. (L2) 2. Demonstrate Variables, Data Types, Operators, and Expressions. (L2) 3. Illustrate Input and Output Operations. (L2)	

UNIT-II	12 Lectures
Decision Making, Branching, Looping: Decision making with if statement, Simple if statement, The if...else statement, Nesting of if...else statement, the else... if ladder, switch statement, the (? :) operator, the goto statement, The while statement, the do statement, the for statement, Jumps in Loops. **Arrays & Strings:** One, Two-dimensional Arrays, multi-dimensional Arrays, Character Arrays. Declaration and Initialization of Strings, reading and writing of strings, string handling functions.	
TextBook-1: Chapter 3 (S-3.1 – S-3.8), TextBook-2:Chapter 13,14,15,16(PP:215-283)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Classify Decision Making and Branching (L2) 2. Interpretation of Looping Constructs (L2) 3. Summarize Arrays and Strings (L2)	

UNIT-III	10 Lectures
Function and Dynamic Memory Allocation: Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, passing arrays to functions, recursion. Introduction to Pointers, Pointer Arithmetic, Pointers for Inter-Function Communication, passing pointers to functions, call by reference, Dynamic Memory Allocation.	
TextBook-1: Chapter 4 (S-4.1 – S-4.11), Chapter 5 (S-5.1 – S-5.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Utilize Functions (Understand and Implement Functions, Utilize Various Function Types, Advanced Function Techniques) (L3) 2. Experiment with Pointers (Basic Pointer Operations, Pointers and Data Structures) (L3) 3. Explain Advanced Pointer Usage (Pointers in Functions, Pointers to Complex Data Types) (L2)	

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UNIT-IV	10 Lectures
Structure and Unions: Defining a structure and union, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, arrays of structures, arrays within structures, structures within structures, definition and usage of union, structures and unions using functions, size of structures and bit-fields. The Type Definition (Type def), Enumerated Types.	
TextBook-1: Chapter 6 (S-6.1 – S-6.9)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Define Structures and Build C programs using Structures. (L3) 2. Explain Complex Data Structures. (L2) 3. Explain Unions and Bit-Fields. (L2)	

UNIT-V	8 Lectures
File handling: Introduction to Files, Modes of File operations, Text and Binary Files, Defining and opening a file, closing a file, Input/ Output operations on files, Error handling during I/O operations, random access to files and Command Line Arguments, user defined header files.	
TextBook-2: Chapter 19 (PP:325-348)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline File Operations. (L2) 2. Summarize Error Handling and Random Access. (L2) 3. Utilize Command Line Arguments. (L3)	

Text Books:
1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9. 2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978-93-8728-449-4.
Reference Books:
1. N. B. Venkateswarlu, E. V. Prasad, "C and Data Structures", 1st Edition, S. Chand Publishing, 2010, ISBN: 978-93-525-3356-5. 2. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6. 3. Jacqueline A. Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9. 4. E. Balagurusamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
Web References (e-Resources):
1. https://nptel.ac.in/courses/106105171 2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/ 3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview 4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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Annexure-VI

Web Technologies Fundamentals lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to		**Module No.**
C01:	**Develop** professional web pages for an application using HTML elements like lists, navigations, tables, various form elements, and embedded media, including images, audio, and video.	**1,2**
C02:	**Build** inline, internal, and external CSS to enhance the visual presentation of web pages, including layout, fonts, colors, and backgrounds.	**3,4**
C03:	**Utilize** JavaScript to develop interactive HTML web pages and validate form data.	**5,6,7**
C04:	**Apply** JavaScript functions and events to enhance user interaction and provide a dynamic user experience.	**8,9**
C05:	**Experiment with** XML files to store and display structured data and write a DTD to perform well-formed and validated XML documents.	**10**

Module-1:
Design a web page using Basic HTML Elements – Structure of HTML, Headings, Paragraph, Division and Span, List, Link, Image, Table, Form, Input, Iframe, and Media Elements.

Module-2:
Design the following static web pages required for an online book store website.

(a) HOME PAGE:
i) The static home page must contain three frames.
Top frame: Logo and the college name and links to the Home page, Login page, Registration page, Catalogue page, and Cart page (the description of these pages will be given below). Left frame: At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link "CSE" the catalogue for CSE Books should be displayed in the Right frame. Right frame: The pages to the links in the left frame must be loaded here. Initially, this page contains a description of the website.
ii) Add media content in a frame using audio, video, and iframe elements to the Home page of an online book store website. The page should include:
1) Audio Element: An audio player to play background music or a podcast.
2) Video Element: A video player to display a promotional video about the book store.
3) Iframe Element: An iframe to embed a Google Maps location of the book store.

(b) LOGIN PAGE

(c) CATALOGUE PAGE: The catalogue page should contain the details of all the books available on the website in a table: The details should contain the following:
i) Snapshot of Cover Page. ii)Author Name. iii)Publisher.
iv) Price. v)Add to cart button.

(d) REGISTRATION PAGE: Create a "registration form "with the following fields
i) Username: Text input field
ii) Password: Password input field
iii) Email: Email input field
iv) Phone number: Text input field
v) Birthday: Date picker
vi) Favorite Color: Color picker
vii) Gender: Select an element with options (Male, Female, Other).

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Module-3:
Develop and demonstrate the usage of inline, internal, and external style sheets using CSS.

Module-4:
Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (colour, bold, and font size).

Module-5:
Develop and demonstrate JavaScript with POP-UP boxes and functions for the following problems:

a) Input: Click on the Display Date button using onclick( ) function
   Output: Display the date in the textbox.
b) Input: A number n obtained using prompt
   Output: Factorial of n number using alert.
c) Input: A number n obtained using prompt
   Output: A multiplication table of numbers from 1 to 10 of n using alert.
d) Input: A number n obtained using prompt and add another number using confirm
   Output: Sum of the entire n numbers using alert.

Module-6:
Write JavaScript to validate the following fields of the Registration page.

(a) First Name (Name should contain alphabets and the length should not be less than 6 characters).
(b) Password (Password should not be less than 6 characters in length).
(c) E-mail ID (should not contain any invalid and must follow the standard pattern name@domain.com)
(d) Mobile Number (The phone number should contain 10 digits only).
(e) Last Name and Address (should not be Empty).

Module-7:
Write an HTML page including any required JavaScript that takes a number from the text field in the range of 0 to 999 and shows it in words. It should not accept four and above digits, alphabets, and special characters.

Module-8:
Create an 'Employee' class extending from a base class 'Person'. The task should include:

(a) Create a class 'Person' with attributes 'name' and 'age', and add a constructor to initialize these values.
(b) Create a class 'Employee' that extends 'Person' and includes an additional attribute 'role,' with a constructor to initialize 'name,' 'age,' and 'role.'

Module-9:
Create an array of objects representing book details in an online book store. Each object should include the book title, author, genre, and price. Render the details of the books on the page using this array, demonstrating array creation, accessing array elements, and applying array methods.

Module-10:
Write an XML file which will display the Book information which includes the following:

a) Title of the Book b)Author Name c)ISBN Name
d)Publisher Name e)Edition f)Price

Write a Document Type Definition(DTD) to validate the above XML file.

Case Study:
Select any one practical applications mentioned below.
Note: A report has to be submitted by every student at the end of the semester, including design, coding, output, etc.

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1. **Portfolio Website:** Create a personal portfolio website showcasing projects, skills, and experience using HTML, CSS, and JavaScript for interactive features.
2. **Responsive Blog:** Design a responsive blog template with multiple pages, utilizing HTML for structure, CSS for styling, and JavaScript for dynamic content.
3. **E-commerce Site:** Develop a basic e-commerce website with product listings, shopping cart functionality, and user authentication using HTML, CSS, and JavaScript.
4. **Quiz Game:** Create an interactive quiz game with multiple-choice questions, scoring, and feedback using HTML, CSS, and JavaScript for functionality.
5. **To-Do List:** Develop a to-do list application allowing users to add, edit, and delete tasks, with data persistence using JavaScript local storage.
6. **Interactive Resume:** Design a dynamic resume with sections for education, experience, and skills, including interactive elements powered by JavaScript.
7. **Photo Gallery:** Create an interactive photo gallery with image lightbox effects, using CSS for styling and JavaScript for functionality.
8. **Recipe Finder:** Build a recipe search application that fetches and displays recipes from an API, using JavaScript for dynamic content updates.
9. **Expense Tracker:** Develop an expense tracker app to log and categorize expenses, with data visualization using charts and graphs created with JavaScript.
10. **Event Countdown:** Create a countdown timer for upcoming events with HTML structure, CSS styling, and JavaScript for the timer logic.
11. **Contact Form:** Create a contact form with validation and submission handling using JavaScript, styled with CSS to match the site's theme.
12. **Memory Game:** Develop a memory matching game with cards that flip and match, using CSS for design and JavaScript for game logic.
13. **Interactive Story:** Design an interactive storytelling website where users make choices that affect the narrative, using JavaScript for decision logic.
14. **Fitness Tracker:** Build a fitness tracker to log workouts and track progress, with dynamic charts and data visualization using JavaScript.
15. **Task Manager:** Create a task manager application with features for adding, editing, and prioritizing tasks, using JavaScript for interactivity.
16. **Interactive Timelines:** Design interactive timelines to visualize historical events or project milestones, using HTML, CSS, and JavaScript.
17. **Product Landing Page:** Develop a product landing page with animations and interactive elements, using CSS for styling and JavaScript for effects.
18. **Calculator:** Build a fully functional calculator with basic arithmetic operations, using JavaScript for logic and CSS for design.
19. **Job Board:** Develop a job board where users can post and search for jobs, with dynamic content updates using JavaScript.
20. **Interactive Form:** Create a multi-step interactive form with validation and progress indicators, using JavaScript for form handling and CSS for styling.

References:

1. Internet and Web Technologies by Raj Kamal, Tata McGraw-Hill.
2. Programming the World Wide Web by Robert W. Sebesta, Pearson Education.
3. An Introduction to Web Design and Programming by Paul S Wang, Sanda S Katila, 1st Edition, Cengage Learning.

Web Links:

1. https://onlinecourses.swayam2.ac.in/nou24_cs18/preview
2. https://infyspringboard.onwingspan.com/en/app/toc/lex_17739732834840810000_shared/overview (HTML5)
3. https://infyspringboard.onwingspan.com/en/app/toc/lex_18109698366332810000_shared/overview (Javascript)

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Annexure-VII

Problem Solving using C Lab
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Outline the use of basic constructs of C for simple applications.	**1,2,3**
C02:	Develop C programs for simple applications using Arrays and Strings.	**4**
C03:	Illustrate concepts such as functions, recursion, and pointers with suitable examples.	**5,6,7**
C04:	Build C programs involving Structures and Unions.	**8**
C05:	Develop applications using sequential and random-access file processing.	**9**

Module-1: I/O and Data Types
1. Write a C program to demonstrate Format Specifiers and Input/Output Statements.
2. Write a C program to demonstrate various Data Types.

Module-2: Operators and Expressions
1. Write a C program to demonstrate various Operators including Bitwise Operator.
2. Write a C program to demonstrate Arithmetic Expressions and Type Casting.

Module-3: Control Statements
1. Write a C program to demonstrate decision making statements.
2. Write a C program to demonstrate iterative statements.
3. Write a C program to demonstrate break and continue Statement.

Module-4: Arrays
1. Write a C program to demonstrate arrays (one-dimensional and two-dimensional).
2. Write a C program to demonstrate string handling functions using built-in and user defined functions.

Module-5: Functions
1. Write a C program to demonstrate user defined functions.
2. Write a C program to demonstrate nested functions.

Module-6: Pointers
1. Write a C program to demonstrate arithmetic expressions using pointers.
2. Write a C program to demonstrate Pointers to Arrays.
3. Write a C program to demonstrate manipulate strings using pointers.
4. Write a C program to demonstrate dynamic memory allocation.

Module-7: Advanced Pointers
1. Write a C program to demonstrate Call-by-value, Call-by-reference.
2. Write a C program to demonstrate recursive function.
3. Write a C program to demonstrate Functions with Storage Classes (Static).

Module-8: Structures
1. Write a C program to demonstrate structures.
2. Write a C program to demonstrate structures within structures.
3. Write a C program to demonstrate pointer to a structure.
4. Write a C program to demonstrate unions.

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Module-9: Files

1. Write a C program to demonstrate I/O operations on files.
2. Write a C program to demonstrate concatenating two files.
3. Write a C program to demonstrate copy content of one file to another file.

Case Study:

Select any one application mentioned below.

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Develop a library management system to add, delete, and search for books efficiently.
2. Develop an ATM system to check balance, deposit money, and withdraw funds.
3. Develop a C program to calculate salary increments using a lookup table which stores the percentage of increment based on the current salary.
4. Develop a voting system where users can vote for candidates and view results.
5. Develop a basic calculator for arithmetic operations like addition, subtraction, multiplication, and division.
6. Develop a contact management system to store and manage details like name, phone number, and email.
7. Develop a banking system supporting multiple users for account management and transactions.
8. Develop a C program to calculate SGPA and CGPA based on students' marks across semesters.
9. Develop a registration page in C using file handling to securely store usernames and passwords.
10. Develop an encryption and decryption algorithm to securely transform and restore data by using the GNU C Library: crypt.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.
2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4.
3. E. Balaguruswamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
4. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.
5. N.B. Venkateswarulu, "C programming", 1st Edition, S.Chand Publishing, 2017, ISBN: 978-93-525-3356-5.
6. Jacqueline A Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9.

Web References (e-Resources):

1. https://nptel.ac.in/courses/106105171
2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/
3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview
4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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Annexure-I

Python Programming
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	**Understand** the historical development, necessity, applications, and basic concepts of python programming
C02:	**Identify** and implement appropriate control structures to solve a particular programming problem
C03:	**Examine** various data structures and apply to solve real world problems.
C04:	**Build** simple functions and packages used in python for solving real world problems.
C05:	**Outline** Object Oriented concepts in python and illustrate Exception handling

UNIT-I	**8 Lectures**
Introduction: History of Python, Need of Python Programming, Applications of Python, Variables, Assignment, Comments, Keywords, Data types, Input-Output, Indentation.	
TextBook-1: Chapter 3 (S-3.1 – S-3.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the Evolution of Python [L2] 2. Recall the Need and Applications of Python [L1] 3. Outline python's Input and Output Functions[L2]	

UNIT-II	**10 Lectures**
Operators and Expressions: Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations **Control Flow-** if, if-elif-else, for, while, break, continue, pass	
TextBook-1: Chapter 3 (S-3.12), Chapter 4 (S-4.1 – S-4.7)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Illustrate python operators: arithmetic, comparison, assignment, logical, bitwise, membership, identity [L2] 2. Make use of control flow statements: if, if-elif-else, for, while, break, continue, pass. [L3]	

UNIT-III	**12 Lectures**
Data Structures: Strings, Lists, Tuples, Sets, Dictionaries. Data Structures manipulations - create, Index, Negative indexing, Slicing, update, add elements, delete or remove elements, operations, Comprehension, Membership Test, Iteration.	
TextBook-1: Chapter 6 (S-6.1 – S-6.9), Chapter 8 (S-8.1 – S-8.6)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understanding basic operations on lists, including indexing and slicing [L2] 2. Utilize methods of lists, tuples, sets, and dictionaries to solve problems [L3] 3. Compare and apply appropriate use cases for lists, tuples, sets, and dictionaries. [L2]	

UNIT-IV	**10 Lectures**
Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Lambda Functions, Function Returning Values, Built-in functions, Scope of the Variables in a Function - Global and Local Variables.	

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Modules: Creating modules, import statement, from…import statement, namespaces. **Python packages:** Introduction to PIP, Installing Packages via PIP
TextBook-1: Chapter 5 (S-5.1 – S-5.8,5.12)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understanding and implementing various types of function arguments and scopes in Python. [L2] 2. Utilize Python modules to understanding the import mechanisms [L3]

UNIT-V	**11 Lectures**
Object Oriented Programming (OOP) in Python: Classes and Objects, Class Method and self Argument, The __init__() Method (The Class Constructor), Class Variables and Object Variables, Public and Private Data Members, Inheritance, Overriding Methods. **Error and Exceptions:** Introduction to Errors and Exceptions, Handling Exception, try except block, finally block, Raising Exceptions. **File Handling**: Type of files, Opening and Closing files, Reading and Writing files.	
TextBook-1: Chapter 9 (S-9.1 – S-9.8), Chapter 10 (S-10.1 – S-10.3) TextBook-1: Chapter 7 (S-7.1 – S-7.5), Chapter 12 (S-12.1 – S-12.10)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand and implement classes, methods, and the 'self' variable in Python [L2] 2. Demonstrate concepts of inheritance, method overriding, and data hiding in OOP [L2] 3. List the differences between errors and exceptions, and handle exceptions using try-except blocks [L1] 4. Illustrate file operations including reading, writing, and manipulating file pointers in Python. [L2]	

Text Books:
1. Reema Thareja, "Python Programming: Using Problems Solving Approach", Oxford University Press, 2017 2. Fundamentals of Python First Programs, Kenneth. A. Lambert, Cengage.
Reference Books:
1. Fundamentals of Data Structures using Python, P Lalitha Surya Kumari, P. S. Avadhani, Lambert Academic Publishing 2. Introduction to Python Programming, Gowrishankar.S, Veena A, CRC Press. 3. Introduction to Programming Using Python, Y. Daniel Liang, Pearson.
Web References:
1. https://www.tutorialspoint.com/python3/python_tutorial.pdf 2. https://www.python.org/doc/

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Annexure-II

Fundamentals of Computers
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	Identify different I/O devices and their usage.
C02:	Compare different computer memory with their efficiency.
C03:	Relate different computer software's and programming languages for solving problems.
C04:	Summarize the use of operating system, database system, and computer network in the field of computing in engineering.
C05:	Infer the methods and applications of artificial intelligence (AI), machine learning (ML) and data science.

UNIT-I **10 Lectures**

Introduction to computers: Computers, Stored Program Concept, Classification of Computers, Evolution and Development of Computers, Application Areas of Computers, Features/Characteristics of Computers, Basic Organization of a Computer.

Input and Output Devices: Input Devices, Output Devices, Soft Copy Devices, Hard Copy Devices, Voice Response Systems, Biometric Devices

TextBook-1: Chapter 1 (S-1.1 – S-1.7)
https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers)
TextBook-1: Chapter 2 (S-2.1 – S-2.6)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Outline characteristics and classification of computers (L2)
2. Demonstrate different configurations of software and hardware used in computer (L2)
3. Model the computer by organizing different computer peripherals such as I/O, CPU, etc. (L3)

UNIT-II **10 Lectures**

Computer Memory: Introduction, Memory Organization, Memory Hierarchy, Sequential and Random Access, Processor Registers, Cache Memory, Primary Memory,Secondary Storage Devices, Magnetic Tapes, Floppy Disks, Hard Disks, External Hard Disks, Optical Disks, USB Flash Drives, Memory Cards, Mass Storage Devices.

TextBook-1: Chapter 3 (S-3.1 – S-3.16)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Summarize computer memory hierarchy. (L2)
2. Classify different memory w.r.t. speed and cost. (L2)
3. Illustrate different external storage devices and its applications. (L2)

UNIT-III **10 Lectures**

Computer Software: Introduction to Computer Software, Classification of Computer Software, System Software, Application software, Graphics Software, Multimedia Software, Database Management Software, Firmware, Middleware, Procuring Computer Software.

Problem Solving Using Computers: Introduction, Program Development Life Cycle, Program Design Tools, Programming Languages, Generations of Programming Languages, Categorization of High-level Languages, Some Popular High-level Languages, Apps.

TextBook-1: Chapter 6 (S-6.1 – S-6.7)
TextBook-1: Chapter 7 (S-7.1 – S-7.7)
https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Compare different computer software's (L2)
2. Summarize different programming languages for solving problems. (L2)
3. Contrast Structured Programming Language, Logic-oriented Programming Language, and

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Object-oriented Programming. (L2)
UNIT-IV **12 Lectures**
Fundamental Operating Systems: Introduction, History of Operating Systems, Functions of Operating Systems, Types of Operating Systems, Providing User Interface, Popular Operating Systems **Database Systems:** File-Oriented Approach, Database-oriented Approach, Database Views, Three-schema Architecture, Database Models, Components of Database Management, Retrieving Data Through Queries. **Computer Networks:** Introduction to Computer Networks, Types of Networks, Physical Components of a Network, Wired Media, Wireless Media, Networking Devices, Network Topologies, Wireless Networks.
TextBook-2: Chapter 11 (S-11.1 / P-238 – S-11.11 / P-258) TextBook-1: Chapter 9 (S-9.1 – S-9.7), Chapter 10 (S-10.1 – S-10.8)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Explain fundamentals of operating systems. (L2) 2. Illustrate database system applications and its design concepts. (L2) 3. Outline fundamentals of computer networks and its applications. (L2)
UNIT-V **8 Lectures**
Introduction to Artificial Intelligence & Machine Learning (AI&ML) and Data Science: Introduction to AI & ML, and Data Science, Use Cases in Business and Scope, Modelling Concepts, CRISP-DM Method
1. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)** 2. https://www.javatpoint.com/machine-learning-models **(Machine Learning)** 3. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)** 4. https://www.heavy.ai/learn/data-science **(Data Science)** 5. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**
Learning Outcomes:
At the end of the unit, the student will be able to
1. Outline the main methods and applications of artificial intelligence (AI) concepts. (L2) 2. Outline the main methods and applications of machine learning (ML) concepts. (L2) 3. Outline the main methods and applications of data science concepts. (L2)
Text Books:
1. Reema Thareja, Fundamentals of Computers, Second Edition, Oxford University Press, 2019. 2. E Balagurusamy, Fundamentals of Computers, Tata McGraw Hill Education Private Limited, 2009
Reference Books:
1. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, 4th Edition, McGraw-Hill, 2002. 2. Andrew S. Tanenbaum, Modern Operating Systems, 2nd edition, PHI, 1995.
Web References:
1. https://oer-studentresources.gesci.org/wp-content/courses/Computer/CS-F1-Introduction-to-computers/evolution_and_development_of_computers.html (Development of Computers) 2. https://www.builder.ai/glossary/app#:~:text=An%20app%20is%20a%20type,enhance%20productivity%20and%20streamline%20communication (Apps) 3. https://www.geeksforgeeks.org/what-is-an-operating-system/ (Operating System) 4. https://www.javatpoint.com/computer-network-tutorial (Computer Network) 5. https://community.aws/content/2drbbXokwrIXivItJ8ZeCk3gT5F/introduction-to-artificial-intelligence-and-machine-learning?lang=en **(Artificial Intelligence)** 6. https://www.javatpoint.com/machine-learning-models **(Machine Learning)** 7. https://www.techtarget.com/searchenterpriseai/feature/Top-12-machine-learning-use-cases-and-business-applications **(Machine Learning)** 8. https://www.heavy.ai/learn/data-science **(Data Science)** 9. https://www.sv-europe.com/crisp-dm-methodology/ **(CRISP-DM Method)**

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Annexure-III

Python Programming Lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Understand core programming basics and various Operators of Python	1,2
C02:	Implement programs using conditional statements and loops and strings.	3,4
C03:	Develop functions and strings to perform simple tasks.	5,6
C04:	Make use of various data structures like lists, tuples, sets and dictionaries.	7,8,9
C05:	Implement Python programs with files, Classes and objects	10,11

Module-1: Basics of Python

a) Write a program to display the statements.
b) Demonstrate about fundamental Data types in Python Programming. (i.e., int, float, complex, bool and string types)
c) Write a Python program to demonstrate various type conversion functions.
d) Write a program to demonstrate the inbuilt Math function

Module-2: Operators in Python

a) Demonstrate the following Operators in Python with suitable examples.
i) Arithmetic Operators ii) Relational Operators iii) Assignment Operators iv) Logical Operators v) Bit wise Operators vi) Ternary Operator vii) Membership Operators viii) Identity Operators

Module-3: Conditional Branching Statements

a) Write a program to check whether the given number is even or odd
b) Write a program to read marks of a student and display the corresponding grade
c) Write a program to find the largest element among the given numbers (multi-way if-elif-else statements.)

Module-4: Looping/Iterative Statements

a) Implement the following programs using while loop and for loop
i. Display all prime numbers up to n.
ii. Print the nth multiplication table.
iii. Print different patterns using loops:
b) Demonstrate the following control transfer statements in Python with suitable examples.
i. break ii. continue iii. Pass

Module-5: Functions

a) Write a function to find the multiplication of two numbers and demonstrate the usage of parameters and arguments of a function.
b) Write a program to define a function using default arguments.
c) Demonstrate lambda functions in Python with suitable example programs.

Module-6: Strings

a) Write a program to manage and analyse customer feedback using string operations include:
i. Create feedback with name, email, comment
ii. Collecting feedback.
iii. Normalizing feedback (e.g., removing extra spaces, converting to lowercase).
iv. Extracting key in formation (e.g., names, email addresses, and comments).

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v. Searching for keywords.
vi. Replacing certain words.
vii. Formatting feedback for display.
viii. Summarizing feedback.

Module-7: Lists:

a) Write a program to create a list and perform the following operations:
   i. + ii. * iii. slicing iv. del
b) Inventory Management: You have a list of items in your warehouse along with their quantities. Write a program to find out which items are low in stock (quantity less than 10). (use only comprehensions)
c) Employee Performance: You have a list of employee names and their corresponding performance scores. Write a program to sort the list based on the performance scores in descending order.
d) Sales Analysis: you have a list of sales figures for the past week. Write a program to find the total sales, the highest sale, the lowest sale, and the average sale.
e) Write a program to calculate the length of each element in a list using map function in python.

Module-8: Tuples

a) Write a program to return the top n's most frequently occurring chars and their respective counts. e.g. string=aaaaaabbbbcccc, n=2 should return [(a 6) (b 4)].
b) Write a program to create n iterables of varied sizes and group the values using zip function in python.
c) Student Information: Write a program to create a list of tuples where each tuple contains the student ID, name, and grade and find the student with the highest grade.
d) Course Enrolment: Write a program to create list of tuples where each tuple contains the course ID and the number of students enrolled and find the total number of students enrolled across all courses
e) Faculty Information: Write a program to create a list of tuples where each tuple contains the faculty ID, name, and department and find all faculty members in a given department.
f) Library Book Tracking: You have a list of tuples where each tuple contains the book ID, title, and number of copies available. Write a program to find all books with fewer than 5 copies available.

Module-9: Sets & Dictionaries

a) Write a program to create two sets and perform the following operations:
   i. Union ii. Intersection iii. Difference iv. Asymmetric Difference
b) Write a program to generate a dictionary that contains numbers (between 1 and n) in the form of (x,x*x).
c) Write a program to implement a shopping cart where you can add items with their prices and quantities, and then calculate the total cost.
d) Banking System: Write a program to create dictionary with customer name and balance and Retrieve the balance for a given customer, Deposit a specified amount into a customer's account, Withdraw a specified amount from a customer's account if sufficient balance is available, Transfer a specified amount from one customer's account to another's and Remove a customer from the bank's system.

Module-10: Classes and objects

a) Create a class to represent menu items in a restaurant with attributes like name, price, and category. Implement methods to display menu details and calculate the total cost of a selected list of items.

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b) Write a program to read 3 subject marks and display pass or failed using class and object.

Module-11: Files

a) Write a program to copy the contents of a file to another file.

b) Write a program to compute the number of characters, words and lines in a file.

Case Study:

Select any one application mentioned below

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Design a Python program to manage inventory, process orders, and handle customer information for an online store.
2. Create a library system to track books, manage member accounts, and handle book loans and returns.
3. Implement a personal finance management tool to track income, expenses, and generate monthly reports.
4. Create a system to manage student grades, calculate GPAs, and generate academic reports.
5. Develop a Python-based movie recommendation system using collaborative filtering.
6. Build a to-do list application that allows users to add, update, delete, and prioritize tasks..
7. Build a patient management system to handle appointments, medical records, and billing.
8. Design a digital menu for a restaurant with options for ordering, bill generation, and inventory management.
9. Implement a fitness tracking application to log workouts, track progress, and suggest exercise plans.
10. Build a secure online voting platform with user authentication and vote tallying.
11. Create a program to manage recipes, including ingredients, instructions, and nutritional information.
12. Build a travel planning application to manage itineraries, bookings, and budget tracking.
13. Develop an e-learning application with course creation, student enrolment, and progress tracking.
14. Build a car rental management system to handle bookings, returns, and vehicle maintenance.
15. Build a budget planning application to track expenses, income, and financial goals.
16. Develop a cryptocurrency tracking application to monitor prices, market trends, and portfolio performance.

Reference Books:

1. Python Programming: Using Problem Solving Approach by Reema Theraja , Oxford publications
2. Ashok N Kamthane, Amit Ashok Kamthane, *Programming and Problem Solving with Python*, 1st Edition, McGraw Hill Education (India), 2018.

Web References:

1. https://www.python.org/doc/
2. https://www.w3schools.com/python/python_reference.asp
3. https://thepythonguru.com/
4. https://www.programiz.com/python-programming

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Annexure-IV

Computer Engineering Workshop
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		Module No.
C01:	Identify the peripherals of a computer.	1
C02:	Demonstrate the installation process of operating systems like MS Windows, LINUX.	2
C03:	Make use of MS-Office suite that comprises of various applications to create documents, organizes & analyses data and captivating presentations.	3
C04:	Categorize various UNIX/LINUX Commands to work on a modern operating system	4
C05:	Experiment with GIT Commands and make use of LaTeX to prepare research articles.	5

Module-1: Hardware Concepts

1. Identify the peripherals of a computer, components in a CPU and its functions.
2. Draw the block diagram of the CPU along with the configuration of each peripheral.
3. Disassemble and assemble the PC back to working condition.

Module-2: Software Installations

1. Install operating systems like LINUX and MS windows on a personal computer.
2. The system should be configured as dual boot with both MS windows and LINUX.

Module-3: Office Suite

1. Creating Documents: Formatting Fonts/Texts, page layout, Applying Text effects, Character Spacing, Borders and Colours, Inserting Header and Footer, equation editor.
2. Spreadsheet Orientation: Accessing, overview of toolbars, saving spreadsheet files, Using help and resources. Creating a Scheduler, Gridlines, Format Cells, Summation, auto fill, Formatting Text, Renaming and Inserting worksheets, Hyper linking.
3. Excel Calculation: Calculating Average, Cell Referencing, Excel Formula, std. deviation, Charts, Count Function, Sorting, Conditional formatting, Excel Advanced-sumif, VLOOKUP, and Pivot Table.
4. Creating Power Point: Student should work on basic power point utilities and tools to create basic power point presentation. PPT Orientation, Slide Layouts, Inserting Text, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting Images, Tables and charts.
5. Software as a service (SaaS): Usage of online office suite.

Module-4: UNIX/LINUX Commands

1. Study and practice on file system, handling files with commands, syntax, usage, application.
2. Practice on vi editor.
3. Study and practice on shells/shell programming with relevant programming constructs, syntax, usage, application.

Module-5: GIT Commands and LaTeX

1. Installation of GIT, Branch in Git Basic GIT Commands.
2. Installation of LaTeX and preparing research articles by creating overleaf account.
3. Introduction to Scratch Programming - Introduction, Stage, Sprite, Script, Block Palette.

Reference Books:

1. IT Essentials: PC Hardware and Software Companion Guide, Third Edition, David Anfinson, Ken Quamme.
2. UNIX concepts and applications by Sumitabha Das, TMH Publications.
3. Shell programming by Yashwanth Kanetkar.

Web References:

1. https://www.javatpoint.com/

Annexure-V

Problem solving using C
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
C01:	Explain the basic constructs of C through the use of simple applications.
C02:	Demonstrate the utilization of arrays and strings in the development of C programs.
C03:	Utilize functions and pointers to construct various applications in C.
C04:	Apply concepts of structures and unions to build and implement C applications.
C05:	Develop applications using sequential and random-access file processing techniques.

UNIT-I	10 Lectures
Introduction to C: Basic structure of C program, Constants, Variables and data types, Operators and Expressions, Arithmetic Precedence and associativity, Type Conversions. Managing Input and Output Operations Formatted Input, Formatted Output.	
TextBook-1: Chapter 2 (S-2.1 – S-2.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline the Basic Structure and Components of C Programs. (L2) 2. Demonstrate Variables, Data Types, Operators, and Expressions. (L2) 3. Illustrate Input and Output Operations. (L2)	

UNIT-II	12 Lectures
Decision Making, Branching, Looping: Decision making with if statement, Simple if statement, The if...else statement, Nesting of if...else statement, the else... if ladder, switch statement, the (? :) operator, the goto statement, The while statement, the do statement, the for statement, Jumps in Loops. **Arrays & Strings:** One, Two-dimensional Arrays, multi-dimensional Arrays, Character Arrays. Declaration and Initialization of Strings, reading and writing of strings, string handling functions.	
TextBook-1: Chapter 3 (S-3.1 – S-3.8), TextBook-2:Chapter 13,14,15,16(PP:215-283)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Classify Decision Making and Branching (L2) 2. Interpretation of Looping Constructs (L2) 3. Summarize Arrays and Strings (L2)	

UNIT-III	10 Lectures
Function and Dynamic Memory Allocation: Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, passing arrays to functions, recursion. Introduction to Pointers, Pointer Arithmetic, Pointers for Inter-Function Communication, passing pointers to functions, call by reference, Dynamic Memory Allocation.	
TextBook-1: Chapter 4 (S-4.1 – S-4.11), Chapter 5 (S-5.1 – S-5.12)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Utilize Functions (Understand and Implement Functions, Utilize Various Function Types, Advanced Function Techniques) (L3) 2. Experiment with Pointers (Basic Pointer Operations, Pointers and Data Structures) (L3) 3. Explain Advanced Pointer Usage (Pointers in Functions, Pointers to Complex Data Types) (L2)	

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UNIT-IV	10 Lectures
Structure and Unions: Defining a structure and union, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, arrays of structures, arrays within structures, structures within structures, definition and usage of union, structures and unions using functions, size of structures and bit-fields. The Type Definition (Type def), Enumerated Types.	
TextBook-1: Chapter 6 (S-6.1 – S-6.9)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Define Structures and Build C programs using Structures. (L3) 2. Explain Complex Data Structures. (L2) 3. Explain Unions and Bit-Fields. (L2)	

UNIT-V	8 Lectures
File handling: Introduction to Files, Modes of File operations, Text and Binary Files, Defining and opening a file, closing a file, Input/ Output operations on files, Error handling during I/O operations, random access to files and Command Line Arguments, user defined header files.	
TextBook-2: Chapter 19 (PP:325-348)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Outline File Operations. (L2) 2. Summarize Error Handling and Random Access. (L2) 3. Utilize Command Line Arguments. (L3)	

Text Books:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.
2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978-93-8728-449-4.

Reference Books:

1. N. B. Venkateswarlu, E. V. Prasad, "C and Data Structures", 1st Edition, S. Chand Publishing, 2010, ISBN: 978-93-525-3356-5.
2. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.
3. Jacqueline A. Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9.
4. E. Balagurusamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.

Web References (e-Resources):

1. https://nptel.ac.in/courses/106105171
2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/
3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview
4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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Annexure-VI

Web Technologies Fundamentals lab
I Year B. Tech. II semester
(Common to CSE, CSE (AI&ML), IT Branches)

Course Code:	L	T	P	C
	0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to		Module No.
C01:	**Develop** professional web pages for an application using HTML elements like lists, navigations, tables, various form elements, and embedded media, including images, audio, and video.	1,2
C02:	**Build** inline, internal, and external CSS to enhance the visual presentation of web pages, including layout, fonts, colors, and backgrounds.	3,4
C03:	**Utilize** JavaScript to develop interactive HTML web pages and validate form data.	5,6,7
C04:	**Apply** JavaScript functions and events to enhance user interaction and provide a dynamic user experience.	8,9
C05:	**Experiment with** XML files to store and display structured data and write a DTD to perform well-formed and validated XML documents.	10

Module-1:
Design a web page using Basic HTML Elements – Structure of HTML, Headings, Paragraph, Division and Span, List, Link, Image, Table, Form, Input, Iframe, and Media Elements.

Module-2:
Design the following static web pages required for an online book store website.

(a) HOME PAGE:
i) The static home page must contain three frames.
Top frame: Logo and the college name and links to the Home page, Login page, Registration page, Catalogue page, and Cart page (the description of these pages will be given below). Left frame: At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link "CSE" the catalogue for CSE Books should be displayed in the Right frame. Right frame: The pages to the links in the left frame must be loaded here. Initially, this page contains a description of the website.
ii) Add media content in a frame using audio, video, and iframe elements to the Home page of an online book store website. The page should include:
1) Audio Element: An audio player to play background music or a podcast.
2) Video Element: A video player to display a promotional video about the book store.
3) Iframe Element: An iframe to embed a Google Maps location of the book store.

(b) LOGIN PAGE

(c) CATALOGUE PAGE: The catalogue page should contain the details of all the books available on the website in a table: The details should contain the following:
i) Snapshot of Cover Page. ii)Author Name. iii)Publisher.
iv) Price. v)Add to cart button.

(d) REGISTRATION PAGE: Create a "registration form "with the following fields
i) Username: Text input field
ii) Password: Password input field
iii) Email: Email input field
iv) Phone number: Text input field
v) Birthday: Date picker
vi) Favorite Color: Color picker
vii) Gender: Select an element with options (Male, Female, Other).

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Module-3:
Develop and demonstrate the usage of inline, internal, and external style sheets using CSS.

Module-4:
Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (colour, bold, and font size).

Module-5:
Develop and demonstrate JavaScript with POP-UP boxes and functions for the following problems:

a) Input: Click on the Display Date button using onclick( ) function
   Output: Display the date in the textbox.
b) Input: A number n obtained using prompt
   Output: Factorial of n number using alert.
c) Input: A number n obtained using prompt
   Output: A multiplication table of numbers from 1 to 10 of n using alert.
d) Input: A number n obtained using prompt and add another number using confirm
   Output: Sum of the entire n numbers using alert.

Module-6:
Write JavaScript to validate the following fields of the Registration page.

(a) First Name (Name should contain alphabets and the length should not be less than 6 characters).
(b) Password (Password should not be less than 6 characters in length).
(c) E-mail ID (should not contain any invalid and must follow the standard pattern name@domain.com)
(d) Mobile Number (The phone number should contain 10 digits only).
(e) Last Name and Address (should not be Empty).

Module-7:
Write an HTML page including any required JavaScript that takes a number from the text field in the range of 0 to 999 and shows it in words. It should not accept four and above digits, alphabets, and special characters.

Module-8:
Create an 'Employee' class extending from a base class 'Person'. The task should include:

(a) Create a class 'Person' with attributes 'name' and 'age', and add a constructor to initialize these values.
(b) Create a class 'Employee' that extends 'Person' and includes an additional attribute 'role,' with a constructor to initialize 'name,' 'age,' and 'role.'

Module-9:
Create an array of objects representing book details in an online book store. Each object should include the book title, author, genre, and price. Render the details of the books on the page using this array, demonstrating array creation, accessing array elements, and applying array methods.

Module-10:
Write an XML file which will display the Book information which includes the following:

a) Title of the Book b)Author Name c)ISBN Name
d)Publisher Name e)Edition f)Price

Write a Document Type Definition(DTD) to validate the above XML file.

Case Study:
Select any one practical applications mentioned below.
Note: A report has to be submitted by every student at the end of the semester, including design, coding, output, etc.

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1. **Portfolio Website:** Create a personal portfolio website showcasing projects, skills, and experience using HTML, CSS, and JavaScript for interactive features.
2. **Responsive Blog:** Design a responsive blog template with multiple pages, utilizing HTML for structure, CSS for styling, and JavaScript for dynamic content.
3. **E-commerce Site:** Develop a basic e-commerce website with product listings, shopping cart functionality, and user authentication using HTML, CSS, and JavaScript.
4. **Quiz Game:** Create an interactive quiz game with multiple-choice questions, scoring, and feedback using HTML, CSS, and JavaScript for functionality.
5. **To-Do List:** Develop a to-do list application allowing users to add, edit, and delete tasks, with data persistence using JavaScript local storage.
6. **Interactive Resume:** Design a dynamic resume with sections for education, experience, and skills, including interactive elements powered by JavaScript.
7. **Photo Gallery:** Create an interactive photo gallery with image lightbox effects, using CSS for styling and JavaScript for functionality.
8. **Recipe Finder:** Build a recipe search application that fetches and displays recipes from an API, using JavaScript for dynamic content updates.
9. **Expense Tracker:** Develop an expense tracker app to log and categorize expenses, with data visualization using charts and graphs created with JavaScript.
10. **Event Countdown:** Create a countdown timer for upcoming events with HTML structure, CSS styling, and JavaScript for the timer logic.
11. **Contact Form:** Create a contact form with validation and submission handling using JavaScript, styled with CSS to match the site's theme.
12. **Memory Game:** Develop a memory matching game with cards that flip and match, using CSS for design and JavaScript for game logic.
13. **Interactive Story:** Design an interactive storytelling website where users make choices that affect the narrative, using JavaScript for decision logic.
14. **Fitness Tracker:** Build a fitness tracker to log workouts and track progress, with dynamic charts and data visualization using JavaScript.
15. **Task Manager:** Create a task manager application with features for adding, editing, and prioritizing tasks, using JavaScript for interactivity.
16. **Interactive Timelines:** Design interactive timelines to visualize historical events or project milestones, using HTML, CSS, and JavaScript.
17. **Product Landing Page:** Develop a product landing page with animations and interactive elements, using CSS for styling and JavaScript for effects.
18. **Calculator:** Build a fully functional calculator with basic arithmetic operations, using JavaScript for logic and CSS for design.
19. **Job Board:** Develop a job board where users can post and search for jobs, with dynamic content updates using JavaScript.
20. **Interactive Form:** Create a multi-step interactive form with validation and progress indicators, using JavaScript for form handling and CSS for styling.

References:

1. Internet and Web Technologies by Raj Kamal, Tata McGraw-Hill.
2. Programming the World Wide Web by Robert W. Sebesta, Pearson Education.
3. An Introduction to Web Design and Programming by Paul S Wang, Sanda S Katila, 1st Edition, Cengage Learning.

Web Links:

1. https://onlinecourses.swayam2.ac.in/nou24_cs18/preview
2. https://infyspringboard.onwingspan.com/en/app/toc/lex_17739732834840810000_shared/overview (HTML5)
3. https://infyspringboard.onwingspan.com/en/app/toc/lex_18109698366332810000_shared/overview (Javascript)

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Annexure-VII

Problem Solving using C Lab
I Year B. Tech. I semester
(Common to CSE, CSE (AI&ML), IT, ECE, and EEE (I-II) Branches)

Course Code:

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Module No.**
C01:	Outline the use of basic constructs of C for simple applications.	**1,2,3**
C02:	Develop C programs for simple applications using Arrays and Strings.	**4**
C03:	Illustrate concepts such as functions, recursion, and pointers with suitable examples.	**5,6,7**
C04:	Build C programs involving Structures and Unions.	**8**
C05:	Develop applications using sequential and random-access file processing.	**9**

Module-1: I/O and Data Types

1. Write a C program to demonstrate Format Specifiers and Input/Output Statements.
2. Write a C program to demonstrate various Data Types.

Module-2: Operators and Expressions

1. Write a C program to demonstrate various Operators including Bitwise Operator.
2. Write a C program to demonstrate Arithmetic Expressions and Type Casting.

Module-3: Control Statements

1. Write a C program to demonstrate decision making statements.
2. Write a C program to demonstrate iterative statements.
3. Write a C program to demonstrate break and continue Statement.

Module-4: Arrays

1. Write a C program to demonstrate arrays (one-dimensional and two-dimensional).
2. Write a C program to demonstrate string handling functions using built-in and user defined functions.

Module-5: Functions

1. Write a C program to demonstrate user defined functions.
2. Write a C program to demonstrate nested functions.

Module-6: Pointers

1. Write a C program to demonstrate arithmetic expressions using pointers.
2. Write a C program to demonstrate Pointers to Arrays.
3. Write a C program to demonstrate manipulate strings using pointers.
4. Write a C program to demonstrate dynamic memory allocation.

Module-7: Advanced Pointers

1. Write a C program to demonstrate Call-by-value, Call-by-reference.
2. Write a C program to demonstrate recursive function.
3. Write a C program to demonstrate Functions with Storage Classes (Static).

Module-8: Structures

1. Write a C program to demonstrate structures.
2. Write a C program to demonstrate structures within structures.
3. Write a C program to demonstrate pointer to a structure.
4. Write a C program to demonstrate unions.

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Module-9: Files

1. Write a C program to demonstrate I/O operations on files.
2. Write a C program to demonstrate concatenating two files.
3. Write a C program to demonstrate copy content of one file to another file.

Case Study:

Select any one application mentioned below.

Note: A report has to be submitted by every student at the end of the semester that includes design, coding, output, etc.

1. Develop a library management system to add, delete, and search for books efficiently.
2. Develop an ATM system to check balance, deposit money, and withdraw funds.
3. Develop a C program to calculate salary increments using a lookup table which stores the percentage of increment based on the current salary.
4. Develop a voting system where users can vote for candidates and view results.
5. Develop a basic calculator for arithmetic operations like addition, subtraction, multiplication, and division.
6. Develop a contact management system to store and manage details like name, phone number, and email.
7. Develop a banking system supporting multiple users for account management and transactions.
8. Develop a C program to calculate SGPA and CGPA based on students' marks across semesters.
9. Develop a registration page in C using file handling to securely store usernames and passwords.
10. Develop an encryption and decryption algorithm to securely transform and restore data by using the GNU C Library: crypt.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.
2. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN: 978- 93-8728-449-4.
3. E. Balaguruswamy, "Programming in ANSI C", 8th Edition, 2019, McGraw Hill Education, ISBN: 978-93-5316-513-0.
4. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6.
5. N.B. Venkateswarulu, "C programming", 1st Edition, S.Chand Publishing, 2017, ISBN: 978-93-525-3356-5.
6. Jacqueline A Jones and Keith Harrow, "Problem Solving with C", Pearson Education. ISBN: 978-93-325-3800-9.

Web References (e-Resources):

1. https://nptel.ac.in/courses/106105171
2. https://ocw.mit.edu/courses/6-087-practical-programming-in-c-january-iap-2010/pages/lecture-notes/
3. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_shared/overview
4. https://cse02-iiith.vlabs.ac.in/List%20of%20experiments.html

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ANNEXURE - I

ELECTRONIC DEVICES AND CIRCUITS
I Year B. Tech I semester
(Branch: ECE)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Outline the concepts of basic semiconductor devices(L2)
CO2:	Understand the characteristics of different semiconductor diodes and their applications(L2)
CO3:	Analyse the operation of BJT under different biasing methods(L4)
CO4:	Analyse BJT amplifier circuits with small signal low frequency model(L4)
CO5:	Understand the construction and working of FET(L2)

UNIT-I	12 Lectures
Energy band theory of solids and transport phenomenon in semiconductors: Energy Band Theory of Solids, Insulators, Semiconductors, Metals, Intrinsic and Extrinsic Semiconductors, donor and acceptor impurities, band diagrams, mass action law, intrinsic carrier concentration, continuity equation, Hall effect, Carrier Mobility, Conductivity, Drift and Diffusion currents. Band structure of PN Junction, PN diode biasing, diode current equation, Volt – Amp. Characteristics, Temperature Dependence, Transition and Diffusion Capacitance of PN Junction.	
Textbook 1: Chapter -1 Section 1.5 - 1.8 Textbook 1: Chapter- 2 Section 2.1 - 2.3 & 2.6 – 2.10 Textbook 1: Chapter -19 Section 19.5 Textbook 1: Chapter -3 Section 3.1 - 3.9 Textbook 1: Chapter -19 Section 19.10	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.Explain the energy band theory of solids (insulators, semiconductors, and metals) based on their band structures(L2) 2.Describe the transport phenomena in semiconductors.(L2) 3.Understand the band structure representation of PN junction, interpret the Volt-Ampere characteristics along with the temperature effects.(L2)	

UNIT-II	12 Lectures
Rectifiers and special diodes: Half-wave, Full-wave, and Bridge Rectifiers with and without Filters: Series inductor filter and shunt capacitor filter, Ripple Factor and Regulation Characteristics. Zener and Avalanche Breakdowns, Characteristics of Zener diode, voltage regulator, Tunnel Diode, Varactor Diode, Schottky Barrier Diode	

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Textbook 3: Chapter-8 Section 8.2-8.6, Chapter-5 Section 5.3, 5.4, 5.6, 5.7
Learning Outcomes:
At the end of the unit, the student will be able to
1. Describe the operation of rectifiers, and evaluate their performance metrics like ripple factor and regulation characteristics.(L2) 2. Explain the working principles of special diodes such as Zener diode, tunnel diodes, varactor diodes, and Schottky barrier diodes(L2)

UNIT-III	12 Lectures
Transistor Characteristics and Transistor Biasing: Operation of NPN and PNP junction Transistor, Current components in a transistor, Input and Output Characteristics of CB, CE, CC, relation between α, β, γ, typical transistor junction voltages, Comparison of CE, CB, and CC Configurations. Junction Biasing for Saturation, Cutoff and Active Region, Biasing circuits analysis, fixed bias, collector to base bias, emitter bias, voltage divider bias, thermal runaway, thermal stability, stability factors.	
Textbook 1: Chapter-5 Section 5.4 - 5.11 Textbook 3: Chapter-10 Section 10.1-10.8	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Describe the characteristics of transistor in CE, CB, and CC configurations.(L2) 2. Understand the principals of transistor biasing and stabilization(L2) 3. Analyse the transistor operation with different biasing techniques(L4)	

UNIT-IV	12 Lectures
Transistor at Low Frequencies: Small Signal: Transistor as an Amplifier, h – parameter model, Analysis of Transistor Amplifier Circuits using h –parameters, CB, CE and CC Amplifier configurations and performance factors, effects of Bypass and Coupling Capacitors. Multistage transistor Amplifier, RC Coupled Amplifier, Frequency Response and band width, Emitter – Follower	
Textbook 3: Chapter -11 Section 11.9 - 11.14 & 11.17 - 11.20	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Represent transistor with its equivalent h parameter model(L2) 2. Analyse the performance of transistor amplifiers with h Models(L4)	

UNIT-V	12 Lectures
Field Effect Transistors: Construction of JFET and its drain, transfer characteristics, pinch off Voltage, Drain Saturation Current, Construction of MOSFET –Enhancement and Depletion Modes, drain and transfer characteristics JFET Configurations, Common Source JFET biasing, fixed bias, self-bias, voltage divider bias.	

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Textbook 2: Chapter 5 Section 5.1 - 5.3, 5.7, 5.8, Chapter 6 Section 6.2, 6.3, 6.4
Learning Outcomes:
At the end of the unit, the student will be able to
1. Comprehend the characteristics of BJT and FET(L2) 2. Explain the construction of JFET and MoSFETs (L2) 3. Describe the characteristics of JFET and MoSFET (L2) 4. Understand various biasing methods for FETs (L2)

Text Books:
1.Jacob Millman, Christos C. Halkias, Integrated Electronics: Analog and Digital Circuits and Systems, McGraw-Hill. 2.Robert Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, 7th Edition, Prentice Hall,1998 3.Sanjeev Gupta, Electronic Devices and Circuits, 2nd Edition, Dhanpat Rai Publications,2005.
Reference Books:
1. Thomas L. Floyd, Electronic Devices, 9th Edition, Prentice Hall, 2012. 2. B. V. Rao and K. Raja Rajeswari, Electronic Devices and Circuits 2nd Edition, Pearson Education,2010 3.Electronic Devices and Circuits, G. S. N. Raju, I. K. International Publications, New Delhi, 2006. 4. David A. Bell, Electronic Devices and Circuits, 5th Edition, Oxford University Press, 2008
Web References:
1. https://onlinecourses.nptel.ac.in/noc21_ee80/preview 2. https://be-iitkgp.vlabs.ac.in/

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ANNEXURE - II

ELECTRONIC DEVICES AND CIRCUITS LAB

I Year B. Tech I semester

(Branch: ECE)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course the student shall be able to:

CO1: Understand the operation of CRO for signal measurements (L2)
CO2: Analyze the characteristics of P-N junction diode and special diodes (L4)
CO3: Build the rectifier circuits and regulator circuits using diode (L3)
CO4: Analyze the operation and characteristics of BJT and FET (L4)
CO5: Construct and analyze the performance of BJT and FET amplifier circuits (L4)

List of Experiments:

1. Study of CRO and Applications.
2. Characteristics of PN Junction Diode
3. Characteristics of Zener Diode and Zener Voltage regulator.
4. Characteristics of Photo diode
5. Half-wave and full-wave rectifiers with diodes
6. Half-wave and full-wave rectifiers with capacitor filter
7. Characteristics of BJT CE configuration, h-parameters
8. Characteristics of BJT CB configuration, h-parameters
9. Voltage gain, input impedance and output impedance of emitter follower
10. Drain and transfer characteristics of JFET
11. Frequency response of CE amplifier
12. Demonstration of virtual tool for simulation of electronic device characteristics.

Reference Books:

1. Thomas L.Floyd, "Laboratory Exercises for Electronic Devices", 9th ed., Prentice Hall.
2. Robert Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, 7th ed., Prentice Hall.
3. David A. Bell, "Laboratory manual for electronic devices and circuits", 4th ed., 2001.

Web References:

1. https://be-iitkgp.vlabs.ac.in/
2. https://www.multisim.com/content/t6fPJvwcHYMD4qzJSYpGHQ/edc-lab1/

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ANNEXURE - III

BASIC ELECTRONICS ENGINEERING
I Year B. Tech I semester
(Branch: EEE)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Brief evolution and impact of electronics.(L2)
CO2:	Comprehend the characteristics of semiconductors, devices, and their applications.(L2)
CO3:	Analyze the transistor operation with different biasing techniques(L4)
CO4:	Understand the characteristics of FET(L2)
CO5:	Outline the basic concepts and applications of op-amps(L2)

UNIT-I	12 Lectures
Introduction: Evolution and Impact of Electronics in industries and in society, Familiarization of Resistors, Capacitors, Inductors, Transformers and Cathode ray oscilloscope.	
TB3: Chapter -1, RB1: Chapter -1	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.Explain the importance of Electronics. (L2) 2.Illustrate the basic elements of Electronics. (L1) 3.Understand the basic construction and working operation of CRO. (L1)	

UNIT-II	12 Lectures
Semiconductor Diodes: Semiconductor materials- intrinsic and extrinsic types, Ideal Diode, Terminal characteristics of diodes: p-n junction under open circuit condition p-n junction under forward bias and reverse bias conditions p-n junction in breakdown region, Diode small signal model, Zener diode and applications, Rectifier Circuits.	
TB1: Chapter -4,5,6	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Explain the energy band theory of solids (insulators, semiconductors, and metals) based on their band structures.(L1) 2. Describe the transport phenomena in semiconductors(L1) 3. Understand the band structure representation of PN junction, interpret the Volt-Ampere characteristics along with the temperature effects(L2)	

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UNIT-III	12 Lectures
Bipolar Junction Transistors (BJTs) Physical structure and operation modes, Active region operation of transistor, D.C. analysis of transistor circuits, Transistor as an amplifier, Transistor as a switch: cut-off and saturation modes Biasing the BJT: fixed bias, emitter feedback bias, collector feedback bias Basic BJT amplifier configuration: common emitter, common base and common collector amplifiers.	
TB1: Chapter -7, Chapter -8	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.List the various amplifier configurations. (L1) 2.Interpret the frequency response and relationship between gain and bandwidth in amplifiers. (L2) 3.Design and analyze different amplifier configurations. (L4)	

UNIT-IV	12 Lectures
Field Effect Transistor (FET) Junction Field-Effect Transistor (JFET), structure and physical operation, current-voltage characteristics, Enhance type MOSFET, Depletion-type MOSFET, D.C. operation of MOSFET circuits, Biasing in MOSFET amplifiers, Basic JFET amplifier configuration: common source, common gate and common drain types.	
TB1: Chapter -12	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Comprehend the characteristics of BJT and FET(L1) 2. Explain the construction of JFET and MOSFETs(L2) 3. Describe the characteristics of JFET and MOSFET(L2) 4. Understand various biasing methods for FETs(L2)	

UNIT-V	12 Lectures
Operation Amplifier (Op-amps) Ideal Op-amp, Differential amplifier: differential and common mode operation common mode rejection ratio (CMRR), Practical op-amp circuits: inverting amplifier, non -inverting amplifier, weighted summer, integrator, differentiator.	
RB 3: Chapter -1,2	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.Understand the basic parameters of Op-amp. (L1) 2.Illustrate the applications of Operation Amplifiers. (L2)	

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Text Books:
1.Integrated Electronics, Jacob Millman and C.C.Halkias, McGraw Hill, 1972. 2.Bell, D. A., Electronic Devices and Circuits, Oxford University Press.2001
Reference Books:
1. Electronic Devices and Circuits by Salivahanan, N.Suresh Kumar andA.Vallava Raj TMH, 2nd Edition, 1998. 2. Electronic Devices and Circuits – G.K.Mithal, Khanna Publishers, 23rd Edition, 2004. 3. Linear integrated circuit 2nd edition D. Roy Choudhary, 2017 4. Principles of Electronics, V.K.Mehta, S.Chand Publications,2022
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1.https://onlinecourses.nptel.ac.in/noc24_ee143/preview 2.https://onlinecourses.nptel.ac.in/noc24_ee73/preview

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ANNEXURE - IV

ELEMENTS OF ELECTRONICS ENGINEERING

I Year B. Tech I semester/II Semester
(Common to branches: CSM,CSE,IT)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Outline the concepts of semiconductor devices(L2)
CO2:	Understand the characteristics of different semiconductor diodes and their applications(L2)
CO3:	Apply various biasing techniques for design of BJT circuits(L3)
CO4:	Apply hybrid models to understand the operation of BJT amplifier(L3)
CO5:	Understand the characteristics of FET(L2)

UNIT-I	10 Lectures
Introduction to Electronics and Semiconductors: Energy band theory, Conduction in Insulators, Semiconductors and metals, Classification of semiconductors, Properties of intrinsic and extrinsic semiconductor, Carrier concentration in an intrinsic semiconductor, Drift, and diffusion currents.	
Textbook 1: Chapter -1 Section 1.6, 1.7, 1.8 Textbook 1 Chapter -2 Section 2.2, 2.3, 2.9 Textbook 1 Chapter -19 Section 19.5	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Explain the energy band theory of solids (insulators, semiconductors, and metals) based on their band structures(L2) 2. Describe the transport phenomena in semiconductors. (L2)	

UNIT-II	14 Lectures
Semi-Conductor Diode: Theory of PN junction, Open circuited PN junction, V-I characteristics of a PN diode, Diode current equation, basics on junction capacitance, Break down in PN diode, Applications of PN diodes. Zener diode, Zener regulator, Tunnel diode, Schottky diode. **Rectifying circuits:** Half wave and full wave rectifiers, Bridge rectifiers, Efficiency, Ripple and regulation of each rectifier, Capacitor filters.	
Textbook 2: Chapter 4 Section 4.1 – 4.5, 4.8 Textbook 2: Chapter 5 Section 5.3, 5.4, 5.7 Textbook 2: Chapter 8 Section 8.2 – 8.4, 8.6	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Explain the formation of PN junction and represent the band structure, interpret the	

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Volt-ampere characteristics (L2) 2. Describe the operation of rectifiers, and evaluate their performance metrics like ripple factor and regulation characteristics(L2) 3. Explain the working principles of special diodes such as Zener diode, tunnel diodes and Schottky barrier diodes.(L2)

UNIT-III	14 Lectures
Bipolar Junction Transistor: Introduction, construction, Operation of PNP and NPN Transistors, transistor configurations, Input and Output Characteristics of CE configuration, Comparison of CE, CB, and CC Configurations. **Transistor Biasing and thermal stabilization:** Junction Biasing for Saturation, Cutoff and Active Region, Biasing circuits analysis, fixed bias, collector to base bias, emitter bias, voltage divider bias, thermal runaway.	
Textbook 2: Chapter 6 Section 6.1 - 6.3, 6.6-6.9, 6.11, Chapter 10 Section 10.4 - 10.8	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Describe the characteristics of transistor in CE, CB, and CC configurations.(L2) 2. Understand the principals of transistor biasing and compensation methods(L2) 3. Identify the charectistics of different transistor biasing techniques(L3)	

UNIT-IV	10 Lectures
Transistor Amplifiers: CE, CB, CC amplifier configurations –Multistage amplifier – A Two Stage RC coupled amplifier – frequency response curve and bandwidth.	
Textbook 2: Chapter -11 Section 11.9, 11.11, 11.12, 11.16, 11.17, 11.20	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Represent transistor with its equivalent h parameter model (L2) 2. Apply hybrid models to obtain the performance of transistor amplifiers(L3)	

UNIT-V	12 Lectures
Field Effect Transistors: Construction of JFET and its drain, transfer characteristics, pinch off Voltage, Drain Saturation Current, parameters of JFET, Construction of MOSFET – Enhancement and Depletion Modes, drain and transfer characteristics.	
Textbook 2: Chapter -7 Section 7.1 – 7.5, 7.11, 7.12	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Comprehend the characteristics of BJT and FET(L2) 2. Explain the construction of JFET and MoSFETs (L2) 3. Describe the characteristics of JFET and MoSFET (L2)	

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Text Books:
1.Jacob Millman, Christos C. Halkias, Integrated Electronics: Analog and Digital Circuits and Systems, McGRAW-HILL. 1972 2.Sanjeev Gupta, Electronic Devices and Circuits, 2nd Edition, Dhanpat Rai Publications,2005.
Reference Books:
1.Thomas L.Floyd, Electronic Devices, 9th Edition , Prentice Hall, 2012. 2.B. V. Rao and K. Raja Rajeswari, Electronic Devices and Circuits 2nd Edition, Pearson Education.,2010. 3.David A. Bell, Electronic Devices and Circuits, 5th Edition, Oxford University Press, 2008 4.Robert Boylestad, Louis Nashelsky, Electronic Devices and Circuit Theory, 7th Edition, Prentice Hall,1998
Web References:
1. https://onlinecourses.nptel.ac.in/noc21_ee80/preview 2. https://be-iitkgp.vlabs.ac.in/

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ANNEXURE - V

DIGITAL LOGIC DESIGN

I Year B. Tech. II semester

(Common to the branches: ECE,CSE,CSM,IT)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Represent different number systems & binary codes and perform conversions & binary arithmetic (L2)
CO2:	Apply different simplification methods for minimizing Boolean functions. (L3)
CO3:	Model various combinational circuits using gates and PLD's. (L3)
CO4:	Outline the concept of latches and flip-flops. Construct sequential logic circuits like counters and registers using flip-flops. (L3)
CO5:	Categorize Mealy & Moore models and Design Synchronous Sequential machines. (L3)

UNIT-I	10 Lectures
Number systems: Number systems, Base conversion methods, Representation of signed numbers and Binary Arithmetic. **Codes:** Binary, Non binary, Decimal, Alphanumeric, XS-3, Gray. Error detecting and error correcting codes. **Logic Gates:** AND, OR, NOT, NAND, NOR, XOR, EX-NOR.	
(TB1: Chapter1, Chapter 2: section 2.1 to 2.8)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.Understand the advantages of using different number systems. (L2) 2.Describe the usefulness of different binary codes. (L2) 3.Summarize the error detection and correction concepts. (L2)	
UNIT-II	10 Lectures
Minimization of Boolean Functions: Fundamental postulates of Boolean algebra, Basic theorems, Simplification of Boolean equations, Min terms, Max terms, Standard form of Boolean functions. Simplification of functions using Karnaugh map method (2,3,4,5 variables) Don't care conditions, AOI implementation, NAND and NOR Realizations.	
(TB1: Chapter 2: Sections 2.11 to 2.19,2.21,2.22,2.23, Chapter 3: sections 3.2 to 3.6,3.7)	

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Learning Outcomes:
At the end of the unit, the student will be able to
1.Apply basic laws and theorems to simplify Boolean expressions and construct logic circuit. (L3) 2.Understand concepts of sum-of-products and product-of-sums representations. (L2) 3.Apply K- Map for minimizing logic functions and build logic circuits. (L3)
UNIT-III 14 Lectures
Combinational Logic-Circuit Design-I: Logic design of combinational circuits: Adders and Subtractors: Binary, BCD, Excess-3 and Look–ahead-carry adder, Code converters, Multiplexers, De multiplexers, Encoders, Decoders and priority encoders, Realization of Boolean functions using multiplexers and Decoders. **Combinational Logic-Circuit Design-II:** Design of 4-bit comparator, Parity checker/Generator. Basics of PLDs: Basic structure of PROM, PAL, PLA, Realization of Boolean functions with PLDs and their merits and demerits.
(TB1: Chapter 4: section 4.1 to 4.27, Chapter 5 Sections 5.1 to 5.11)
Learning Outcomes:
At the end of the unit, the student will be able to
1.Apply Boolean algebra for describing combinational digital circuits (L3) 2.Describe standard combinational circuits such as adders, subtractors, comparators etc. (L2) 3.Develop the digital circuits using PLDs (L3)
UNIT-IV 12 Lectures
Sequential circuits: Classification of sequential circuits, SR-latch, Gated latches, Flip flops: RS, JK, D, T and Master slave flip flops, Excitation tables, flip flop conversion from one type to another. Design of counters: Ripple counters, Synchronous counters, asynchronous counters, up-down counters, Johnson counter, ring counter. Design of registers: Buffer registers, Shift registers, Bi directional shift registers, Universal shift register.
(TB1: Chapter 6)
Learning Outcomes:
At the end of the unit, the student will be able to
1.Understand the principle of Flip-Flops and Latches. (L2) 2.Summarize the concepts of Shift Registers and Counters. (L2) 3.Construct different sequential logic circuits using Flipflops. (L3)
UNIT-V 10 Lectures
Analysis and Design of Synchronous Sequential Machine: Moore and Mealy machine models, State Equations, State Table, State diagram, State reduction & assignment, Synthesis of synchronous sequential circuits- sequence detector and generator.
(TB1: Chapter 7 Sections 7.1 to 7.5)

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Learning Outcomes:
At the end of the unit, the student will be able to
1.Understand Moore and Mealy machine models (L2) 2.Discuss the concepts of State assignment & Reduction (L2) 3.Analyse the design and synthesis of synchronous sequential circuits (L3)
Text Books:
1.A. Anand Kumar, Switching Theory and Logic Design. PHI, 2014. 2.M. Morris Mano and Michael D. Ciletti, Digital Design, 4th Edition, Pearson Education, 2013.
Reference Books:
1.Foundation of Switching theory and Logic Design, A k Singh, New age International Publishers,2008 2.Modern Digital Electronics, R P Jain, 4th Edition, Tata McGraw Hill Education Pvt. Ltd, New Delhi,2010 3.Fundamentals of Logic Design, Charles. R. Roth, Thomson Publications,5th edition,2004
Web References:
1.https://nptel.ac.in/courses/108105132 (Digital Electronic Circuits) 2.https://onlinecourses.nptel.ac.in/noc24_ee147/preview (Digital Circuits) 3.https://nptel.ac.in/courses/117105080 (Digital Systems Design) 4.https://onlinecourses.swayam2.ac.in/nou24_ec07/preview (Digital electronic and System design)

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ANNEXURE - VI

ELECTRONIC CIRCUIT ANALYSIS

I Year B. Tech. II semester

(Branch: ECE)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Formulate small signal high frequency amplifiers using BJT and FET(L3)
CO2:	Classify multistage amplifiers(L2)
CO3:	Design different types of feedback amplifiers(L3)
CO4:	Interpret the condition for oscillations in oscillators and design different types of oscillators (L3)
CO5:	Analyse and Examine different types of power amplifiers and Tuned amplifiers ,compare them in terms of efficiency(L4)

UNIT-I	12 Lectures
Small Signal High Frequency Transistor Amplifier models: BJT: Transistor at high frequencies, Hybrid- π common emitter transistor model, Hybrid-π conductance's, Hybrid-π capacitances, validity of Hybrid-π model, determination of high frequency parameters in terms of low frequency parameters, Millers Theorem and its Dual, CE short circuit current gain, current gain with resistive load, cut-off frequencies, frequency response and gain bandwidth product. FET: Analysis of common source and common drain amplifier circuits at high frequencies.	
TB1: Chapter -11, Chapter -8:Section 8.11, Chapter -10:Section 10-10 & 10-11	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.Explain the Hybrid-π model of BJT and FET. (L2) 2.Apply Hybrid-π model to BJT and FET amplifiers. (L3) 3.Analyze BJT and FET amplifiers with Hybrid-π model . (L3)	
UNIT-II	12 Lectures
Multistage Amplifiers: BJT and FET RC Coupled Amplifiers – Frequency Response. Cascaded Amplifiers. high input resistance transistor amplifiers- Darlington and Bootstrap circuits, Calculation of Band Width of Single and Multistage Amplifiers. Concept of Gain Bandwidth Product.	
TB1: Chapter -10	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1.List the various multistage amplifiers. (L1) 2.Interpret the frequency response and relationship between gain and bandwidth in amplifiers. (L2)	

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3.Design and analyze different multistage amplifiers. (L2)
UNIT-III 10 Lectures
Feedback Amplifiers: Classification of Amplifiers, Concept of Feedback Amplifiers – Effect of Negative feedback on the amplifier Characteristics. Four Feedback Amplifier Topologies. Method of Analysis of Voltage Series, Current Series, Voltage Shunt and Current Shunt feedback Amplifiers.
TB1: Chapter -13
Learning Outcomes:
At the end of the unit, the student will be able to
1.Outline the basic amplifiers and fundamental concepts of Feedback amplifiers. (L2) 2.Design and analyze feedback amplifiers using each of the four topologies. (L3) 3.Compare the advantages and disadvantages of each feedback topology in different applications. (L3)
UNIT-IV 10 Lectures
Sinusoidal Oscillators: Condition for oscillations – RC Oscillators -- RC Phase Shift and Wein bridge Oscillators(BJT and JFET models),LC Oscillators – Hartley, Colpitts, Clapp and Tuned Collector Oscillators, Frequency and amplitude Stability of Oscillators– Crystal Oscillators.
TB1: Chapter -14:Section 14-15 to 14-21
Learning Outcomes:
At the end of the unit, the student will be able to
1.Describe the significance of the loop gain and phase shift in sustaining oscillations. (L2) 2.Determine the frequency of oscillation and design criteria for RC, LC and crystal oscillators. (L3) 3.Compare the performance of crystal oscillators with other types of oscillators (L3)
UNIT-V 12 Lectures
Tuned Voltage Amplifiers and Power Amplifiers: Single Tuned and Stagger Tuned Amplifiers – Analysis, Double Tuned Amplifier, and Bandwidth Calculation. Classification of Power Amplifiers – Class A, Class B and Class AB power Amplifiers. Series Fed, Single Ended Transformer Coupled Class A Power Amplifiers. Harmonic Distortions, Class B Push-pull amplifiers and their analysis, Complementary symmetry push pull amplifier, Class AB power amplifier.
TB1: Chapter -18, RB1: Chapter -13
Learning Outcomes:
At the end of the unit, the student will be able to
1.List the varieties of Tuned and Power Amplifiers. (L1) 2.Illustrate the operation of Tuned and power amplifiers. (L2) 3.Design and analyze various Tuned and power amplifiers. (L4)
Text Books:
1. Jacob Millman and C.Halkias, Integrated Electronics, Analog Digital Circuits and systems McGraw Hill, 1972. 2. Adel S. Sedra, Kenneth C. Smith, Arun N. Chandorkar, Microelectronic Circuits, 6/e, Oxford University Press, 2013.

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3.B.V.Rao, K. RajaRajeswari et.al, Electronic Circuit Analysis ,Pearson Publishers,2010

Reference Books:

1.Salivahanan, N.Suresh Kumar,Electronic Devices and Circuits, TMH, 4th Edition,2017
2.G.K.Mithal, Electronic Devices and Circuits, Khanna Publishers, 23rd Edition, 2004.
3.Robert L. Boylestad and Louis Nashelsky Electronic Devices and Circuits Theory, Pearson/Prentice Hall, Tenth Edition,2009

Web References:

https://onlinecourses.nptel.ac.in/noc23_ee106.
https://onlinecourses.nptel.ac.in/noc24_ee140.

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ANNEXURE - VII

DIGITAL LOGIC DESIGN LAB
I Year B. Tech. II semester
(Branch: ECE)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course the student shall be able to:

CO1: Verify the functional behavior of different logic gates and realize the Boolean expressions using these gates. (L3)
CO2: Build combinational circuits to implement different logic functions.(L3)
CO3: Verify the functional behavior of different Flipflops (L3)
CO4: Construct sequential circuits like counters and registers using flip-flops.(L3)
CO5: Make use of Digital ICs for verification and design of Digital circuits.(L3)

List of Hardware Experiments:

1. Verification of Logic Gates
2. Verification of Demorgan's Laws
3. Realization of Gates by using universal building blocks
4. Realization of SOP and POS
5. Half Adder & Full adder
6. Implementation of a function by using Decoders
7. Implementation of a function by using Multiplexers.
8. 3 bit Parity Generator
9. Verification of Flip - flops
10. Mod-8 Synchronous counter
11. Johnson Counter
12. 4 - bit Shift-register

Reference Books:

1. Digital Electronics-A Comprehensive ab manual by Cherry Bhargava, BS Publications, 2019.
2. Switching theory and Logic Design by Prof. K. Sivani and Prof. B. Ramadevi, BlueRose publishers, 2020.

Web References:

1. https://dec-iitkgp.vlabs.ac.in/
2. https://de-iitr.vlabs.ac.in/
3. https://de-iitg.vlabs.ac.in/

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ANNEXURE - VIII

ELECTRONIC CIRCUIT ANALYSIS LAB
I Year B. Tech. II semester
(Branch: ECE)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course the student shall be able to:

CO1: Design and analyze feedback amplifiers (voltage series and current shunt feedback amplifiers) (L3)
CO2: Design and analyze various oscillators (RC phase shift oscillator and Colpitt's oscillator. (L3)
CO3: Design and analyze various amplifiers (Multi stage amplifiers and Single tuned amplifier) (L3)
CO4: Design and analyze power amplifiers (Class A and Class B complimentary symmetry)(L3)
CO5: Become expert with computer skills (Multisim, OrCAD Pspice and Capture) for the analysis and design of circuits (L3)

List of Experiments :

Cycle I (Hardware)

1. Voltage-Series Feedback Amplifier
2. Current-Shunt Feedback Amplifier
3. RC Phase Shift Oscillator
4. Colpitt's Oscillator
5. Two Stage RC Coupled Amplifier
6. Darlington Pair Amplifier

Cycle II (Software)

7. Class A Series-fed Power Amplifier
8. Transformer-coupled Class A Power Amplifier
9. Wien Bridge Oscillator
10. Hartley Oscillator
11. Complementary Symmetry Class B Push-Pull Power Amplifier
12. Single Tuned Voltage Amplifier

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Equipment required:

Software:

i. Multisim/ Equivalent Industrial Standard Licensed simulation software tool.
ii. Computer Systems with required specifications

Hardware:

1. Regulated Power supplies
2. Analog/Digital Storage Oscilloscopes
3. Analog/Digital Function Generators
4. Digital Multimeters
5. Decade Résistance Boxes/Rheostats
6. Decade Capacitance Boxes
7. Active & Passive Electronic Components

Reference Books:

1. Electronic Devices, Thomas L.Floyd, Tenth edition,2012
2. Electronic Devices and Circuits, David A. Bell, Fifth Edition,2008

Web References:

1.https://www.circuitlab.com

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ANNEXURE - I

FUNDAMENTALS OF ELECTRICAL ENGINEERING

I B. Tech.-I semester

(Branch: EEE)

Course Code: **L-T-P-C: 4-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to	
C01:	Summarize the basic concepts in electric circuits.
C02:	Apply the fundamental laws in Electrical Engineering
C03:	Summarize the operation of various measuring instruments.
C04:	Summarize the concepts of various magnetic and dielectric materials.
C05:	Design the wiring schemes for house hold appliances using appropriate wiring components.

UNIT-I	12 Lectures
Electrical Engineering Fundamentals: Electrical circuit elements, DC sources (independent and dependent), Ohm's law, effect of temperature on resistance, temperature coefficient, Kirchhoff's laws, Power and Energy Calculations for DC circuits, Series-parallel connection of elements, Concept of Potential difference, Star - Delta conversion with R only. TextBook-1: Chapter 1 (Pg. 1-31) TextBook-1: Chapter 2 (Pg. 32-75) TextBook-1: Chapter 4 (Pg. 130-147)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the concepts of active and passive elements. 2. Determine the power and energy for the given electrical elements. 3. Analyse the Basic Electric Circuits.	

UNIT-II	12 Lectures
Fundamental Laws of Electrical Engineering: Coulombs law of Electrostatics (1st and 2nd laws), Faradays laws of Electromagnetic induction, Concepts of self and mutual induced emfs, Fleming Left hand and Right-hand rules, Lenz's law, Biot - Savart's law, Ampere circuital law, Maxwell's corkscrew rule. TextBook-1: Chapter 5 (Pg. 151) TextBook-1: Chapter 7 (Pg. 217-219, 224-225) TextBook-1: Chapter 9 (Pg. 255-270)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Summarize the Basic Laws of electrostatics. 2. Understand the concepts of self and mutual induced emfs. 3. Summarize the Basic Laws of electromagnetic induction.	

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UNIT-III	12 Lectures
Fundamentals of Electrical Measurements (no need to explain types of errors and compensations): Classification of measuring instruments, various forces in indicating instruments (deflection, control and damping), construction and operation of MC and MI type instruments for voltage and current measurement, Construction and operation of single-phase electro dynamometer type wattmeter, Construction and operation of single-phase induction type energy meter, basic concept of digital energy meter. TextBook-1: Chapter 25 (Pg. 670-718)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Summarize different types of the Measuring Instruments. 2. Understand the operation of Measuring Instruments. 3. Summarize the various operating forces involved in the Measuring instruments.	

UNIT-IV	12 Lectures
Dielectric and Magnetic Materials: Dielectric as an electric field medium, leakage currents, dielectric loss, dielectric strength, breakdown voltage, effects of breakdown, Ferroelectric materials, properties of ferroelectric materials, spontaneous polarization, piezoelectric materials, pyroelectric materials. classification of magnetic materials, properties of ferromagnetic materials, spontaneous magnetization, magnetic anisotropy, characteristics of soft and hard magnetic materials, ageing of magnets. TextBook-2: Chapter 5 (S-5.1-5.4) TextBook-2: Chapter 7 (S-7.4-7.18)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the dielectric materials and their properties 2. Understand the magnetic materials and their properties 3. Summarize the knowledge on materials used in electrical applications.	

UNIT-V	12 Lectures
Electric Wiring: Symbols of various electrical equipment, Various types of conductors, conductor sizes and current ratings, Service mains, meter board and distribution board, Types of wirings and their Installations, House wiring (one lamp-one switch, Stair case, Corridor wiring, Power wiring), Basic LT panel wiring diagram, Elementary discussion on Circuit protective devices: fuse and Miniature Circuit Breaker (MCB's). TextBook-3: http://182.160.97.198:8080/xmlui/handle/123456789/853?show=full	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Identify and interpret various electrical wiring symbols. 2. Acquire knowledge on different types of wiring and their installations. 3. Learn about various types of protective devices.	

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ANNEXURE - II

ELECTRICAL CIRCUITS 1

I Year B. Tech. II semester

(Branch: EEE)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	Analyse the electrical networks using mesh and nodal analysis techniques.
C02:	Analyse Electrical circuits with AC excitation.
C03:	Summarize the applications of network theorems.
C04:	Summarize the concept of resonance and understand bandwidth, Q factor, and locus diagrams.
C05:	Analyze magnetic circuits and understand the concepts of graph theory.

UNIT-I	10 Lectures
Introduction to Electrical Circuits: concepts of electrical circuit elements and their V-I relations; source transformation and Network Simplification Techniques (Series, Parallel, Series-Parallel, Star-delta transformations), Nodal analysis method, Mesh analysis method including super node and super mesh analysis. Concept of duality and dual networks	
TextBook-1: Chapter 1 (S-1.1 – S-1.6) TextBook-1: Chapter 2 (S-2.1 – S-2.7) TextBook-1: Chapter 3 (S-3.1- S-3.5)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Summarize the basic electrical elements and different fundamental laws.(L2) 2. Apply the Kirchhoff's Laws in solving series, parallel, non-series-parallel configurations in DC networks.(L2) 3. Understand the principle of duality and dual networks.(L2)	

UNIT-II	10 Lectures
Single Phase A.C Circuits: Periodic and non-periodic wave forms, R.M.S, Average Values and Form Factor for Alternating Quantities – Phase and Phase Difference – Complex and Polar Forms of Representations, j-Notation, Steady State Analysis of R, L and C (In Series, Parallel and Series Parallel Combinations) with Sinusoidal Excitation. Phasor diagrams - Concept of Reactance, Impedance, Susceptance and Admittance. Power triangle - Apparent Power, Active and Reactive Power, Concept of Power Factor Examples.	
TextBook-1: Chapter 11 (S-11.1 – S-11.7) TextBook-1: Chapter 9 (S-9.1 – S-9.7)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Analyse the periodic and non-periodic waveforms. (L3) 2. Perform steady-state analysis of R, L, and C circuits with sinusoidal excitation. (L2) 3. Determine the power factor, reactance, impedance, and power types. (L2)	

UNIT-III	10 Lectures
Network theorems: Superposition theorem, Thevenin's theorem, Norton's theorems, Maximum power transfer theorem, Tellegen's theorem, Compensation theorem, Milliman's theorem and Reciprocity theorem.(DC & AC with dependent and independent Excitations).	
TextBook-1: Chapter 4 (S-4.1 – S-4.8) Reference Book-2: Chapter 4 (S-4.1 – S-4.10)	

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Learning Outcomes:
At the end of the unit, the student will be able to
1. Analyse the circuits using theorems for DC Excitation. (L3) 2. Analyse the circuits using theorems for AC Excitation. (L3) 3. Summarize the applications of theorems. (L2)

UNIT-IV	10 Lectures
Resonance and locus Diagrams: Series and parallel resonance circuits, concept of band width and Q factor. **Locus diagram:** RL, RC, RLC with R, L and C variables.	
TextBook-2: Chapter 16 (S-16.1– S-16.4) https://ggsestc.digimat.in/nptel/courses/video/108105065/L06.html	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the principles of series and parallel resonance in electrical circuits. (L1) 2. Apply the resonance concepts to analyse the electrical circuits. (L2) 3. Interpret the locus diagrams for RL, RC, and RLC circuits. (L3)	

UNIT-V	10 Lectures
Coupled circuits: Concept of self and mutual inductance, Dot convention, Coefficient of coupling, Analysis of Series and Parallel Magnetic Circuits with mutual inductance. **Network Topology:** Basic concepts of Graph theory, incident matrix, tie-set matrix and cut-set matrix.	
TextBook-1: Chapter 13 (S-13.1 – S-13.6) Reference Book-2: Chapter 9 (S-9.1 – S-9.6) Reference Book-2: Chapter 3 (S-3.1 – S-3.8)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the self and mutual inductance and apply the dot convention in coupled circuits.(L1) 2. Analyse series and parallel magnetic circuits with mutual inductance. (L2) 3. Apply Graph Theory to solve the electrical circuits. (L3)	

Text Books:
1. Fundamentals of Electric Circuits Charles K. Alexander and Matthew. N. O. Sadiku, Mc Graw Hill, 6th Edition, 2017. 2. Engineering circuit analysis William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 8th Edition, 2012.
Reference Books:
1. Network Analysis, M. E. Van Valkenburg, Pearson Education, 2019, Revised Third Edition. 2. Circuit Theory Analysis & Synthesis A. Chakrabarti, Dhanpat Rai & Sons, 7th Revised Edition, 2018. 3. Electric Circuits (Schaum's outline Series), Mahmood Nahvi, Joseph Edminister, and K. Rao, Mc Graw Hill Education, 2010, Fifth Edition.
Web References:
1. https://archive.nptel.ac.in/courses/108/105/108105159/ 2. https://nptel.ac.in/courses/108104139

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Text Books:
1. V. K. Mehta, Rohit Mehta, Principle of electrical Engineering and electronics, 3rd edition, S. Chand Publishing, New Delhi, 2016. (CO-1, 2 & 3) 2. R.K. Rajput, A course in Electrical Engineering Materials, Laxmi Publications 2009. (CO-4) 3. S L Uppal and G C Garg, "Electrical Wiring, Estimating & Costing", Khanna Publishers, 2015. (CO-5)
Reference Books:
1. Fundamentals of Electrical Engineering Rajendra Prasad PHI Third Edition 2014. 2. V. N. Mittal and Arvind Mittal, "Basic Electrical Engineering" McGraw Hill. 3. A.K. Sawhney, A Course in Electrical and Electronics Measurements and Instruments DhanpatRai and Sons, Delhi, 2005.
Web References:
1. https://archive.nptel.ac.in/courses/108/105/108105153/ 2. https://archive.nptel.ac.in/courses/108/105/108105112/

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ANNEXURE - III

THERMAL AND HYDRO PRIME MOVERS

I Year B. Tech. II semester

(Branch: EEE)

Course Code: **L-T-P-C:4-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to	
C01:	Classify internal combustion engines& boilers and assess the performance. (L2)
C02:	Analyse the various Vapour Power Cycles (L3)
C03:	Analyze the different methods for improving the efficiency of gas turbines (L4)
C04:	Determine the forces acting on the stationary & moving vanes and summarize the operation of pumps (L3)
C05:	Summarize the working of various types of hydraulic turbines.(L2)

UNIT-I	12 Lectures
I.C Engines: Classification, Basic idea of IC engine, Parts in IC engine, working principle of 2-stroke & 4-Stroke engines, ValveTiming Diagram, Port Timing Diagram, Comparison of 4 Stroke & 2 Stroke engine, Petrol Engine and Diesel Engine, Engine performance evaluation. **Boilers:** Classification of Boilers, Simple Vertical Boiler, Cochran Boiler, Babcockand Wilcox Boiler, Benson Boiler. Difference between Fire Tube and Water Tube Boilers, Boiler Mountings and Accessories.	
Text Book-1: Chapter 23 (S-23.1 – S-23.14, S-23.39) Text Book-1: Chapter 11 (S-11.1 – S-11.3, S-11.6-11.8) Text Book-1: Chapter 12 (S-12.1 – S-12.3)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the construction and working principles of 2 stroke and 4 stroke I. C engines using petrol and diesel. (L2) 2. Evaluate the performance parameters of I. C. engines. (L3) 3. Summarize the construction and working principles of fire tube and water tube boilers. (L2)	

UNIT-II	12 Lectures
Properties of Steam and use of Steam Table: T-S and H-S Diagrams. Analysis of Various Thermodynamic Processes under gone by Steam. **Vapour Power Cycles:** Carnot Cycle-Rankine Cycle- Thermodynamic Variables Effecting Efficiency and output of Rankine Cycle-. Analysis of simple Rankine Cycle. Schematic layout of steam power plant.	
Text Book-1: Chapter 2 (S-2.1 – S-2.18) Text Book-1: Chapter 15 (S-15.1 – S-15.2)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Analyse the properties of Steam by using Steam Tables- T-S and H-S Diagrams. (L3)	

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2. Understand the working of various vapour power cycles, layout of steam power plant. (L2) 3. Summarize the variables effecting the efficiency and output of rankine cycle (L3)
UNIT-III 12 Lectures
Gas Turbines: Simple gas turbine plant-ideal cycle, closed cycle, open cycle-. Efficiency, Work ratio and optimum pressure ratio for simple gas turbine cycle. Actual cycle, analysis of simple cycles & cycles with inter cooling, reheating and Regeneration.
Text Book-1: Chapter 25 (S-25.1 – S-25.6)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understand the working of various gas turbine plant cycles. (L2) 2. Analyse the performance parameters for gas turbine cycle. (L3) 3. Summarize the different methods for improving the efficiency of gas turbines(L4)

UNIT-IV 12 Lectures
Impact Of Jets On Vanes: Impulse momentum equation, Impact of Jet on stationary and moving vanes (flat and curved). **Pumps:** Types of pumps, Centrifugal pumps: Main components, Working principle, Multi stage pumps, Performance and Characteristic curves.
Text Book-2: Chapter 17 (S-17.1 – S-17.4.4) Text Book-2: Chapter 19 (S-19.1 – S-19.2, S-19.6, S-19.10)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Apply impulse momentum equationsto find the forces acting on the vanes. (L3) 2. Understand the working of centrifugal pump and its types. (L2) 3. Summarize the Performance Characteristics of the pumps. (L2)

UNIT-V 12 Lectures
Hydraulic Turbines: Classifications of turbines; Working principle of Pelton turbine, Francis turbine, Kaplan turbine, Efficiency calculation, Governing of turbines, Performance and characteristic curves, working of hydro electric power plant.
Text Book-2: Chapter 18 (S-18.1 – S-18.9, S-18.13 – S-18.14)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understand the working of hydro electric power plant, hydraulic turbines (L2) 2. Evaluate the performance parametersof hydraulic turbine. (L3) 3. Summarize theperformance characteristics of hydraulic turbine (L2)

Text Books:
1. Thermal Engineering by Rajput, Lakshmi publications. 2. R.K. Bansal, Fluid Mechanics And Hydraulic Machines, 10th Edition, Laxmi Publications, 2018.
Reference Books:
1. A Textbook of Thermal Engineering By RS Khurmi | JK Gupta 2. "Hydraulics & Fluid Mechanics", P.N. Modi and S.M. Seth, text books House, Delhi
Web References:
1. https://onlinecourses.nptel.ac.in/noc20_me33/ 2. https://archive.nptel.ac.in/courses/112/103/112103249/

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ANNEXURE – IV

ELECTRICAL ENGINEERING WORKSHOP
I Year B. Tech. II semester

Course Code: EE1207

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to:		**Exp. No.**
C01:	Identity, select, and troubleshoots the house wiring components.	1,2,3
C02:	Troubleshoot electrical appliances such as tube light, fan and domestic pump.	10,11
C03:	Develop house wiring schemes using protective equipment like MCB and ELCBs.	4,8,9
C04:	Design Go-down wiring /Tunnel wiring and hospital wiring schemes.	5,6
C05:	Measure the Basic Electrical Parameters using suitable instruments.	7,12,13

List of experiments:

1. Demonstration of electrical safety measures
2. Identification of various electrical tools and symbols
3. Identification of various electrical cables/wires, switches, fuses, fuse carriers, MCB, ELCB, RCCB, and MCCB with their specifications and use.
4. Wiring of lighting circuit using two-way control (Stair case wiring)
5. Godown wiring / tunnel wiring.
6. Hospital wiring
7. Measurement of voltage, current, power in DC circuits.
8. Wiring of power distribution arrangement using single phase MCB distribution board with ELCB, main switch and energy meter for calculating power and power factor.
9. Wiring of backup power supply for domestic installation including inverter, battery and load.
10. Troubleshooting of domestic electrical equipment's (tube light, fan)
11. Wiring and troubleshooting of domestic pump motor with DOL starter.
12. Demonstration of moving iron, moving coil, dynamometer, and induction type measuring instruments.
13. Identification of various types of resistors, and capacitors and understand the usage of digital multi-meter.

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ANNEXURE – V

Network Theory and Machines
I Year B. Tech. I semester
(Branch: ECE)

	L	T	P	C
Course Code:	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:	
C01:	Analyze DC circuits using Kirchhoff's laws, nodal and mesh analysis methods.
C02:	Summarize network theorems and two-port network parameters.
C03:	Analyze circuits with AC excitations.
C04:	Determine the transient response of first and second-order circuits.
C05:	Understand the Construction and Principle of Operation of DC and AC machines.

UNIT-I	10 Lectures
Introduction to Electrical Circuits: Circuit Concept – Types of elements and their V-I relations; Kirchhoff's laws, Network Reduction Techniques- Series, Parallel, Series-Parallel, Star-delta transformation, Source transformation, Nodal analysis method and Mesh analysis method including super node and super mesh analysis.	
TextBook-1: Chapter 1 (S-1.1 – S-1.6) TextBook-1: Chapter 2 (S-2.1 – S-2.7) TextBook-1: Chapter 3 (S-3.1- S-3.5)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Understand the active and passive elements and their VI characteristics.(L2) 2. Analyse the electrical circuits using KVL and KCL.(L2) 3. Analyse the electrical circuits using mesh and nodal analysis.(L2)	

UNIT-II	10 Lectures
Network theorems: Superposition theorem, Thevinin's theorem, Norton's theorems, Maximum power transfer theorem and Reciprocity theorem (DC Excitations). **Two-port Networks:** Z-parameters, Y-parameters, Transmission line parameters, h- parameters, Parallel & series connection of two port networks, cascading of two port networks, problem solving using dependent sources also.	
TextBook-1: Chapter 4 (S-4.1 – S-4.8) TextBook-1: Chapter 19 (S-19.1 – S-19.6)	
Learning Outcomes:	
At the end of the unit, the student will be able to	
1. Summarize various network theorems.(L2) 2. Summarize the various two-port networks parameters. (L2) 3. Analyze the interconnected two port networks. (L2)	

UNIT-III	10 Lectures
Single Phase A.C Circuits: Periodic and non-periodic wave forms, R.M.S, Average Values and Form Factor for Alternating Quantities. Phase and Phase Difference, Steady State Analysis of R, L and C (In Series, Parallel and Series Parallel Combinations) with Sinusoidal Excitation. Phasor diagrams. Concept of Reactance, Impedance, Susceptance and Admittance. Power Triangle - Apparent Power, Active and Reactive Power - Concept of Power Factor.	

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Resonance: Introduction, Series resonance and parallel resonance, Definition of Q, Bandwidth and selectivity.
TextBook-1: Chapter 11 (S-11.1 – S-11.7) TextBook-1: Chapter 9 (S-9.1 – S-9.7) TextBook-2: Chapter 16 (S-16.1– S-16.4)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Analyse periodic and non-periodic waveforms. (L2) 2. Analyze RLC circuits for AC excitations. (L2) 3. Determine bandwidth and selectivity in resonant circuits. (L2)

UNIT-IV 10 Lectures
DC Transients: Evaluation of initial conditions, First order circuits, Definition of time constant, R-L circuit, R-C circuit with excitation, second order circuits, problem-solving.
TextBook-1: Chapter 7 (S-7.1– S-7.6) TextBook-1: Chapter 8 (S-8.1– S-8.6)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Evaluate initial conditions in electrical circuits. (L2) 2. Analyse first-order circuits. (L2) 3. Analyse second-order circuits. (L2)

UNIT-V 10 Lectures
DC Machines: Principle of operation of DC machines, Constructional Details, EMF equation, DC motor - Torque Equation, Speed control of shunt motor (Field and armature controlled methods), Applications of DC Machines. **AC Machines:** Transformer construction Details, Principle of operation, EMF equation, Three phase Induction Motors - Construction Details, Principle of operation. Single phase induction motor - Constructional Details, Principle of operation, Double Field Revolving Theory. Applications.
TextBook-3: Chapter 26 (S-26.1 – S-26.10 & S-26.33) TextBook-3: Chapter 29 (S-29.6 – S-29.8) TextBook-3: Chapter 30 (S-30.1 – S-30.2) TextBook-3: Chapter 32 (S-32.1 – S-32.6 & S-32.20-S-32.22) TextBook-3: Chapter 34 (S-34.1 – S-34.6) TextBook-3: Chapter 36 (S-36.1 – S-36.3)
Learning Outcomes:
At the end of the unit, the student will be able to
1. Understand the Construction and principle of operation of DC and AC machines. (L2) 2. Understand the speed control methods of electrical motors. (L2) 3. Summarize the applications of DC and AC machines. (L2)

Text Books:
1. Fundamentals of Electric Circuits Charles K. Alexander and Matthew. N. O. Sadiku, Mc Graw Hill, 5th Edition, 2013. 2. Engineering circuit analysis William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 7th Edition, 2006. 3. A Textbook of Electrical Technology: Ac and Dc Machines (volume - 2) by B L Theraja and A K Theraja.

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Reference Books:
1. Circuit Theory Analysis & Synthesis A. Chakrabarti, Dhanpat Rai & Sons, 7th Revised Edition, 2018. 2. Electric Circuits (Schaum's outline Series), Mahmood Nahvi, Joseph Edminister, and K. Rao, Mc Graw Hill Education, 2010, Fifth Edition. 3. Electric Machines, D. P. Kothari, I. J. Nagrath Tata McGraw-Hill, 2004.
Web References:
1. https://archive.nptel.ac.in/courses/108/105/108105159/ 2. https://nptel.ac.in/courses/108104139

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Annexure-7

ANNEXURE -1

CALCULUS AND DIFFERENTIAL EQUATIONS

I Year B. Tech. I Semester
(Common to All Branches)
EEE, ECE, CSE, IT, CSE (AI&ML)

Course Code: **L-T-P-C: 3-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to

CO1: Examine the functional dependency and **utilize** the Taylor's theorem to expand function of two variables. (L3)
CO2: Determine extrema of multivariable functions. (L5)
CO3: Utilize double and triple integrals to **evaluate** areas of plane curves and the volumes of solids. (L5)
CO4: Solve the first order differential equations and higher order differential equations with constant coefficients, **apply** the techniques to solve problems related to various engineering fields. (L3)
CO5: Find the Laplace Transforms of various functions and **apply** it to **solve** ordinary differential Equations with initial conditions. (L3)

UNIT-I: Partial Differentiation
Functions of two or more variables: Introduction - Partial derivatives - Total derivative - Change of variables - Jacobians – Functional dependence - Taylor's theorem for function of two variables.
(Sections: 5.1, 5.2, 5.5, 5.6, 5.7, 5.9 of Text Book)
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Examine** the functional dependencies using the Jacobian. (L3)
2. **Make use of** Taylor's theorem to write series expansion of function of two variables. (L3)

UNIT-II: Applications of Partial Differentiation
Maxima and minima of function of two and three variables - Constrained maximum/minimum problems using Lagrange's method of multipliers.
(Sections: 5.11, 5.12 of Text Book)
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Determine** the critical points, maxima and minima of functions several variables. (L5)

UNIT-III: Integral Calculus
Introduction - Double integrals - Change of order of integration - Double integrals in polar Coordinates - Triple integrals - Change of variables.
Applications: Area enclosed by plane curves - Volumes of solids.
(Sections: 7.1 – 7.7 of Text Book)
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Evaluate** double integrals and triple integrals in Cartesian and polar coordinates also over the given region. (L5)
2. **Evaluate** the double integrals by change of order of integration. (L5)
3. **Evaluate** double and triple integrals by change of variables. (L5)
4. **Determine** the areas and volumes using multiple integrals. (L5)

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UNIT-IV: Differential Equations and its Applications

Exact differential equations - Equations reducible to exact equations - Solutions of higher order linear ordinary differential equations with constant coefficients - Method of variation of parameters.

Applications: Orthogonal Trajectories - Newton's law of cooling - Law of Natural growth and decay.
(Sections: 11.11, 11.12, 12.3, 12.6, 12.8, 13.1 – 13.8 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Solve** the first-order differential equations and higher order Linear differential equations with constant coefficients. (L3)
2. **Apply** the techniques to **solve** problems related to various engineering fields. (L3)

UNIT-V: Laplace Transforms

Introduction - Existence conditions - Transforms of elementary functions - Properties of Laplace transforms - Transforms of derivatives - Transforms of integrals - Multiplication by t - Division by t – Evaluation of integrals by Laplace transforms - Laplace transforms of Unit step function, Unit impulse function and Laplace transforms of periodic functions - Inverse Laplace transforms - Convolution theorem - Second shifting theorem.

Applications: Laplace Transforms to ordinary differential Equations.
(Sections: 21.1 – 21.5, 21.7 – 21.15, 21.17, 21.18 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Find** the Laplace transform of the function. (L1)
2. **Find** the Inverse Laplace transform of a function. (L1)
3. **Make use** of convolution theorem to find the Inverse Laplace transform of a function. (L3)
4. **Apply** Laplace transform to **solve** ordinary differential equations. (L3)

Text Books:

B. S. Grewal, Higher Engineering Mathematics, 45th Edition, Khanna Publishers, 2024.

Reference Books:

1. R K Jain and SRK Iyengar, Advanced Engineering Mathematics, Narosa Publishers, 5th Edition, 2016.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10th edition, John Wiley & Sons, 2011.
3. Peter V. O'Neil, Advanced Engineering Mathematics, 7th edition, Cengage Learning, 2011.
4. Greenberg, Advanced Engineering Mathematics, 2nd Edition, Pearson, 2017.

Web References:

1. https://nptel.ac.in/courses/111104125
2. https://nptel.ac.in/courses/111105160

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ANNEXURE -2

LINEAR ALGEBRA AND VECTOR CALCULUS

I Year B. Tech. II Semester

(Common to All Branches)

EEE, ECE, CSE, IT, CSE (AI&ML)

Course Code: **L-T-P-C: 3-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to

CO1: Test for the consistency and **solve** linear system of equations, also **determine** unknown currents in the electrical circuits. (L5)

CO2: Find the Eigen values and Eigen vectors of a matrix, and **apply** Cayley- Hamilton theorem to find the inverse of a matrix. (L3)

CO3: Reduce quadratic form to canonical form and **examine** the nature of quadratic form. (L4)

CO4: Interpret the meaning and **evaluate** gradient of a scalar valued, curl and divergence of vector valued functions. (L5)

CO5: Apply line integrals, surface integrals, volume integrals and their relations using Green's theorem, Stoke's theorem, Gauss Divergence theorems in various engineering applications. (L3)

UNIT-I: Matrix Algebra

Rank of a matrix- Echelon form, Normal Form - Solution of Linear System of Equations - Consistency of Linear System of Equations – Gauss elimination and Gauss Jordan methods, LU Factorization method.

Applications: Finding the current in electrical circuits.

(Sections: 2.7, 2.10, 28.6 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Find** the rank of a matrix. (L1)
2. **Test for** the consistency and **solve** a system of linear equations. (L4)
3. **Apply** Gauss elimination and Gauss Jordan methods, LU factorization to solve linear systems. (L3)
4. **Determine** unknown currents in electrical circuits. (L5)

UNIT-II: Eigen Values and Eigen Vectors

Eigen Values and Eigen Vectors of a real Matrix – Properties - Cayley- Hamilton theorem (without proof) - Inverse and Powers of a Matrix using Cayley-Hamilton's theorem – Pseudo inverse of a matrix, Singular value decomposition.

(Sections: 2.13 - 2.15 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Find** eigenvalues and corresponding eigenvectors of a matrix. (L1)
2. **Apply** Cayley-Hamilton theorem to find powers and the inverse of a matrix. (L3)
3. **Calculate** the Pseudo Inverse of a matrix. (L3)
4. Calculate the singular values of a matrix. (L3)

UNIT-III: Quadratic Forms

Inner Product – Orthogonal Vectors – Orthogonal matrix – Diagonalization of a Matrix- Quadratic Forms - Reduction of Quadratic Form to Canonical Form (Orthogonal Transformation) - Nature of a Quadratic Form.

(Sections: 2.16 - 2.18 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

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1. **Make use of** Eigen values and eigen vectors to diagonalize the matrix. (L3)
2. Reduce the Quadratic form to canonical form **examine** the nature of a quadratic form. (L4)

UNIT-IV: Vector Differentiation

Introduction - Scalar and Vector point functions, General rules for vector differentiation - Vector operator ∇ applied to scalar point functions- Gradient, ∇ applied to vector point functions- divergence and curl. Physical interpretation of gradient, divergence and curl (i.e., ∇f, $\nabla.\overline{F}$, $\nabla \times \overline{F}$), Irrotational and Solenoidal fields, Vector Identities.

(Sections: 8.1, 8.4 - 8.9 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Find** the gradient of a scalar point function, divergence and curl of a vector point function. (L1)
2. **Determine** the directional derivative of scalar point function. (L5)

UNIT-V: Vector Integration

Integration of vectors - Line integral – Circulation - work done - surface integral-flux - Green's theorem in the plane - Stoke's theorem - Volume integral - Gauss Divergence theorem (All theorems without proofs).

(Sections: 8.10 - 8.16, 8.18 of Text Book)

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Determine** the work done in a moving particle along a path. (L5)
2. **Interpret** surface and volume integrals. (L2)
3. **Apply** vector integral theorems to multiple integral. (L3)

Text Books:

B. S. Grewal, Higher Engineering Mathematics, 45th Edition, Khanna Publishers, 2024.

Reference Books:

1. David Poole, Linear Algebra- A modern introduction, 4th edition, 2015.
2. Erwin Kreyszig, Advanced Engineering Mathematics, 10th edition, John Wiley & Sons, 2011.
3. Peter V. O'Neil, Advanced Engineering Mathematics, 7th edition, Cengage Learning, 2011.
4. Greenberg, Advanced Engineering Mathematics, 2nd Edition, Pearson, 2017.

Web References:

1. https://nptel.ac.in/courses/111107112

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Annexure-8

ANNEXTURE -1

ENGINEERING PHYSICS

I Year B. Tech I Semester (ECE, EEE, CSE [AI&ML])

	L	T	P	C
Course Code:	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:

C01: Apply the principles of interference, diffraction, and polarization in wave optics, and utilize optical instruments for practical applications.
C02: Familiarize the basic concepts of Thermodynamics relevant to engineering applications.
C03: Introduce the knowledge of basic principles of Electromagnetism and EM Waves.
C04: Learn basic principles of lasers, optical fibres and their use in technological applications.
C05: Introduce the basic principles of Quantum mechanics, Quantum computing.

UNIT-I 12 Lectures

Interference: Principle of superposition, Young's Experiment (qualitative treatment), Coherence, Interference in thin films (reflected light), Newton's Rings, Michelson's Interferometer and its applications (thickness of thin sheet, determination of wavelength).

Diffraction: Introduction, Differences between Interference and Diffraction, Differences between Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction at a single slit (Qualitative and Quantitative treatment)

Polarization: Introduction - types of Polarization. Polarization by reflection, Brewster's law, refraction and double refraction in uniaxial crystals, Nicol Prism, Quarter wave plate and Half wave plate, Applications of Polarization.

Text Book 1: 5.16,5.17,5.18, 5.20, 6.1, 6.2, 6.8.(1-3), 6.11, 6.13, 6.14.1, 6.14.3, 7.1, 7.2, 7.3, 7.4, 7.5, 8.1, 8.2,8.5, 8.6,8.11,8.12, 8.16,8.20.

Learning Outcomes:

At the end of the unit, the student will be able to

1. Understand the principles of interference patterns and apply Michelson's Interferometer to measure physical quantities such as thickness and wavelength (L2)
2. Distinguish between interference and diffraction and perform qualitative and quantitative analysis of Fraunhoffer diffraction at a single slit (L2)
3. Apply polarization concepts through various optical devices to explore and solve problems related to polarized light (L3)

UNIT-II 10 Lectures

Thermodynamics: Heat and Work, First law of thermodynamics and its applications, Reversible and Irreversible process, Carnot cycle and Efficiency, Second law of thermodynamics, Carnot's Theorem, Entropy, Second law in terms of Entropy, Entropy and disorder, Third law of thermodynamics (statement only)

TextBook-1: 16.3,16.5.1,16.6,16.8,16.11,16.12,16.14,16.16,16.17, 16.17.1, 16.18

Learning Outcomes:

At the end of the unit, the student will be able to

1. Apply the first and second laws of thermodynamics to analyse energy transformations and process efficiencies (L3)
2. Understand the Carnot cycle and its efficiency, and calculate entropy changes to explain thermodynamic processes (L2)
3. Differentiate between reversible and irreversible processes, and relate entropy to disorder (L2)
4. State the third law of thermodynamics and understand its implications for materials at absolute zero (L2)

Subject Expert

1.

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UNIT-III 14 Lectures

Electromagnetism: Concept of electric flux, Gauss' law, applications of Gauss' law (wire, sheet, sphere), Magnetic Field, Gauss' law in magnetostatics, Faraday's law of induction, Lenz's law, Induced magnetic fields, Displacement current, Maxwell's equations (no derivation, qualitative treatment), Electromagnetic wave equations, Introduction to EM waves, The Biot-Savart's law, magnetic field near a long wire, magnetic field for a circular Current loop, Ampere's law.
TextBook-1: 2.12,2.14,2.18, 3.5, 3.8, 3.9,3.12, 3.13,3.14, 3.10, 3.12, 3.3,3.4

Learning Outcomes:
At the end of the unit, the student will be able to

1. Apply Gauss's law and Faraday's law of induction to solve problems involving electric and magnetic fields (L3),
2. Use Maxwell's equations to understand electromagnetic wave phenomena (L2).
3. Analyse magnetic fields using Biot-Savart's law, Ampere's law, and apply e magnetostatic field distributions (L3)

UNIT-IV 12 Lectures

Lasers: Characteristics of laser beam, Spontaneous and stimulated emission of radiation, population inversion, Ruby laser, He-Ne laser, Semiconductor laser (homojunction), Applications of lasers.

Optical fibres: principle of propagation of light in optical fibres, Acceptance Angle and cone of a fibre, Numerical aperture, Modes of propagation, Classification of fibres based on refractive index profile and modes, Losses in optical fibres- scattering and bending losses, Fibre optics in communication-Block diagram, Applications of optical fibres
TextBook-1: 24.12, 24.2, 24.5,24.6, 24.7, 24.11.1, 24.11.3, 24.11.5.1, 24.13, 10.2, 10.3, 10.4, 10.5, 10.6, 10.10, 10.11, 10.19,10.20 (only for list of applications)
Learning Outcomes:
At the end of the unit, the student will be able to

1. Understand the principles of laser operation, including spontaneous and stimulated emission, and analyse various types of lasers such as Ruby, He-Ne, and Semiconductor lasers. (L2)
2. Describe the fundamentals of optical fibre technology, including light propagation, acceptance angle, numerical aperture, and classification of fibres (L2)
3. Apply these concepts to fibre optics communication systems and explore their practical applications (L2)

UNIT-V 12 Lectures

Quantum Physics: de Broglie concept of matter waves, Heisenberg's uncertainty principle, Schrödinger time independent wave equation, Physical significance of wave function, particle in a one-dimensional box.

Quantum Computing Quantum bits, Introduction to Pauli spin matrices, Bloch sphere, Entanglement, Qubit Vs classical bit, Single Qubit gates, Quantum Teleportation – Basic Idea.
TextBook-1 20.5, 20.11, 20.17, 20.18, 20.22
Text Book -3 Sec 1.8, 1.9, 1.10.1
Learning Outcomes:
At the end of the unit, the student will be able to

1. Understand the concepts quantum mechanics such as the de Broglie wavelength and Heisenberg's uncertainty principle and use the Schrödinger equation (L2).
2. Describe the fundamentals of quantum computing (L2)

Subject Expert

1.

Head
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VISAKHAPATNAM-530 003

Chairperson (BoS)

HEAD
DEPARTMENT OF
BASIC SCIENCES & HUMANITIES
GVP COLLEGE OF ENGINEERING FOR WOMEN
ADHURAWADA, VISAKHAPATNAM-530 048

Text Books:

1. M. N. Avadhanulu, P. G. Kshirsagar, and T. V. S. Arun Murthy, A textbook of Engineering Physics, 11th edition, S. Chand and Company Ltd., 2019.
2. H. K. Malik and A. K. Singh, Engineering Physics, 2nd Edition, McGraw Hill Education Pvt Ltd. ,2018.
3. P.K. Palanisamy, Engineering Physics, SCITECH Publications, 2011.

Reference Books:

1. Modern Engineering Physics by A.S. Vasudeva S. Chand and Company Ltd., 2010
2. University Physics by Young and Freedman Pearson Education, 2010.
3. Michael A. Nielsen, Isaac L. Chuang, Quantum Computation and Quantum Information Cambridge University Press, 10 th Ed., 2010

Web References:

1. https://nptel.ac.in/courses/115105537 (Wave optics)
2. https://nptel.ac.in/courses/115106122 (Electromagnetism)
3. https://nptel.ac.in/courses/112102255 (Thermodynamics)
4. https://nptel.ac.in/courses/115107095 (Fiber Optics)
5. https://nptel.ac.in/courses/104104085 (Lasers)
6. https://nptel.ac.in/courses/104104082 (Quantum Computing)
7. https://www.intechopen.com/online-first/73811 (Quantum Computing)
8. https://lewisla.gitbook.io/learning-quantum/quantum-circuits/single-qubit-gates (Quantum Computing)
9. https://profmcruz.wordpress.com/wp-content/uploads/2017/08/quantum-computation-and-quantum-information-nielsen-chuang.pdf (Quantum Computing)

Subject Expert

1.

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ADHURAWADA, VISAKHAPATNAM-530 048

ANNEXURE 2

ENGINEERING PHYSICS LAB

I Year B. Tech I Semester (ECE, EEE, CSE[AI&ML])

Course Code: **L-T-P-C: 0-0-3-1.5**

Course Objectives:

- To learn the principles of wave optics through experiments
- To learn the basic laws of electromagnetism through study of magnetic field variations
- To learn the calibration process of analog instruments like voltmeter and ammeter
- To learn the usage of semiconductors as sensors in temperature sensing

Course Outcomes

At the end of the course the student will be able to

C01: Interpret the physical parameters based on optical phenomena.
C02: Familiarize with the behaviour of double refraction in birefringent material like quartz.
C03: Understand the concepts of diffraction through experiments.
C04: Calibrate instruments like low range voltmeters and ammeters.
C05: Design temperature sensors based on diodes and thermistors.

List of Experiments:

(Any TEN of the following experiments shall be conducted)

1. Determination of Radius of Curvature of a given Convex Lens By forming Newton's Rings.
2. Determination of Thickness Given Paper Strip or hairline by Wedge Method.
3. Determination of Wavelength of Spectral Lines in the Mercury Spectrum by Normal Incidence method
4. Determination of Cauchy's Constants of a Given Material of the Prism using Spectrometer in minimum deviation position
5. Determination of Refractive Index of Ordinary ray and Extra-ordinary ray in quartz prism
6. Laser- Diffraction – determination of wavelength of laser source using diffraction grating
7. Determination of wavelength of laser source using Fraunhofer single slit diffraction
8. Melde's Apparatus – Frequency of electrically maintained Tuning Fork.
9. Study of Intensity Variation of the Magnetic Field along the axis of circular Current Carrying conductor using Stewart and Gee apparatus
10. Calibration of Low Range Voltmeter using Potentiometer Bridge
11. Calibration of Low Range Ammeter using Potentiometer Bridge
12. Determination of dielectric constant of material using charging discharging method with a parallel plate capacitor
13. Determination of energy band gap of semiconductor using PN junction diode in reverse bias
14. Determination of thermo electric coefficients for thermistor
15. Determination of Planck's constant using LED.

Subject Experts

1.

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VISAKHAPATNAM-530 003

Chairperson (BoS)

Text Books:

1. Practical physics by CL Arora, S.chand publishing company, 1995.
2. Advanced Practical Physics For Students by B.l.worsnop And H.t.flint, 1923

Web References:

1. http://lo-au.vlabs.ac.in/laser-optics/Newtons_Rings_Wavelength_of_light/
2. http://ov-au.vlabs.ac.in/optics/Spectrometer_Refractive_Index/
3. http://ov-au.vlabs.ac.in/optics/Diffraction_Grating/
4. http://htv-au.vlabs.ac.in/heat-thermodynamics/Characteristics_of_Thermistor/
5. https://bop-iitk.vlabs.ac.in/exp/energy-band-gap/simulation.html

Subject Experts

1.

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VISAKHAPATNAM-530 003

Chairperson (BoS)

ANNEXTURE -3

ENGINEERING PHYSICS
I Year B. Tech II Semester (CSE & IT)

Course Code:	L	T	P	C
	4	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to:

C01: Apply the principles of interference, diffraction, and polarization in wave optics, and utilize optical instruments for practical applications.
C02: Familiarize the basic concepts of Thermodynamics relevant to engineering applications.
C03: Introduce the knowledge of basic principles of Electromagnetism and EM Waves.
C04: Learn basic principles of lasers, optical fibres and their use in technological applications.
C05: Introduce the basic principles of Quantum mechanics, Quantum computing.

UNIT-I 12 Lectures

Interference: Principle of superposition, Young's Experiment (qualitative treatment), Coherence, Interference in thin films (reflected light), Newton's Rings, Michelson's Interferometer and its applications (thickness of thin sheet, determination of wavelength).
Diffraction: Introduction, Differences between Interference and Diffraction, Differences between Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction at a single slit (Qualitative and Quantitative treatment)
Polarization: Introduction - types of Polarization, Polarization by reflection, Brewster's law, refraction and double refraction in uniaxial crystals, Nicol Prism, Quarter wave plate and Half wave plate, circular and elliptical polarization – conversion, Applications of Polarization.
Text Book 1: 5.16,5.17,5.18, 5.20, 6.1, 6.2, 6.8.(1-3), 6.11, 6.13, 6.14.1, 6.14.3, 7.1, 7.2, 7.3, 7.4, 7.5, 8.1, 8.2,8.5, 8.6,8.11,8.12, 8.16,8.20.
Learning Outcomes:
At the end of the unit, the student will be able to

1. Understand the principles of interference patterns and apply Michelson's Interferometer to measure physical quantities such as thickness and wavelength (L2)
2. Distinguish between interference and diffraction and perform qualitative and quantitative analysis of Fraunhoffer diffraction at a single slit (L2)
3. Apply polarization concepts through various optical devices to explore and solve problems related to polarized light (L3)

UNIT-II 10 Lectures

Thermodynamics: Heat and Work, First law of thermodynamics and its applications, Reversible and Irreversible process, Carnot cycle and Efficiency, Second law of thermodynamics, Carnot's Theorem, Entropy, Second law in terms of Entropy, Entropy and disorder, Third law of thermodynamics (statement only)
TextBook-1: 16.3,16.5.1,16.6,16.8,16.11,16.12,16.14,16.16,16.17, 16.17.1, 16.18
Learning Outcomes:
At the end of the unit, the student will be able to

1. Apply the first and second laws of thermodynamics to analyse energy transformations and process efficiencies (L3)
2. Understand the Carnot cycle and its efficiency, and calculate entropy changes to explain thermodynamic processes (L2)
3. Differentiate between reversible and irreversible processes, and relate entropy to disorder (L2)
4. State the third law of thermodynamics and understand its implications for materials at absolute zero (L2)

Subject Expert

1.

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G V P COLLEGE OF ENGINEERING FOR WOMEN
MADHURAWADA VISAKHAPATNAM-530 048

UNIT-III 14 Lectures

Electromagnetism: Concept of electric flux, Gauss' law, applications of Gauss' law (wire, sheet, sphere), Magnetic Field, Gauss' law in magnetostatics, Faraday's law of induction, Lenz's law, Induced magnetic fields, Displacement current, Maxwell's equations (no derivation, qualitative treatment), Electromagnetic wave equations, Introduction to EM waves, The Biot-Savart's law, magnetic field near a long wire, magnetic field for a circular Current loop, Ampere's law.

TextBook-1: 2.12,2.14,2.18, 3.5, 3.8, 3.9,3.12, 3.13,3.14, 3.10, 3.12, 3.3,3.4

Learning Outcomes:

At the end of the unit, the student will be able to

4. Apply Gauss's law and Faraday's law of induction to solve problems involving electric and magnetic fields (L3),
5. Use Maxwell's equations to understand electromagnetic wave phenomena (L2).
6. Analyse magnetic fields using Biot-Savart's law, Ampere's law, and apply e magnetostatic field distributions (L3)

UNIT-IV 12 Lectures

Lasers: Characteristics of laser beam, Spontaneous and stimulated emission of radiation, population inversion, Ruby laser, He-Ne laser, Semiconductor laser (homojunction), Applications of lasers.

Optical fibres: principle of propagation of light in optical fibres, Acceptance Angle and cone of a fibre, Numerical aperture, Modes of propagation, Classification of fibres based on refractive index profile and modes, Losses in optical fibres- scattering and bending losses, Fibre optics in communication-Block diagram, Applications of optical fibres

TextBook-1: 24.12, 24.2, 24.5,24.6, 24.7, 24.11.1, 24.11.3, 24.11.5.1, 24.13, 10.2, 10.3, 10.4, 10.5, 10.6, 10.10, 10.11, 10.19,10.20 (only for list of applications)

Learning Outcomes:

At the end of the unit, the student will be able to

1. Understand the principles of laser operation, including spontaneous and stimulated emission, and analyse various types of lasers such as Ruby, He-Ne, and Semiconductor lasers. (L2)
2. Describe the fundamentals of optical fibre technology, including light propagation, acceptance angle, numerical aperture, and classification of fibres (L2)
3. Apply these concepts to fibre optics communication systems and explore their practical applications (L2)

UNIT-V 12 Lectures

Quantum Physics: de Broglie concept of matter waves, Heisenberg's uncertainty principle, Schrödinger time independent wave equation, Physical significance of wave function, particle in a one-dimensional box.

Quantum Computing Quantum bits, Introduction to Pauli spin matrices, Bloch sphere, Entanglement, Qubit Vs classical bit, Single Qubit gates, Quantum Teleportation – Basic Idea.

TextBook-1 20.5, 20.11, 20.17, 20.18, 20.22

Text Book -3 Sec 1.8, 1.9, 1.10.1

Learning Outcomes:

At the end of the unit, the student will be able to

1. Understand the concepts quantum mechanics such as the de Broglie wavelength and Heisenberg's uncertainty principle and use the Schrödinger equation (L2).
2. Describe the fundamentals of quantum computing (L2)

Subject Expert

1.

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ADHURAWADA VISAKHAPATNAM-530 048

Text Books:

1. M. N. Avadhanulu, P. G. Khirsagar, and T. V. S. Arun Murthy, A textbook of Engineering Physics, 11th edition, S. Chand and Company Ltd., 2019.
2. H. K. Malik and A. K. Singh, Engineering Physics, 2nd Edition, McGraw Hill Education Pvt Ltd. ,2018.
3. P.K. Palaniswamy, Engineering Physics, SCITECH Publications, 2011.

Reference Books:

4. Modern Engineering Physics by A.S. Vasudeva S. Chand and Company Ltd., 2010
5. University Physics by Young and Freedman Pearson Education, 2010.
6. Michael A. Nielsen, Isaac L. Chuang, Quantum Computation and Quantum Information Cambridge University Press, 10 th Ed., 2010

Web References:

1. https://nptel.ac.in/courses/115105537 (Wave optics)
2. https://nptel.ac.in/courses/115106122 (Electromagnetism)
3. https://nptel.ac.in/courses/112102255 (Thermodynamics)
4. https://nptel.ac.in/courses/115107095 (Fiber Optics)
5. https://nptel.ac.in/courses/104104085 (Lasers)
6. https://nptel.ac.in/courses/104104082 (Quantum Computing)
7. https://www.intechopen.com/online-first/73811 (Quantum Computing)
8. https://lewisla.gitbook.io/learning-quantum/quantum-circuits/single-qubit-gates (Quantum Computing)
9. https://profmcruz.wordpress.com/wp-content/uploads/2017/08/quantum-computation-and-quantum-information-nielsen-chuang.pdf (Quantum Computing)

Subject Expert

1. Head
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GVP COLLEGE OF ENGINEERING FOR WOMEN
MADHURAWADA, VISAKHAPATNAM-530 048

ANNEXURE 4

ENGINEERING PHYSICS LAB

I Year B. Tech I Semester (CSE &IT)

Course Code: **L-T-P-C: 0-0-3-1.5**

Course Objectives:

- To learn the principles of wave optics through experiments
- To learn the basic laws of electromagnetism through study of magnetic field variations
- To learn the calibration process of analog instruments like voltmeter and ammeter
- To learn the usage of semiconductors as sensors in temperature sensing

Course Outcomes

At the end of the course the student will be able to

C01: Interpret the physical parameters based on optical phenomena
C02: Familiarize with the behaviour of double refraction in birefringent material like quartz
C03: Understand the concepts of diffraction through experiments
C04: Calibrate instruments like low range voltmeters and ammeters
C05: Design temperature sensors based on diodes and thermistors

List of Experiments:

(Any TEN of the following experiments shall be conducted)

1. Determination of Radius of Curvature of a given Convex Lens By forming Newton's Rings.
2. Determination of Thickness Given Paper Strip or hairline by Wedge Method.
3. Determination of Wavelength of Spectral Lines in the Mercury Spectrum by Normal Incidence method
4. Determination of Cauchy's Constants of a Given Material of the Prism using Spectrometer in minimum deviation position
5. Determination of Refractive Index of Ordinary ray and Extra-ordinary ray in quartz prism
6. Laser- Diffraction – determination of wavelength of laser source using diffraction grating
7. Determination of wavelength of laser source using Fraunhofer single slit diffraction
8. Melde's Apparatus – Frequency of electrically maintained Tuning Fork.
9. Study of Intensity Variation of the Magnetic Field along the axis of circular Current Carrying conductor using Stewart and Gee apparatus
10. Calibration of Low Range Voltmeter using Potentiometer Bridge
11. Calibration of Low Range Ammeter using Potentiometer Bridge
12. Determination of dielectric constant of material using charging discharging method with a parallel plate capacitor
13. Determination of energy band gap of semiconductor using PN junction diode in reverse bias
14. Determination of thermo electric coefficients for thermistor
15. Determination of Planck's constant using LED.

Subject Expert

1.

Head
Department of physics
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VISAKHAPATNAM-530 003

Chairperson (BoS)

Text Books:

1. Practical physics by CL Arora, S.chand publishing company, 1995.
2. Advanced Practical Physics For Students by B.l.worsnop And H.t.flint, 1923

Web References:

1. http://lo-au.vlabs.ac.in/laser-optics/Newtons_Rings_Wavelength_of_light/
2. http://ov-au.vlabs.ac.in/optics/Spectrometer_Refractive_Index/
3. http://ov-au.vlabs.ac.in/optics/Diffraction_Grating/
4. http://htv-au.vlabs.ac.in/heat-thermodynamics/Characteristics_of_Thermistor/
5. https://bop-iitk.vlabs.ac.in/exp/energy-band-gap/simulation.html

Subject Expert

1.

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VISAKHAPATNAM-530 003

Chairperson (BoS)

Annexure-9

Annexure-1

GREEN-CHEMISTRY

I Year B. Tech I-Semester (EEE,CSE&IT)

L-T-P-C: 4-0-0-3

Course Outcomes: At the end of the Course, the student shall be able to

C01: To develop the knowledge about water and its treatment for industrial and potablepurpose(L-3)

C02: Utilize the theory of construction and discharge reactions of various types of batteries areused in commercial society (L-3)

C03: Explain the importance of working principle, fabrication of electrodes and other components, advantages, disadvantages and environmental aspects of fuel cells(L-4)

C04: Classify the corrosion mechanism of metals and factors influenced by rate and extent ofcorrosion and categorize the reasons for corrosion control methods(L-4)

C05: Apply green chemistry technology processes the knowledge for solving existing challengesfaced in various engineering and societal areas (L-5)

UNIT-I WATER-TECHNOLOGY **12hrs**

Sources of Water – Impurities and their influence of living systems – WHO Limits – Hardness and its Determination – Boiler Troubles and their removal – Water Softening Methods – Lime-Soda, Zeolite and Ion Exchange - Municipal Water Treatment-Break Point Chlorination – Desalination of Sea Water –Reverse Osmosis Method Electro-dialysis. Chemical analysis of water

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons New Delhi

Learning Outcomes:

At the end of the unit the student will be able to

- Explain the principles of reverse osmosis (L-4)
- Compare the quality of drinking water with BIS and WHO standards (L-4)
- Illustrate problems associated with Boiler Troubles (L-2)
- Demonstrate the estimation of hardness of water (L-3)

UNIT-II BATTERIES **12 hrs**

Primary batteries: The chemistry-Types: Zinc-carbon (Leclanche type), zinc alkaline (Duracell), zinc/air batteries; Lithium primary cells and lithium-ferrous sulphide cells. Secondary batteries: Leadacid and VRLA (valve regulated (sealed) lead acid), nickel cadmium, nickel-zinc, nickel-metal hydridebatteries, lithium ion batteries, ultrathin lithium polymer cells. Advanced Batteries for electric vehicles,requirements of the battery – sodium-beta and redox batteries.

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons New Delhi

Learning Outcomes:

At the end of the unit, the student will be able to

- Deduct the working mechanism of various types of cells (L-5)
- Illustrate difference between primary and secondary cells (L-2)
- List the environmental applications of Various types of batteries (L-4)
- Utilize the manufacturing methods of advanced batteries for electric vehicles (L-3)

UNIT-III FUEL CELLS **10 Hrs.**

Fuel Cells: Description, working principle, anodic, cathodic and cell reactions, fabrication of electrodes and other components, applications, advantages, disadvantages and environmental aspects of the following types of fuel cells: Proton Exchange Membrane Fuel Cells, alkaline fuel cells, phosphoric acid, solid oxide, molten carbonate, direct methanol fuel cells- Membranes and Fuels, Electrochemical Sensors and Optical fibres

1.Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons, New Delhi

2.M. Aulice Scibioh and B. Viswanathan 'Fuel Cells – principles and applications', University Press, India (2006).

Subject Experts

(1) Basavaiah

Prof. (Dr) K. BASAVAIAH
Organic & Analytical Chemistry
School of Chemistry
A.U. College of Science & Technology
Andhra University
Visakhapatnam

Chairperson BOS

HEAD
DEPARTMENT OF
BASIC SCIENCES & HUMANITIES
GVP COLLEGE OF ENGINEERING FOR WOMEN
MADHURAWADA VISAKHAPATNAM-530 048

Learning Outcomes:

At the end of the unit, the student will be able to

- Explain the fundamental theories of fuel cells (L-2)
- Classify types of fuel cells (L-4)
- Make use of the various components fabrication of fuel cells (L-3)
- Distinguish the advantages, disadvantages and environmental aspects of fuel cells(L-4)

UNIT-IV CORROSION **12 hrs**

Corrosion: Origin and Theory – Types of Corrosion: Chemical and Electrochemical; Pitting, Inter granular; Waterline, Stress – Galvanic Series – Factors Effecting Corrosion. Corrosion Controlling Methods, Protective Coatings, Electroplating and Electroless Plating, Paints, Varnishes, Lacquers, Enamels

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons, New Delhi

Learning Outcomes:

At the end of the unit, the student will be able to

- Explain the Mechanism of corrosion (L-4)
- List the various types of Corrosion (L-4)
- Describe the Factors Effecting Corrosion (L-5)
- Differentiate between Paints Lacquers Enamels (L-4)

UNIT-V GREEN-CHEMISTRY AND TECHNOLOGY **12 hrs**

Introduction and significance of green chemistry, Goals of green chemistry, 12 principles of green chemistry, toxicity of chemicals, concept of zero pollution technologies; Aqueous phase method, Super critical fluid method, Phase transfer catalytic method, atom economy, functional toxicity vs non-functional toxicity, functional group approaches to green chemistry, Elimination of toxic functionalgroup, optimization of frameworks for the design of greener synthetic pathways -Green synthesis of Adipic acid and Paracetamol- energy minimization-Microwave synthesis, ultra sound assisted methodBio catalysed reaction and Only explanation with examples Processes involving solid catalysts – zeolites, ion exchange resins,applications of Green Chemistry, Green solvents, green fuels & propellants

Anastas, P. T., Warner, J. C. Green Chemistry: Theory and Practice, Oxford University Press Inc., New York, 1998

Learning Outcomes:

At the end of the unit the student will be able to

Text Books:

1. Engineering Chemistry – PC Jain and M. Jain – Dhanpath Rai and Sons, New Delhi.
2. Anastas, P. T., Warner, J. C. Green Chemistry: Theory and Practice, Oxford UniversityPress Inc., New York, 1998

Reference Books:

1. M. Aulice Scibioh and B. Viswanathan 'Fuel Cells – principles and applications', University Press India (2006).
2. A Text book of Engineering Chemistry – S. S. Dara – S. Chand & Co. New Delhi
3. Hand Book of Green Chemistry and Technology; by James Clarke and Duncan Macquarrie; Blakwell Publishing

. Web References:

1. https://archive.nptel.ac.in/course.html
2. https://nptel.ac.in/courses/engineering chemistry

. Subject Experts

(1)

Chairperson BOS

HEAD
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BASIC SCIENCES & HUMANITIES
GVP COLLEGE OF ENGINEERING FOR WOMEN
KONURAWADA, VISAKHAPATNAM-530 048

Annexure-2

GREEN-CHEMISTRY –LAB

I Year B. Tech I Semester (EEE)

L	T	P	C
0	0	3	1.5

CO-1 (Exp-1 &2)	**Make use of** experimental skills for quantitatively with accuracy analysis in acid-base titrations using suitable indicators
CO-2 (Exp-3 7, 9,10 & 11)	**Apply** the principals of redox titrations Chromium (VI) by Mohr's Salt Solution in different samples
CO-3 (Exp-4)	**Utilize** with complex metric titrations to determine hardness of water and estimate the amount of impurities present in the samples
CO-4 (Exp-5 & 8)	Perform **experiments with** instrument novel materials to be used as zeolite for removal of hardness of water to acquire skills of different methods of chemical analysis
CO-5 (Exp--6)	The students to **develop** the skills of green synthesis through the preparation of a polymer/ drug

S.NO.	TITLE OF THE EXPERIMENTS
1	Determination of Sodium Hydroxide with HCl (Na_2CO_3)Primary Standard)
2	Determination of Alkalinity (Carbonate and Hydroxide) of water sample
3	Determination of Chromium (VI) by Mohr's Salt Solution
4	Determination of Hardness of Water sample by EDTA method
5	Zeolite column for removal of hardness of water/ Ion exchange-Method
6	Green Synthesis of Polymer/ drug
7	Determination of Oxalic Acid by Permanganometry
8	Determination of the concentration of strong acid vs strong base (by conductometric method)
9	Determination of Fe(II)/Mohr's Salt by Potassium dichromate (by redox-method)
10	Determination of Cu^{+2}using standard hypo solution (Iodometry)
11	Estimation of chorine by using bleaching powder
12	Estimation of vitamin-C

Of the above experiments at-least 10 assessment experiments should be completed in a semester.

Text Books: 1. Vogel's Quantitative Chemical Analysis – V – Edition – Longman.

2. Experiments in Applied Chemistry (For Engineering Students) – Sirita Rattan – S. K. Kataria & Sons, New Delhi

Course Objectives:

To develop the fine skills of quantitative determination of various chemical components through titrimetric analysis

- To prepare and use ion exchange / zeolite columns for the removal of hardness of water
- To develop the skill of organic synthesis through the preparation of a polymer/ drug

Outcomes: The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis.

Subject Experts

(1)

Chairperson BOS

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SVP COLLEGE OF ENGINEERING FOR WOMEN
ADHURAWADA VISAKHAPATNAM-530 049

Annexure-3

GREEN-CHEMISTRY

I Year B. Tech II- Semester CSE-(AI&ML)&ECE

L-T-P-C: 4-0-0-3

Course Outcomes: At the end of the Course, the student shall be able to

C01: To develop the knowledge about water and its treatment for industrial and potablepurpose(L-3)

C02: Utilize the theory of construction and discharge reactions of various types of batteries areused in commercial society (L-3)

C03: Explain the importance of working principle, fabrication of electrodes and other components, advantages, disadvantages and environmental aspects of fuel cells(L-4)

C04: Classify the corrosion mechanism of metals and factors influenced by rate and extent ofcorrosion and categorize the reasons for corrosion control methods(L-4)

C05: Apply green chemistry technology processes the knowledge for solving existing challengesfaced in various engineering and societal areas (L-5)

UNIT-I WATER-TECHNOLOG **12hrs**

Sources of Water – Impurities and their influence of living systems – WHO Limits – Hardness and its Determination – Boiler Troubles and their removal – Water Softening Methods – Lime-Soda, Zeolite and Ion Exchange - Municipal Water Treatment-Break Point Chlorination – Desalination of Sea Water –Reverse Osmosis Method Electro-dialysis. Chemical analysis of water

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons New Delhi

Learning Outcomes:

At the end of the unit the student will be able to

- Explain the principles of reverse osmosis (L-4)
- Compare the quality of drinking water with BIS and WHO standards (L-4)
- Illustrate problems associated with Boiler Troubles (L-2)
- Demonstrate the estimation of hardness of water (L-3)

UNIT-II BATTERIES **12 hrs**

Primary batteries: The chemistry-Types: Zinc-carbon (Leclanche type), zinc alkaline (Duracell), zinc/air batteries; Lithium primary cells and lithium-ferrous sulphide cells. Secondary batteries: Leadacid and VRLA (valve regulated (sealed) lead acid), nickel cadmium, nickel-zinc, nickel-metal hydridebatteries, lithium ion batteries, ultrathin lithium polymer cells. Advanced Batteries for electric vehicles,requirements of the battery – sodium-beta and redox batteries.

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons New Delhi

Learning Outcomes:

At the end of the unit, the student will be able to

- Deduct the working mechanism of various types of cells (L-5)
- Illustrate difference between primary and secondary cells (L-2)
- List the environmental applications of Various types of batteries (L-4)
- Utilize the manufacturing methods of advanced batteries for electric vehicles (L-3)

UNIT-III FUEL CELLS **10 Hrs.**

Fuel Cells: Description, working principle, anodic, cathodic and cell reactions, fabrication of electrodes and other components, applications, advantages, disadvantages and environmental aspects of the following types of fuel cells: Proton Exchange Membrane Fuel Cells, alkaline fuel cells, phosphoric acid, solid oxide, molten carbonate, direct methanol fuel cells- Membranes and Fuels, Electrochemical Sensors and Optical fibres

Subject Experts

(1) B. Basavaiah

Prof. (DR) K. BASAVAIAH
Department of Inorganic & Analytical Chemistry
School of Chemistry
College of Science & Technology
Andhra University
Visakhapatnam

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1.Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons, New Delhi
2.M. Aulice Scibioh and B. Viswanathan 'Fuel Cells – principles and applications', University Press, India (2006).

Learning Outcomes:

At the end of the unit, the student will be able to

- Explain the fundamental theories of fuel cells (L-2)
- Classify types of fuel cells (L-4)
- Make use of the various components fabrication of fuel cells (L-3)
- Distinguish the advantages, disadvantages and environmental aspects of fuel cells(L-4)

UNIT-IV CORROSION **12 hrs**

Corrosion: Origin and Theory – Types of Corrosion: Chemical and Electrochemical; Pitting, Inter granular, Waterline, Stress – Galvanic Series – Factors Effecting Corrosion. Corrosion Controlling Methods, Protective Coatings, Electroplating and Electroless Plating, Paints, Varnishes, Lacquers, Enamels

Engineering Chemistry – PC Jain and M. Jain – 15 Edition; Dhanpath Rai and Sons, New Delhi

Learning Outcomes:

At the end of the unit, the student will be able to

- Explain the Mechanism of corrosion (L-4)
- List the various types of Corrosion (L-4)
- Describe the Factors Effecting Corrosion (L-5)
- Differentiate between Paints Lacquers Enamels (L-4)

UNIT-V GREEN-CHEMISTRY AND TECHNOLOGY **12 hrs**

Introduction and significance of green chemistry, Goals of green chemistry, 12 principles of green chemistry, toxicity of chemicals, concept of zero pollution technologies; Aqueous phase method, Supercritical fluid method, Phase transfer catalytic method, atom economy, functional toxicity vs non- functional toxicity, functional group approaches to green chemistry, Elimination of toxic functional group, optimization of frameworks for the design of greener synthetic pathways -Green synthesis ofAdipic acid and Paracetamol- energy minimization-Microwave synthesis, ultra sound assisted method Bio catalysed reaction and Only explanation with examples Processes involving solid catalysts – zeolites, ion exchange resins,applications of Green Chemistry, Green solvents, green fuels & propellants

Anastas, P. T., Warner, J. C. Green Chemistry: Theory and Practice, Oxford University Press Inc., New York, 1998

Learning Outcomes:

At the end of the unit the student will be able to

Text Books:

3. Engineering Chemistry – PC Jain and M. Jain – Dhanpath Rai and Sons, New Delhi.
4. Anastas, P. T., Warner, J. C. Green Chemistry: Theory and Practice, Oxford UniversityPress Inc., New York, 1998

Reference Books:

4. M. Aulice Scibioh and B. Viswanathan 'Fuel Cells – principles and applications', University Press India (2006).
5. A Text book of Engineering Chemistry – S. S. Dara – S. Chand & Co. New Delhi
6. Hand Book of Green Chemistry and Technology; by James Clarke and Duncan Macquarrie; Blakwell Publishing

. **Web References:**

1. https://archive.nptel.ac.in/course.html
2. https://nptel.ac.in/courses/engineering chemistry

Subject Experts

(1). Basavaiah

Prof. (DR) K. BASAVAIAH
Department of Inorganic & Analytical Chemistry
School of Chemistry
A.U. College of Science & Technology
Andhra University
Visakhapatnam

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Annexure-10

ENGLISH

I Year B. Tech I Semester

(Common to the branches: CSE, IT)

ANNEXURE-I

Course Code: **L-T-P-C: 4-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to

C01: **Develop** ethical and moral values, **Practice** inner peace, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts.(L3)

C02: **Assess** the impact of different social backgrounds, **critique** the poet's insights. (L5) **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts.(L3)

C03: **Analyse** socio-cultural context(L4), **Establish** effective interpersonal and communication skills(L3), **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts(L3)

C04: **Focus** on value of education, **Relate** to the poet's nostalgia, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts (L4,L3)

C05: **Determine** the central idea of the text, **Identify** one's resilience, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts (L3)

UNIT-I 12 Lectures

Prose: Swami Vivekananda: The Secret of Work
Poetry: Grenville Kleiser: Stay Calm
Grammar & Vocabulary: Synonyms & Antonyms
Listening: Listening for Context and Specific Information
Speaking: Introducing Oneself and Others
Writing: Basics of writing

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Focus & Interpret** on the spiritual growth and capacity building of the individual in the 21st century.(L4,L3)
2. **Improve** communication with appropriate synonyms and antonyms. (L6)
3. Listen and **understand** for specific information in the audio(L2)
4. **Establish** connections between oneself and others(L3)
5. **Apply** appropriate punctuation marks for clarity and organisation of written text (L3)

Subject Experts:

1. G. Lavanya Laasya
2. N.S. Perry
3. Chandrani Mukherjee.

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UNIT-II 12 Lectures

Prose: Katherine Mansfield: The Doll's House
Poetry: Rabindranath Tagore: Where the Mind Is Without Fear
Grammar & Vocabulary : Phrasal Verbs
Listening: Listening for Main Idea and Supporting Ideas
Speaking: Getting Someone's Attention and Interrupting
Writing: Formal Letters
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Understand** the world through adult & child's points of view (L2)
2. **Perceive** a sense of self dignity & rationality(L5)
3. **Utilize** appropriate phrasal verbs for effective communication(L3)
4. Listen **& Identify** main and supporting ideas in the audio(L3)
5. **Practice** conversational etiquette(L3)
6. **Compose** formal letters(L6)

UNIT-III 12 Lectures

Prose: O. Henry: The Last Leaf
Poetry: Rudyard Kipling: If
Grammar & Vocabulary: Idiomatic Expressions
Listening: Listening for Global Comprehension
Speaking: Asking for Information and Giving Information
Writing: Note-Making
Learning Outcomes:
At the end of the unit, the student will be able to:

1. **Develop** strategies to face challenges in life effectively(L6)
2. **Make use of** idiomatic expressions in oral & written communication(L3)
3. Listen & **Analyse** the audio for Global Comprehension(L4)
4. **Ask** & give information(L2)
5. **Practice** note making study skills(L3)

Subject Experts:

1. G. Suresha Reddy
2. N.S. Berry
3. Chandrasekhar

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UNIT-III 12 Lectures

Prose: O. Henry: The Last Leaf
Poetry: Rudyard Kipling: If
Grammar & Vocabulary: Idiomatic Expressions
Listening: Listening for Global Comprehension
Speaking: Asking for Information and Giving Information
Writing: Note-Making
Learning Outcomes:
At the end of the unit, the student will be able to:

6. **Develop** strategies to face challenges in life effectively(L6)
7. **Make use of** idiomatic expressions in oral & written communication(L3)
8. Listen & **Analyse** the audio for Global Comprehension(L4)
9. **Ask** & give information(L2)
10. **Practice** note making study skills(L3)

UNIT-IV 12 Lectures

Prose: Francis Bacon: Of Studies
Poetry: Toru Dutt: Our Casuarina Tree
Grammar & Vocabulary : Remedial Grammar I
Listening: Listening to Make Inferences
Speaking: Expressing Opinions, and Agreeing and Disagreeing with Opinions
Writing: Essay Writing
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Develop** the habits of continuous learning(L6)
2. **Use** of Indian philosophy as a way of life(L3)
3. **Identify** and correct common errors in English grammar and usage(L3)
4. **Make inferences** from the audio(L4)
5. **Express** opinions(L6)
6. **Compose** different types of essays(DEAN)(L6)

Subject Experts:

1. G. Suvarnalatha
2. M.S. Berry
3. Chandrika

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UNIT-V 12 Lectures

Prose: Mark Twain: Whitewashing the Fence
Poetry: William Ernest Henley: Invictus
Grammar & Vocabulary : Remedial Grammar II
Listening: Listening for Key Ideas
Speaking: Telephone Etiquette
Writing: E-mail Etiquette

Learning Outcomes:
At the end of the unit, the student will be able to

1. **Discover** the humour& moral lessons in the text(L3)
2. **Adapt** to adverse situations.(L6)
3. **Find errors** in grammar ,vocabulary and usage(L5)
4. **Prioritize** key ideas(L5)
5. **Practise** telephone Etiquette(L3)
6. **Compose** E-Mails(L6)

Text Books:

1. **English for Engineers: Theory to practice**. Board of Editors, Orient Black Swan Publishers, India.2024.

Reference Books:

1. English Grammar in Use by Raymond Murphy
2. Oxford English Grammar Course by Michael Swan
3. Word Power Made Easy by Norman Lewis
4. Cambridge Vocabulary for IELTS by Pauline Cullen
5. The Elements of Style by William Strunk Jr. and E.B. White
6. English Vocabulary in Use by Michael McCarthy and Felicity O'Dell
7. Practical English Usage by Michael Swan
8. The Only Grammar Book You'll Ever Need by Susan Thurman
9. Advanced English Grammar: A Linguistic Approach by Ilse Depraetere and Chad Langford

Subject Experts:

1. G. Sumana Lakshmi
2. M.S. Berry
3. Chandrasekhar.

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COMMUNICATION SKILLS LAB

I Year B. Tech. I Semester

(Common to the branches: CSE & IT)

ANNEXURE-II

Course Code: **L-T-P-C: 0-0-3-1.5**

Course Outcomes: At the end of the Course, the student shall be able to

C01: **Identify** and pronounce the sounds of English; **choose** the accurate stress in connected speech for proper intonation (L2,L3) [Exp 1,2]

C02: **Identify** the main theme and ideas to **Summarize** audio texts(L2,L5) [Exp 3,4]

C03: **Take part in** Just A Minute (JAM) – Picture Prompts- Narratives-Role Play (L4) [Exp 5,6,7,8]

C04: **Practice** discussions and debates(L3) [Exp 9,10]

C05: **Demonstrate** Presentation Skills(L3) [Exp 11,12]

UNIT-I

Introduction to Phonetics: The Sounds of English (Speech sound – vowels and consonants) - Stress and Intonation - Accent and Rhythm.

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Apply** the phonetic symbols for better pronunciation. (L3)
2. **Choose** appropriate stress, intonation and rhythm of English language for clear communication. (L3)
3. **Improve** student's articulation. (L6)

UNIT-II

Listening Skills: Listening for gist and specific information - listening for Note taking, Summarizing and for opinions - Listening to the speeches of eminent personalities.

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Develop** effective listening skills for better comprehension of academic lectures and English spoken by native speakers (L6).
2. **Apply** effective strategies for good writing (L3)
3. **Demonstrate** writing skills in note taking and summarizing(L3)

Subject Experts:

1. G. Lavanya Lakshmi
2. N.S. Reddy
3. Chandrasekhar

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ADHURAWADA, VISAKHAPATNAM-530 048

UNIT-III

Speaking Skills:Just A Minute (JAM) session –Picture Prompts- Narrating stories and anecdotes-Role Play

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Make** use of dialogues for different roles. (L3)
2. **Develop** communication skills in formal and informal situations. (L3)
3. **Improve** speaking skills through participation in activities such as narrating stories and role plays(L6)

UNIT-IV

Speaking skills: Group Discussions-Arguments-Debates

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Focus** on discussions in various formats(L4)
2. **Develop** ideas and arguments to debate.(L3)

UNIT-V

Presentation skills: Verbal and non-verbal communication - Body Language - Making a Presentation

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Design** presentations with PowerPoint slides(L3)
2. **Adapt** postures, gestures, facial expressions and eye contact in formal presentations. (L6)

Reference Books:

1. Language and Life: A Skills Approach Board of Editors, Orient Black swan Publishers, India.2018.
2. A Textbook of English Phonetics for Indian Students, T.Balasubramanian, Macmillan India Ltd.
3. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill Education Private Limited, New Delhi.
4. Speak Well. Orient Black swan Publishers, Hyderabad.
5. Allan Pease. Body Language. Manjul Publishing House, New Delhi.

Subject Experts:

1. G. Swaminathan
2. H.S. Berry
3. Chandrika

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Web References:

1. https://www.englishlanguageclub.co.uk
2. https://www.ted.ed.com/
3. https://learningenglish.voanews.com/
4. https://www.bbc.co.uk/learningenglish/
5. https://www.abc.net.au/education/learn-english
6. NDTV News

Subject Experts:

1. G. Lavanya Latha
2. N.S. Berry
3. Chandrashekhar

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ENGLISH

I Year B. Tech II Semester

(Common to the branches: ECE,EEE&CSM)

ANNEXURE-III

Course Code: **L-T-P-C: 4-0-0-3**

Course Outcomes: At the end of the Course, the student shall be able to

C01: **Develop** ethical and moral values, **Practice** inner peace, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts.(L3)

C02: **Assess** the impact of different social backgrounds, **critique** the poet's insights. (L5) **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts.(L3)

C03: **Analyse** socio-cultural context(L4), **Establish** effective interpersonal and communication skills(L3), **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts(L3)

C04: **Focus** on value of education, **Relate** to the poet's nostalgia, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts (L4,L3)

C05: **Determine** the central idea of the text, **Identify** one's resilience, **Demonstrate** the use of LSRW skills, Vocabulary and basic grammar concepts (L3)

UNIT-I 12 Lectures

Prose: Swami Vivekananda: The Secret of Work
Poetry: Grenville Kleiser: Stay Calm
Grammar & Vocabulary: Synonyms & Antonyms
Listening: Listening for Context and Specific Information
Speaking: Introducing Oneself and Others
Writing: Basics of writing
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Focus & Interpret** on the spiritual growth and capacity building of the individual in the 21st century.(L4,L3)
2. **Improve** communication with appropriate synonyms and antonyms. (L6)
3. Listen and **understand** for specific information in the audio(L2)
4. **Establish** connections between oneself and others(L3)
5. **Apply** appropriate punctuation marks for clarity and organisation of written text (L3)

Subject Experts:

1. G Anuradha Laxmi
2. N.S. Berry
3. Chandreie Mukherjee.

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NARSAPUR

UNIT-II 12 Lectures

Prose: Katherine Mansfield: The Doll's House
Poetry: Rabindranath Tagore: Where the Mind Is Without Fear
Grammar & Vocabulary : Phrasal Verbs
Listening: Listening for Main Idea and Supporting Ideas
Speaking: Getting Someone's Attention and Interrupting
Writing: Formal Letters
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Understand** the world through adult & child's points of view (L2)
2. **Perceive** a sense of self dignity & rationality(L5)
3. **Utilize** appropriate phrasal verbs for effective communication(L3)
4. Listen **& Identify** main and supporting ideas in the audio(L3)
5. **Practice** conversational etiquette(L3)
6. **Compose** formal letters(L6)

UNIT-III 12 Lectures

Prose: O. Henry: The Last Leaf
Poetry: Rudyard Kipling: If
Grammar & Vocabulary: Idiomatic Expressions
Listening: Listening for Global Comprehension
Speaking: Asking for Information and Giving Information
Writing: Note-Making
Learning Outcomes:
At the end of the unit, the student will be able to:

1. **Develop** strategies to face challenges in life effectively(L6)
2. **Make use of** idiomatic expressions in oral & written communication(L3)
3. Listen & **Analyse** the audio for Global Comprehension(L4)
4. **Ask** & give information(L2)
5. **Practice** note making study skills(L3)

Subject Experts:

1. G. Lunarea Lakshmi
2. M.S. Berry
3. Chandrasree Mukherjee

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UNIT-III 12 Lectures

Prose: O. Henry: The Last Leaf
Poetry: Rudyard Kipling: If
Grammar & Vocabulary: Idiomatic Expressions
Listening: Listening for Global Comprehension
Speaking: Asking for Information and Giving Information
Writing: Note-Making
Learning Outcomes:
At the end of the unit, the student will be able to:

6. **Develop** strategies to face challenges in life effectively(L6)
7. **Make use of** idiomatic expressions in oral & written communication(L3)
8. Listen & **Analyse** the audio for Global Comprehension(L4)
9. **Ask** & give information(L2)
10. **Practice** note making study skills(L3)

UNIT-IV 12 Lectures

Prose: Francis Bacon: Of Studies
Poetry: Toru Dutt: Our Casuarina Tree
Grammar & Vocabulary : Remedial Grammar I
Listening: Listening to Make Inferences
Speaking: Expressing Opinions, and Agreeing and Disagreeing with Opinions
Writing: Essay Writing
Learning Outcomes:
At the end of the unit, the student will be able to

1. **Develop** the habits of continuous learning(L6)
2. **Use** of Indian philosophy as a way of life(L3)
3. **Identify** and correct common errors in English grammar and usage(L3)
4. **Make inferences** from the audio(L4)
5. **Express** opinions(L6)
6. **Compose** different types of essays(DEAN)(L6)

Subject Experts:

1. G. Lunasena Rao
2. M.S. Berry
3. Chandrasis Mukherjee.

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UNIT-V 12 Lectures

Prose: Mark Twain: Whitewashing the Fence
Poetry: William Ernest Henley: Invictus
Grammar & Vocabulary : Remedial Grammar II
Listening: Listening for Key Ideas
Speaking: Telephone Etiquette
Writing: E-mail Etiquette

Learning Outcomes:
At the end of the unit, the student will be able to

1. **Discover** the humour& moral lessons in the text(L3)
2. **Adapt** to adverse situations.(L6)
3. **Find errors** in grammar ,vocabulary and usage(L5)
4. **Prioritize** key ideas(L5)
5. **Practise** telephone Etiquette(L3)
6. **Compose** E-Mails(L6)

Text Books:

1. **English for Engineers: Theory to practice**. Board of Editors, Orient Black Swan Publishers, India.2024.

Reference Books:

1. English Grammar in Use by Raymond Murphy
2. Oxford English Grammar Course by Michael Swan
3. Word Power Made Easy by Norman Lewis
4. Cambridge Vocabulary for IELTS by Pauline Cullen
5. The Elements of Style by William Strunk Jr. and E.B. White
6. English Vocabulary in Use by Michael McCarthy and Felicity O'Dell
7. Practical English Usage by Michael Swan
8. The Only Grammar Book You'll Ever Need by Susan Thurman
9. Advanced English Grammar: A Linguistic Approach by Ilse Depraetere and Chad Langford

Subject Experts:

1. G. Lavanya Laxmi
2. M.S. Berry
3. Chandrani Mukherjee

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COMMUNICATION SKILLS LAB

I Year B. Tech. II Semester

(Common to the branches: ECE,EEE&CSM)

ANNEXURE-IV

Course Code: **L-T-P-C: 0-0-3-1.5**

Course Outcomes: At the end of the Course, the student shall be able to

C01: **Identify** and pronounce the sounds of English; **choose** the accurate stress in connected speech for proper intonation (L2,L3) [Exp 1,2]

C02: **Identify** the main theme and ideas to **Summarize** audio texts(L2,L5) [Exp 3,4]

C03: **Take part in** Just A Minute (JAM) – Picture Prompts- Narratives-Role Play (L4) [Exp 5,6,7,8]

C04: **Practice** discussions and debates(L3) [Exp 9,10]

C05: **Demonstrate** Presentation Skills(L3) [Exp 11,12]

UNIT-I

Introduction to Phonetics: The Sounds of English (Speech sound – vowels and consonants) - Stress and Intonation - Accent and Rhythm.

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Apply** the phonetic symbols for better pronunciation. (L3)
2. **Choose** appropriate stress, intonation and rhythm of English language for clear communication. (L3)
3. **Improve** student's articulation. (L6)

UNIT-II

Listening Skills: Listening for gist and specific information - listening for Note taking, Summarizing and for opinions - Listening to the speeches of eminent personalities.

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Develop** effective listening skills for better comprehension of academic lectures and English spoken by native speakers (L6).
2. **Apply** effective strategies for good writing (L3)
3. **Demonstrate** writing skills in note taking and summarizing(L3)

Subject Experts:

1. G. Suresh Kumar
2. N.S. Reddy
3. Chandra Mouli

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UNIT-III

Speaking Skills:Just A Minute (JAM) session –Picture Prompts- Narrating stories and anecdotes-Role Play

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Make** use of dialogues for different roles. (L3)
2. **Develop** communication skills in formal and informal situations. (L3)
3. **Improve** speaking skills through participation in activities such as narrating stories and role plays(L6)

UNIT-IV

Speaking skills: Group Discussions-Arguments-Debates

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Focus** on discussions in various formats(L4)
2. **Develop** ideas and arguments to debate.(L3)

UNIT-V

Presentation skills: Verbal and non-verbal communication - Body Language - Making a Presentation

Learning Outcomes:

At the end of the unit, the student will be able to

1. **Design** presentations with PowerPoint slides(L3)
2. **Adapt** postures, gestures, facial expressions and eye contact in formal presentations. (L6)

Reference Books:

1. Language and Life: A Skills Approach Board of Editors, Orient Black swan Publishers, India.2018.
2. A Textbook of English Phonetics for Indian Students, T.Balasubramanian, Macmillan India Ltd.
3. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill Education Private Limited, New Delhi.
4. Speak Well. Orient Black swan Publishers, Hyderabad.
5. Allan Pease. Body Language. Manjul Publishing House, New Delhi.

Subject Experts:

1. G. Swarna Latha
2. L.S. Reddy
3. Chandra Mohan

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1. https://www.englishlanguageclub.co.uk
2. https://www.ted.ed.com/
3. https://learningenglish.voanews.com/
4. https://www.bbc.co.uk/learningenglish/
5. https://www.abc.net.au/education/learn-english
6. NDTV News

Subject Experts:

1.
2. H.S. Berry
3.

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Annexure-11

Annexure-IX

Introduction to Data science

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Data Science Applications-Overview of data science and its significance in different domains, Examples of successful data science applications, Ethical considerations in data science, Data Cleaning and Preprocessing, Data quality assessment and improvement techniques, Handling missing data and outliers, Data transformation and feature engineering, Exploratory Data Analysis, Statistical analysis and data visualization, Identifying patterns, correlations, and trends in data, Feature selection techniques.

UNIT II: Applications of Data Science- Data Science Applications in Healthcare, Data Science Applications in Education, Data Science Applications in Manufacturing and Production, Data Science Applications in Sports, Data Science Applications in Cyber-Security, Data Science Applications in Airlines

UNIT III: Widely Used Techniques in Data Science Applications: Supervised Learning, Unsupervised Learning Reinforcement Learning, A/B Testing, Association Rules, Decision Tree, Cluster Analysis, Advantages and Disadvantages of Clustering, Pattern Recognition

UNIT IV: Data Preprocessing: Feature, Feature Selection, Feature Selection Methods, Objective of Feature Selection, Feature Selection Criteria, Feature Generation Schemes, Applications of Feature Selection, Feature Selection: Issues, Different Types of Feature Selection Algorithms. Classification: Classification, Decision Tree, Regression Analysis, Support Vector Machines, Naive Bayes, Artificial Neural Networks

UNIT V: Clustering: Cluster Analysis, Types of Clusters, K-Means, Reducing the SSE with Post-processing ,Bisecting K-Means, Agglomerative Hierarchical Clustering, DBSCAN Clustering Algorithm, Cluster Evaluation, General Characteristics of Clustering Algorithms Usman Qamar, Muhammad Summair Raza

UNIT VI: Text Mining: Text Mining Applications, Exploratory Text Analysis, Information Extraction , Automatic Text Classification, Text Categorization Types, Text Categorization Approaches, Perspectives for Text Categorization ,Text Categorization Applications, Representation of Document, Text Document Preprocessing , Opinion Mining, Sentiment Classification.

UNIT VII: Data Visualization: Principles of effective data visualization, Visualizing relationships, distributions, and trends, Interactive and dynamic visualizations, Applications of Data Science in Business Analytics. Role of Data Science in Revolutionizing Healthcare , BERT- and Fast Text-Based Research Paper Recommender System

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Text Books:

1. "Data Science for Applications: Concepts, Techniques, and Practical Examples", John Smith, Publisher: DataTech Publishing, ISBN: 978-1234567890.

Reference Books:

1. Data Science Techniques and Intelligent Applications, Chapman & Hall/CRC, 2022, Pallavi Vijay Chavan, Parikshit N. Mahalle, Ramchandra Mangrulkar, Idongesit Williams

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Cloud Computing and Virtualization

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Cloud: The vision of cloud computing, Defining a cloud, The cloud computing reference model, Characteristics and benefits, Challenges, Principles of Parallel and Distributed Computing, Virtualization: Characteristics and Taxonomy of Virtualization Techniques, Virtualization and cloud computing, Cloud Computing Architecture.

UNIT II: Virtual Machines and Virtualization of Clusters and Data Centres: Implementation Levels of Virtualization, Virtualization Structures/Tools and Mechanisms, Virtualization of CPU, Memory, and I/O Devices, Virtual Clusters and Resource Management, Virtualization for Data-Centre Automation.

UNIT III: Service-Oriented Architectures for Distributed Computing: Services and Service-Oriented Architecture, Message-Oriented Middleware, Workflow in Service-Oriented Architectures.

UNIT IV: Cloud Programming and Software Environments: Parallel and Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments

UNIT V: Grid Computing Systems and Resource Management: Grid Architecture and Service Modelling, Grid Projects and Grid Systems Built, Grid Resource Management and Brokering, Software and Middleware for Grid Computing, Grid Application Trends and Security Measures

UNIT VI: Peer-to-Peer Computing and Overlay Networks: Peer-to-Peer Computing Systems, P2P Overlay Networks and Properties, Routing, Proximity, and Fault Tolerance, Trust, Reputation, and Security Management, P2P File Sharing and Copyright Protection.

UNIT VII: Ubiquitous Clouds and the Internet of Things: Cloud Trends in Supporting Ubiquitous Computing, Performance of Distributed Systems and the Cloud, Enabling Technologies for the Internet of Things, Innovative Applications of the Internet of Things, Online Social and Professional Networking.

Text Books:

1. Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra, "Distributed and cloud computing from Parallel Processing to the Internet of Things", Morgan Kaufmann, Elsevier, 2012.

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Reference Books:

1. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, "Mastering Cloud Computing", Tata Mcgraw Hill, 2013.
2. Cloud Computing:Theory and Practice, Dan C. Marinescu, Morgan Kaufmann, Elsevier, 2012
3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing – A Practical Approach, Tata Mcgraw Hill, 2009
4. Barrie Sosinsky, "Cloud Computing Bible" John Wiley & Sons, 2010.

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Elective-I Big Data Analytics

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to big data: What is big data, why big data, convergence of key trends, unstructured data, industry examples of big data, web analytics, big data and marketing, fraud and big data, risk and big data, credit risk management, big data and algorithmic trading, big data and healthcare, big data in medicine, advertising and big data, big data technologies, introduction to Hadoop, open source technologies, cloud and big data,

UNIT II: Introduction to NoSQL, aggregate data models, aggregates, key-value and document data models, relationships, graph databases, schema less databases, materialized views, distribution models, sharding, master-slave replication, peer- peer replication, sharding and replication, consistency, relaxing consistency, version stamps, Working with Cassandra ,Table creation, loading and reading data

UNIT III: Hadoop and Mapreduce: Data formats, analyzing data with Hadoop, scaling out, Architecture of Hadoop distributed file system (HDFS), fault tolerance ,with data replication, High availability, Data locality , Map Reduce Architecture, Process flow, Java interface, data flow, Hadoop I/O, data integrity, compression, serialization

UNIT IV: Introduction to Hive, data types and file formats, HiveQL data definition, HiveQL data manipulation, Logical joins, Window functions, Optimization, Table partitioning, Bucketing, Indexing, Join strategies

UNIT V: Apache spark- Advantages over Hadoop, lazy evaluation, In memory processing, DAG, Spark context, Spark Session, RDD, Transformations- Narrow and Wide, Actions, Data frames ,RDD to Data frames, Catalyst optimizer, Data Frame Transformations, Working with Dates and Timestamps, Working with Nulls in Data, Working with Complex Types, Working with JSON, Grouping,

UNIT VI: Apache spark :Window Functions, Joins, Data Sources, Broadcast Variables, Accumulators, Deploying Spark- On-Premises Cluster Deployments, Cluster Managers-Standalone Mode, Spark on YARN , Spark Logs, The Spark UI- Spark UI History Server, Debugging and Spark First Aid

UNIT VII: Apache spark tuning: Spark-Performance Tuning, Stream Processing Fundamentals, Event-Time and State full Processing - Event Time, State full Processing, Windows on Event Time- Tumbling Windows, Handling Late Data with Watermarks, Dropping Duplicates in a Stream, Structured Streaming Basics - Core Concepts, Structured Streaming in

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Action, Transformations on Streams, Input and Output

Text Books:

1. Big Data, Big Analytics: Emerging, Michael Minnelli, Michelle Chambers, and Ambiga Dhiraj.

Reference Books:

1. SPARK: The Definitive Guide, Bill Chambers & Matei Zaharia, O'Reilley, 2018 Edition
2. Business Intelligence and Analytic Trends for Today's Businesses", Wiley, 2013
3. P. J. Sadalage and M. Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World Polyglot Persistence", Addison-Wesley Professional, 2012
4. Tom White, "Hadoop: The Definitive Guide", Third Edition, O'Reilley, 2012
5. "Hadoop Operations", O'Reilley, Eric Sammer, 2012
6. "Programming Hive", O'Reilley, E. Capriolo, D. Wampler, and J. Rutherglen, 2012
7. "HBase: The Definitive Guide", O'Reilley, Lars George, 2011
8. "Cassandra: The Definitive Guide", O'Reilley, Eben Hewitt, 2010
9. "Programming Pig", O'Reilley, Alan Gates, 201

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Elective-I Computational Linear Algebra

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Basic Linear Algebra Subprograms: BLAS: An Introductory Example, Matrix Notations, IEEE Floating Point Systems and Computer Arithmetic, Vector-Vector Operations: Level-1 BLAS, Matrix-Vector Operations: Level-2, BLAS Matrix-Matrix Operations: Level-3 BLAS, Sparse Matrices: Storage and Associated Operations..

UNIT II: Basic Concepts for Matrix Computations: Vector Norms, Complements on Square Matrices, Rectangular Matrices: Ranks and Singular Values, Matrix Norms.

UNIT III: Gauss Elimination and LU Decompositions of Matrices : Special Matrices for LU Decomposition, Gauss Transforms, Naive LU Decomposition for a Square Matrix with Principal Minor Property (pmp), Gauss Reduction with Partial Pivoting: PLU Decompositions, MATLAB Commands Related to the LU Decomposition, Condition Number of a Square Matrix.

UNIT IV: Orthogonal Factorizations and Linear Least Squares Problems : Formulation of Least Squares Problems: Regression Analysis, Existence of Solutions Using Quadratic Forms, Existence of Solutions through Matrix Pseudo-Inverse, The QR Factorization Theorem, Gram-Schmidt Orthogonalization: Classical, Modified, and Block Solving, the Least Squares Problem with the QR Decomposition, Householder QR with Column Pivoting, MATLAB Implementations

UNIT V: Algorithms for the Eigenvalue Problem : Basic Principles, QR Method for a Non-Symmetric Matrix, Algorithms for Symmetric Matrices, Methods for Large Size Matrices, Singular Value Decomposition.

UNIT VI: Iterative Methods for Systems of Linear Equations : Stationary Methods, Krylov Methods, Method of Steepest Descent for spd Matrices, Conjugate Gradient Method (CG) for spd Matrices, The Generalized Minimal Residual Method, The Bi-Conjugate Gradient Method, Preconditioning Issues.

UNIT VII: Sparse Systems to Solve Poisson Differential Equations : Poisson Differential Equations, The Path to Poisson Solvers, Finite Differences for Poisson-Dirichlet Problems, Variational Formulations, One-Dimensional Finite-Element Discretizations.

Text Books:

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1. INTRODUCTION TO COMPUTATIONAL LINEAR ALGEBRA by Nabil Nassif, Jocelyne Erhel, Bernard Philippe. CRC Press, Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300 Boca Raton, FL 33487-2742, 2016.

Reference Books:

1. Gilbert Strang, Linear Algebra and its Applications, Fourth Edition, Cambridge University Press. 2009.
2. Gene H. Golub and V. Van Loan, Matrix Computations, Third Edition, John Hopkins University Press, Baltimore, 1996.
3. David C. Lay, Linear Algebra and Its Applications, Pearson Addison Wesley, 2002.
4. Strang, Gilbert. Linear algebra and learning from data. Cambridge: Wellesley-Cambridge Press, 2019.

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Elective-I

Soft Computing

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction: What is Soft Computing? ,Fuzzy Systems,Rough Sets, Artificial Neural Networks, Evolutionary Search Strategies,
FUZZY SETS: Crisp Sets, Fuzzy Sets, Fuzzy Membership Functions, Operations on Fuzzy Sets, Fuzzy Relations, Fuzzy Extension Principle.

UNIT II: Fuzzy Logic: Crisp Logic, Fuzzy Logic Basics, Fuzzy Truth in Terms of Fuzzy Sets, Fuzzy Rules, Fuzzy Reasoning,

UNIT III: Fuzzy Inference Systems: Introduction, Fuzzification of the Input Variables, Application of Fuzzy Operators on the Antecedent Parts of the Rules, Evaluation of the Fuzzy Rules, Aggregation of Output Fuzzy Sets Across the Rules, Defuzzification of the Resultant Aggregate Fuzzy Set, Fuzzy Controllers.

UNIT IV: Rough Sets: Information Systems and Decision Systems, Indiscernibility, Set Approximations, Properties of Rough Sets.

UNIT V: Neural Networks: Machine Learning Using Neural Network, Adaptive Networks, Feed forward Networks, Supervised Learning Neural Networks, Radial Basis Function Networks: Reinforcement Learning, Unsupervised Learning Neural Networks, Adaptive Resonance architectures

UNIT VI: Basics of Genetic Algorithms: Introduction to Genetic Algorithms (GA), Applications of GA in Machine Learning: Machine Learning Approach to Knowledge Acquisition.

UNIT VII: Deep Networks : Introduction to Deep learning – Deep neural networks – concepts. Recurrent neural network - concepts – applications.

Text Books:

1. Samir Roy, Udit Chakraborty, Introduction to Soft Computing: Neuro-Fuzzy and Genetic Algorithms, Pearson, 2013

Reference Books:

1. Jyh-Shing Roger Jang, Chuen:Tsai Sun, EijiMizutani, Neuro:Fuzzy and Soft Computing®,Prentice Hall of India, 2003

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2. Saroj Kaushik, Sunita Tiwari, Soft computing: Fundamentals, Techniques and applications,Mc Graw Hill Education, 2018
3. Sivanandam&Deepa, "Principles of Soft Computing", 2nd Edition, Wiley India, 2011
4. Snehashish Chakraverty, Deepti Moyi Sahoo, Nisha Rani Mahato,Concepts of Soft Computing: Fuzzy and ANN with Programming, Springer,2019.
5. Samir Roy, Udit Chakraborty, Introduction to Soft Computing: Neuro-Fuzzy and Genetic Algorithms, Pearson, 2013.
6. D. E. Goldberg, "Genetic Algorithms in Search, Optimization and Machine Learning", 1st Edn, Pearson, 2016

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Elective-I Computational Biology

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: DNA computing: Motivation- DNA structure- processing and computational operations- steps involved in DNA computation- Filtering models: Adleman's experiment-Lipton's solution-Scope and Applications of DNA computing- Search Algorithms: Hill climbing, Simulated annealing:-introduction-Simulated annealing algorithm.

UNIT II: Combinatorial Pattern Matching: Hash Tables, Repeat Finding, Exact Pattern Matching; Genetic Algorithm: Basic Concepts, Reproduction, Cross over, Mutation, Fitness Value, Optimization using GAs; Applications of GA in bioinformatics.

UNIT III: Hidden Markov Model: Markov processes and Markov Models, Hidden Markov Models. Forward and Backward Algorithms, Most probable state path: Viterbi algorithm, Parameter Estimation for HMMs:-Baum-Welch Algorithm, Applications of profile HMMs for multiple alignment of proteins and for finding genes in the DNA

UNIT IV: Designing Effective Visualizations: -Steps in Designing Visualizations,- Problems in Designing Effective Visualizations.- Comparing and Evaluating Visualization Techniques-User Tasks- User Characteristics Data Characteristics -Visualization Characteristics-,Structures for Evaluating Visualizations Benchmarking Procedures-,An Example of Visualization Benchmarking

UNIT V: Support Vector Machines: Introduction- hyperplane separation (maximum and soft margin hyperplanes)-linear classifier-Kernel functions, Large Margin Classification, Optimization problem with SVM- Applications of SVM in bioinformatics

UNIT VI: Bayesian network: Bayes Theorem-Inference and learning of Bayesian network- BN and Other Probabilistic Models

UNIT VII: Artificial Neural Network: Historic evolution – Perceptron, characteristics of neural networks terminology, models of neuron Mc Culloch – Pitts model, Perceptron, Adaline model, Basic learning laws, Topology of neural network architecture, single layer ANN, multilayer perceptron, back propagation learning, input - hidden and output layer computation, back propagation algorithm, Applications of ANN.

Text Books:

1. An introduction to bioinformatics algorithms by Neil C. Jones, Pavel Pevzner. MIT Press.2004.

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Reference Books:

1. Biological sequence analysis: Probabilistic models of proteins and nucleic acids by Richard Durbin, Eddy, Anders Krogh, 1998
2. Algorithms for Molecular Biology by Ron Shamir Lecture, Fall Semester, 2001
3. Neural Networks: A Systematic Introduction by Raul Rojas. Springer. 1996
4. Artificial Intelligence and Games by Georgios N. Yannakakis and Julian Togelius, Springer 2018
5. Bioinformatics: the machine learning approach by Pierre Baldi, Søren Brunak. MIT Press.2001.
6. Bioinformatics: Sequence and Genome Analysis: by David Mount, University of Arizona,Tucson. 2005
7. Fundamentals of natural computing : Basic concepts, Algorithms and Applications, Chapman & Hall / CRC, Taylor & Francis group, 2006

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Elective-I Internet of Things

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Fundamentals of IoT: Evolution of Internet of Things, Enabling Technologies, IoT Architectures: oneM2M, IoT World Forum (IoTWF) and Alternative IoT models, Simplified IoT Architecture and Core IoT Functional Stack, Fog, Edge and Cloud in IoT, Functional blocks of an IoT ecosystem, Sensors, Actuators, Smart Objects and Connecting Smart Objects

UNIT II: IoT Protocols: IoT Access Technologies: Physical and MAC layers, topology and Security of IEEE 802.15.4, 802.15.4g, 802.15.4e, 1901.2a, 802.11ah and LoRaWAN, Zigbee protocol, Network Layer: IP versions, Constrained Nodes and Constrained Networks

UNIT III: Optimizing IP for IoT: From 6LoWPAN to 6Lo, Routing over Low Power and Lossy Networks, Application Transport Methods: Supervisory Control and Data Acquisition, Application Layer Protocols: CoAP and MQTT

UNIT IV: Design and Development: Design Methodology, Embedded computing logic, Microcontroller, System on Chips, IoT system building blocks, Arduino–Board details, IDE programming, Raspberry Pi and Interfaces

UNIT V: Data Analytics and Supporting Services: Structured Vs Unstructured Data and Data in Motion Vs Data in Rest, Role of Machine Learning-No SQL Databases, Hadoop Ecosystem, Apache Kafka, Apache Spark, Edge Streaming Analytics and Network Analytics, Xively Cloud for IoT

UNIT VI: Python Web Application Framework, Django, AWS for IoT, System Management with NETCONF-YANG, Kibana, Fault-tolerant data processing on devices.

UNIT VII: Case Studies/Industrial Applications: Cisco IoT system, IBM Watson IoT platform, Manufacturing, Converged Plantwide Ethernet Model (CPwE), Power Utility Industry, GridBlocks Reference Model, Smart and Connected Cities: Layered architecture, Smart Lighting, Smart Parking Architecture and Smart Traffic Control

Course outcome: At the end of the course.

Text Books:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, IoT Fundamentals:Networking Technologies, Protocols and Use Cases for Internet of Things, Cisco Press, 2017

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Reference Books:

1. Arshdeep Bahga, Vijay Madisetti, Internet of Things – A hands-on approach, Universities Press, 2015.
2. Olivier Hersent, David Boswarthick, Omar Elloumi , The Internet of Things – Key applications and Protocols, Wiley, 2012
3. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stamatis, Karnouskos, Stefan Avesand, DavidBoyle, From Machine-to-Machine to the Internet of Things –Introduction to a New Age of Intelligence, Elsevier, 2014.
4. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), Architecting the Internet of Things, Springer, 2011.
5. Michael Margolis, Arduino Cookbook, Recipes to Begin, Expand, and Enhance Your Projects, 2nd Edition, O'Reilly Media, 2011

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Elective-II Cyber Security for Data Science

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Cyber Security-Cyber security objectives, roles, differences between information security and cyber security, Cyber security principles-confidentiality, integrity, availability, authentication and non-repudiation.

UNIT II: Information Security within Lifecycle Management-Lifecycle management landscape, Security architecture processes, Security architecture tools, Intermediate lifecycle management concepts.

UNIT III: Risks & Vulnerabilities-Basics of risk management, Operational threat environments, Classes of attacks.

UNIT IV: Incident Response-Incident categories, Incident response, Incident recovery, **Operational security protection**-Digital and data assets, ports and protocols, Protection technologies, Identity and access Management, configuration management.

UNIT V: Threat Detection and Evaluation Monitoring-Vulnerability management, Security logs and alerts, Monitoring tools and appliances

UNIT VI: Analysis-Network traffic analysis, packet capture and analysis.

UNIT VII: Data Visualization: Introduction to backdoor System and security-Introduction to metasploit, backdoor, demilitarized zone (DMZ), Digital signature, Brief study on Harding of operating system.

Text Books:

1. NASSCOM: Security Analyst Student Hand Book, Dec 2015

Reference Books:

1. Information Security Management Principles, Updated Edition, David Alexander, Amanda Finch, David Sutton, BCS publishers, June 2013.
2. Cyber Security Fundamentals-Cyber Security, Network Security and Data Governance Security, 2nd Edition, ISACA Publishers

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Elective-II OPTIMIZATION TECHNIQUES FOR DATA SCIENCE

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction- mathematical optimization, least-squares and linear programming, convex and nonlinear optimization. convex sets.

UNIT II: Convex optimization problems - optimization problem in standard form, convex optimization problems, quasi-convex optimization, linear optimization

UNIT III: Quadratic optimization: generalized inequality constraints, semi definite programming, vector optimization. Duality, approximation and fitting, statistical estimation, geometric problems

UNIT IV: Unconstrained minimization- gradient descent method, steepest descent method, Newton's method.

UNIT V: Equality constrained minimization - equality constrained minimization, eliminating equality constraints, Newton's method with equality constraints, infeasible start Newton method, and implementation.

UNIT VI: Interior-point methods -inequality constrained minimization, logarithmic barrier function and central path, barrier method, L1 Norm optimization methods.

UNIT VII: Introduction to Neural Networks - Alternating direction method of multipliers (ADMM) and applications (16 applications mentioned by Prof. Stephen Boyd)

Text Books:

1. Kalyanmoy, Deb. Optimization for engineering design: Algorithms and examples. Prentice-Hall of India Pvt. Limited, 2012.

Reference Books:

1. Chong, Edwin KP, and Stanislaw H. Zak. An introduction to optimization. John Wiley & Sons, 2004.
2. Bhatti, M. Asghar. Practical Optimization Methods: With Mathematica® Applications. Springer Science & Business Media, 2012
3. Stephen P. Boyd, and Lieven Vandenberghe. Convex optimization. Cambridge university press, 2004

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Elective-II Time Series Data Analysis

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to time series analysis, stationary and non stationary datasets. Finding the trend and seasonal components of signal. Auto Correlation Function (ACF) and Partial Auto Correlation Function (PACF).

UNIT II: Stationary Process and ARMA Models: Forecasting stationary time series using ARMA.

UNIT III: Nonstationary and Seasonal Time Series Models: Seasonal ARIMA models.

UNIT IV: Multivariate Time Series: Multivariate ARMA processes, Modeling and forecasting

UNIT V: Forecasting Techniques: The Holt-Winter algorithm & Holt-Winter seasonal algorithm.

UNIT VI: Time series forecasting using ML algorithms: Linear Regression ,Multi Linear Regression and ensemble techniques.

UNIT VII: Introduction to Recurrent Neural Networks (RNN), Long Short Term Memory (LSTM) and its role in time series forecasting.

Text Books:

1. Brockwell, Peter J. and Davis, Richard A. (2002). Introduction to Time Series and Forecasting, 2nd edition. Springer-Verlag, New York.

Reference Books:

1. Shumway, R.H and Stoffer, D.S., Time Series Analysis and its Applications: With r Examples, Springer.
2. Box, G.E.P., Jenkins, G.M. and Reinsel, G.C. (1994). Time Series Analysis: Forecasting and Control, 3rd Edition, Prentice Hall, New Jersey.
3. Chatfield, C. (1996). The Analysis of Time Series, 5th edition, Chapman and Hall, New York.
4. James D. Hamilton (1994). Time Series Analysis, 1st Edition, Princeton University Press

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Elective-II Natural Language Processing

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: INTRODUCTION: Origins and challenges of NLP - Language Modelling: Grammar-based LM, Statistical LM - Regular Expressions, Finite-State Automata - English Morphology, Transducers for lexicon and rules,
Tokenization, Detecting and Correcting Spelling Errors, Minimum Edit Distance.

UNIT II: WORD LEVEL ANALYSIS: Unsmoothed N-grams, Evaluating N-grams, Smoothing, Interpolation and Backoff - Word Classes.

UNIT III: MODELS FOR SEQUENTIAL TAGGING: Smoothing, Interpolation and Backoff - Word Classes, Part of-
Speech Tagging, Rule-based, Named Entities and Named Entities Tagging, Evaluation of Named Entity Recognition,Vector Semantics Embedding, Lexical Semantics.

UNIT IV: SYNTACTIC ANALYSIS: Context-Free Grammars, Grammar rules for English, Treebanks, Normal Forms for grammar -Dependency Grammar - Syntactic Parsing, Ambiguity

UNIT V: DYNAMIC PROGRAMMING PARSING- Shallow parsing– Probabilistic CFG, Probabilistic CYK, Probabilistic Lexicalized CFGs – Feature structures, Unification of feature structures.

UNIT VI: SEMANTICS AND PRAGMATICS: Requirements for representation, First-Order Logic, Description Logics – Syntax-Driven Semantic analysis, Semantic attachments – Word Senses, Relations between Senses, Thematic Roles, selectional restrictions – Word Sense Disambiguation, WSD using Supervised, Dictionary & Thesaurus,
Bootstrapping methods – Word Similarity using Thesaurus and Distributional methods.

UNIT VII: DISCOURSE ANALYSIS AND LEXICAL RESOURCES: Discourse segmentation, Coherence – Reference Phenomena, Anaphora Resolution using Hobbs and Centering Algorithm – Coreference Resolution – Resources: Porter Stemmer, Lemmatizer, WordNet, PropBank, FrameNet, Brown Corpus, British National Corpus(BNC).

Text Books:

1. Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech, 2nd Edition, Daniel Jurafsky, James H. Martin—Pearson Publication, 2014.

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Reference Books:

1. Natural Language Processing with Python, First Edition, Steven Bird, Ewan Klein and Edward Loper, OReilly Media, 2009.
2. Language Processing with Java and LingPipe Cookbook, 1st Edition, Breck Baldwin, Atlantic Publisher, 2015.
3. Handbook of Natural Language Processing, Second, Nitin Indurkhya and Fred J. Damerau, Chapman and Hall/CRC Press, 2010. Edition.
4. Natural Language Processing and Information Retrieval, 3rd Edition, Tanveer Siddiqui, U.S. Tiwary, Oxford University Press, 2008.

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Elective-II Statistical Modeling

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Random process, types and their probability distributions, Expectation, mean and variance,

UNIT II: Sampling: Estimating the Population Mean (μ), Population Proportion, Sample Size and its Determination. Sample Size through the Approach Based on Precision Rate and Confidence Level.

UNIT III: Hypothesis testing- Z, t, Chi-Square & F-test. ANOVA & Designs of Experiments - Single, Two factor ANOVA, Factorials ANOVA models.

UNIT IV: Model selection, AIC, BIC, SIC, bias-variance trade-off; ARMA models.

UNIT V: Univariate Regression and its estimation techniques and analysis

UNIT VI: Multivariate Regression and its estimation techniques and analysis

UNIT VII: State-space models, Kalman filter, hidden state, HMM, Switching models, hidden Markov models.

Text Books:

1. Jay L. Devore, Probability and Statistics for Engineering and the Sciences, 8th edition, Cengage, 2012.

Reference Books:

1. T. VeeraRajan, Probability, Statistics and Random processes, Tata McGraw-Hill,2008
2. Research Methodology: Methods and Techniques: C.R. Kothari, New Age International Publishers
3. Sheldon M. Ross, Introduction to probability and statistics for engineers and scientists, 4th edition, Elsevier, 2009.
4. Levin R.I. and Rubin D.S., Statistics for Management, 7th edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2001

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Data Science Applications with Python Lab

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week **Time: 3 Hours** **Credits: 2**
Internal: 50 Marks **External: 50 Marks** **Total: 100 Marks**

Experiment 1:
Write a Python Program to Find the Sum of the Series: 1 + 1/2 + 1/3 + .. + 1/N

Experiment 2:
Write a Python Program to Split the array and add the first part to the

Experiment 3:
Write a Python Program to Create a List of Tuples with the First Element as the Number and Second Element as the Square of the Number

Experiment 4:
Write a Python program to count number of vowels using sets in given string

Experiment 5:
Write a program to implement permutation of a given string using inbuilt function.

Experiment 6:
Write a python program to sort list of dictionaries by values in Python – Using lambda function.

Experiment 7:
Write a Python Program for following sorting:
i. Quick Sort ii. Heap Sort

Experiment 8:
Write a Python Program to Reverse a String Using Recursion

Experiment 9:
Write a Python Program to Count the Number of Words in a Text File

Experiment 10:
Write a Python Program to Read the Contents of a File in Reverse Order

Experiment 11:
Write a program to Merge and Join DataFrames with Pandas in Python

Experiment 12:

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Annexure-XXI

Write a program to implement Merge and Join DataFrames with Python Pandas

Experiment 13:
Write a Python Program to Append the Contents of One File to Another File

Experiment 14:
How to install and Load CSV files to Python Pandas

Experiment 15:
Write a program to implement Data analysis and Visualization with Python using pandas.

Experiment 16:
Write a program to Implement Plotting Functions in python pandas

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Cloud Computing and Big Data Analytics Lab

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 2**
Internal: 50 Marks	**External: 50 Marks**	**Total: 100 Marks**

Cloud Computing Programs:

Experiment-1

Create Virtual Machine on Azure

a. A Windows VM
b. Linux VM

Experiment-2

Create a Web app and host it in Azure, use web app to accept files and upload them to blob storage

a. Create Storage accounts in Azure and upload files
b. Create SQL Database to store info
c. Use Azure KeyVault to store secrets such as connection strings
d. Use managed Identity to access secrets from KeyVault, access SQL DB & storage accounts
e. Create Service Bus to accept messages
f. Create App Insights to get logging
g. Create Azure Monitor to get notifications

Experiment-3

Create a function apps

a. Create function app with HTTP trigger
b. Create function app with Timer trigger
c. Create function app with Storage trigger
d. Create Service bus trigger to process messages asynchronously

Experiment-4

Create Traffic Manager / Azure Front Door & APIM

a. Identify the best case scenarios for these

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Experiment-5

Create a Tenant in Azure Active directory

a. Create users in the tenant and use Microsoft Authentication Library (MSAL)
b. Use Azure AD as Identity provider for your web apps

Experiment-6

Create a Azure container registry

a. Deploy a container from the registry to an AppService
b. Create an Azure Kubernetes Cluster and deploy

Experiment-7

Create an Azure Open AI service and use them in your application

Big Data Analytics Programs:

Experiment-1

Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.

Experiment-2

Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record-oriented.
Data available at: https://github.com/tomwhite/hadoopbook/tree/master/input/ncdc/all

Experiment 3:

Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.

Experiment 4:

Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and Indexes

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Machine Learning

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction-Towards Intelligent Machines, Well posed Problems, Example of Applications in diverse fields, Data Representation, Domain Knowledge for Productive use of Machine Learning, Diversity of Data: Structured / Unstructured, Forms of Learning, Machine Learning and Data Mining, Basic Linear Algebra in Machine Learning Techniques.

UNIT II: Supervised Learning- Rationale and Basics: Learning from Observations, Bias and Why Learning Works: Computational Learning Theory, Occam's Razor Principle and Overfitting Avoidance Heuristic Search in inductive Learning, Estimating Generalization Errors, Metrics for assessing regression, Metris for assessing classification

UNIT III: Statistical Learning- Machine Learning and Inferential Statistical Analysis, Descriptive Statistics in learning techniques, Bayesian Reasoning: A probabilistic approach to inference, K-Nearest Neighbor Classifier. Discriminant functions and regression functions, Linear Regression with Least Square Error Criterion, Logistic Regression for Classification Tasks, Fisher's Linear Discriminant and Thresholding for Classification, Minimum Description Length Principle

UNIT IV: Support Vector Machines (SVM)- Introduction, Linear Discriminant Functions for Binary Classification, Perceptron Algorithm, Large Margin Classifier for linearly seperable data, Linear Soft Margin Classifier for Overlapping Classes, Kernel Induced Feature Spaces, Nonlinear Classifier, Regression by Support vector Machines

UNIT V: Learning with Neural Networks: Towards Cognitive Machine, Neuron Models, Network Architectures, Perceptrons, Linear neuron and the Widrow-Hoff Learning Rule, The error correction delta rule

UNIT VI: MLP: Multilayer Perceptron Networks and error back propagation algorithm, Radial Basis Functions Networks

UNIT VII: Decision Tree Learning: Introduction, Example of classification decision tree, measures of impurity for evaluating splits in decision trees, ID3, C4.5, and CART decision trees, pruning the tree, strengths and weakness of decision tree approach.

Text Books:

1. Applied Machine Learning, M.Gopal, Mc Graw Hill Education.

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Reference Books:

1. Christopher Bishop, Pattern Recognition and Machine Learning, Springer, 2007.
2. Kevin Murphy, Machine Learning: A Probabilistic Perspective, MIT Press, 2012
3. Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning, Springer 2009 (freely available online).

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Data Visualization

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction: What Is Visualization?- History of Visualization- Relationship between Visualization and Other fields – The Visualization Process-Pseudocode Conventions-The Scatterplot and The Role of the User.- Data Foundations Types of Data, Structure within and between Records-Data Pre-processing.

UNIT II: Human Perception and Information Processing: What Is Perception? –Physiology-Perceptual Processing- Perception in Visualization- Metrics Visualization Foundations.- The Visualization Process in Detail-Semiology of Graphical Symbols-The Eight Visual Variables-Historical Perspective-Taxonomies-Metrics Visualization Foundations-TheVisualization Process in Detail-Semiology of Graphical Symbols-The Eight Visual Variables-Historical Perspective-Taxonomies

UNIT III: Interaction Concepts: Interaction Operators-Interaction Operands and Spaces,- A Unified Framework.- Interaction Techniques- Screen Space, Object Space (D Surfaces), Data Space (Multivariate Data Values)-Attribute Space (Properties of Graphical Entities)-Data Structure Space (Components of Data Organization)- Visualization Structure Space (Components of the Data Visualization).-Animating Transformations Interaction Control.

UNIT IV: Designing Effective Visualizations: -Steps in Designing Visualizations,- Problems in Designing Effective Visualizations.- Comparing and Evaluating Visualization Techniques-User Tasks- User Characteristics Data Characteristics -Visualization Characteristics-,Structures for Evaluating Visualizations Benchmarking Procedures-,An Example of Visualization Benchmarking

UNIT V: Visualization Systems: Systems Based on Data Type-Systems Based on Data Analysis Type-Text Analysis and Visualization-Modern Integrated Visualization Systems Toolkits

UNIT VI: Research Directions in Visualization: Issues of Data Issues of Cognition-Perception, and Reasoning-Issues of System Design-Issues of Evaluation-Issues of Hardware-Issues of Applications

UNIT VII: Visualization Techniques for Spatial Data: One-Dimensional Data,-Two-Dimensional Data-Three-Dimensional Data-Dynamic Data Combining Techniques
Visualization Techniques for Time-Oriented Data:Introduction, Definitions-Characterizing Time-Oriented Data-Visualizing Time-Oriented Data-Time Bench: A Data Model and Software Library for Visual Analytics of Time-Oriented Data

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Text Books:

1. Ward, Grinstein Keim, Interactive Data Visualization: Foundations, Techniques, and Applications. Natick: A K Peters, Ltd,2015.

Reference Books:

1. Charu C. Aggarwal, Recommender Systems: The Textbook, 1/e, Springer, 2016.
2. Ricci F., Rokach L., Shapira D., Kantor B.P., Recommender Systems Handbook, Springer, 2015.
3. Manouselis N., Drachsler H., Verbert K., Duval E., Recommender Systems for Learning, Springer, 2013. (no update)
4. Kristen Sosulski, Data Visualization Made Simple: Insights into Becoming Visual, Routledge; 1st edition,2018

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Elective-III Image and Video Analytics

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Digital image representation- Visual Perception- Sampling and Quantization- Basic Relations between Pixels- Mathematical Tools Used in Digital Image Processing: Fundamental Operations –Vector and Matric Operations- Image Transforms (DFT, DCT, DWT, Hadamard)..

UNIT II: Fundamentals of spatial filtering: spatial correlation and convolution-smoothingblurringsharpening- edge detection - Basics of filtering in the frequency domain: smoothing-blurring- sharpening- -Histograms and basic statistical models of image.

UNIT III: Colour models and Transformations – Image and Video segmentation-Image and video demonising- Image and Video enhancement- Image and Video compression

UNIT IV: Object detection and recognition in image and video-Texture models Image and Video classification models- Object tracking in Video.

UNIT V: Applications and Case studies- Industrial- Retail- Transportation & Travel- Remote sensingVideo Analytics in WSN: IoT Video Analytics Architectures.

Text Books:

1. " Digital Image Processing". 3rd Edition, R.C. Gonzalez and R.E. Woods Addison Wesley, 2007.

Reference Books:

1. "Computer Vision: Algorithms and Applications", Richard Szelisk, Springer 2011
2. "Nonparametric and Semi parametric Models", W. Härdle, M. Müller, S. Sperlich, A. Werwatz, Springer, 2004.
3. "Intelligent Video Surveillance Systems", Jean-Yves Dufour, Wiley, 2013.
4. "Video Analytics for Business Intelligence", Caifeng Shan, Fatih Porikli, Tao Xiang, Shaogang Gong, Springer, 2012.
5. "Intelligent Transport Systems: Technologies and Applications", AsierPerallos, Unai HernandezJayo, Enrique Onieva, Ignacio Julio García Zuazola, Wiley,2015.
6. "Analysis of Urban Growth and Sprawl from Remote Sensing Data", Basudeb Bhatta, Springer, 2010

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Elective-III Social Media Analytics

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Social Media Analytics: An Overview Core Characteristics of Social Media, Types of Social Media, Social media landscape, Need for Social Media Analytics (SMA), SMA in small & large organizations. Purpose of Social Media Analytics, Social Media vs. Traditional Business Analytics, Seven Layers of Social Media Analytics, Types of Social Media Analytics, Social Media Analytics Cycle, Challenges to Social Media Analytics, Social Media Analytics Tools.

UNIT II: Social Network Structure, Measures & Visualization Basics of Social Network Structure - Nodes, Edges & Tie Describing the Networks Measures - Degree Distribution, Density, Connectivity, Centralization, Tie Strength & Trust Network Visualization - Graph Layout, Visualizing Network features, Scale Issues. Social Media Network Analytics - Common Network Terms, Common Social Media Network Types, Types of Networks, Common Network Terminologies, Network Analytics Tools

UNIT III: Social Media Text, Action & Hyperlink Analytics

Social Media Text Analytics - Types of Social Media Text, Purpose of Text Analytics, Steps in Text Analytics, Social Media Text Analysis Tools Social Media Action Analytics - What Is Actions Analytics? Common Social Media Actions, Actions Analytics Tools Social Media Hyperlink Analytics - Types of Hyperlinks, Types of Hyperlink Analytics, Hyperlink Analytics Tools

UNIT IV: Social Media Location & Search Engine Analytics Location Analytics - Sources of Location Data, Categories of Location Analytics, Location Analytics and Privacy Concerns, Location Analytics Tools Search Engine Analytics - Types of Search Engines, Search Engine Analytics, Search Engine Analytics Tools

UNIT V: Social Information Filtering Social Information Filtering - Social Sharing and filtering , Automated Recommendation systems, Traditional Vs. social Recommendation Systems Understanding Social Media and Business Alignment, Social Media KPI, Formulating a Social Media Strategy, Managing Social Media Risks

UNIT VI: Social Media Analytics Applications Social media in public sector - Analysing public sector social media, analysing individual users, case study. Business use of Social Media - Measuring success, Interaction and monitoring, case study

UNIT VII: Social Media Analytics Privacy: Privacy - Privacy policies, data ownership and maintaining privacy online.

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Text Books:

1. Seven Layers of Social Media Analytics_ Mining Business Insights from Social Media Text, Actions, Networks, Hyperlinks, Apps, Search Engine, and Location Data, Gohar F. Khan,(ISBN-10: 1507823207)..

Reference Books:

1. Analyzing the Social Web 1st Edition by Jennifer Golbeck
2. Mining the Social Web_ Analyzing Data from Facebook, Twitter, LinkedIn, and Other Social Media Sites, Matthew A Russell, O'Reilly
3. Charu Aggarwal (ed.), Social Network Data Analytics, Springer, 2011
4. Social Media Analytics [2015], Techniques and Insights for Extracting Business Value Out of Social Media, Matthew Ganis, AvinashKohirkar, IBM Press
5. Social Media Analytics Strategy_ Using Data to Optimize Business Performance, Alex Gonçalves, APress Business Team
6. Social Media Data Mining and Analytics, Szabo, G., G. Polatkan, O. Boykin & A. Chalkiopoulus (2019), Wiley, ISBN 978-1-118-82485-6

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Elective-III Deep Learning

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Basics of Deep leaning- Deep learning architectures, Convolution Neural Networks, Neurons in Human Vision-The Shortcomings of Feature Selection-Vanilla Deep Neural Networks Don't Scale-Filters and Feature Maps-Full Description of the Convolution Layer-Max Pooling-Full Architectural Description of Convolution Networks-Closing the Loop on MNIST with Convolutional Networks-Image Preprocessing Pipelines Enable More Robust Models-Accelerating Training with Batch Normalization

UNIT II: Building a Convolutional Network for CIFAR-10-Visualizing Learning in Convolutional NetworksLeveraging Convolutional Filters to Replicate Artistic Styles-Learning Convolutional Filters for Other Problem Domains-Training algorithms

UNIT III: Memory Augmented Neural Networks : Neural Turing Machines-Attention-Based Memory Access-NTM Memory Addressing Mechanisms-Differentiable Neural Computers-Interference-Free Writing in DNCs-DNC Memory Reuse-Temporal Linking of DNC Writes-Understanding the DNC Read Head-The DNC Controller Network- Visualizing the DNC in Action-Implementing the DNC in TensorFlow-Teaching a DNC to Read and Comprehend

UNIT IV: Deep Reinforcement Learning: Deep Reinforcement Learning Masters Atari Games- What Is Reinforcement Learning?-Markov Decision Processes (MDP)-Explore Versus Exploit-Policy versus Value Learning-Pole-Cart with Policy Gradients-Q-Learning and Deep Q-Networks-Improving and Moving Beyond DQN

UNIT V: Implementing Neural Networks in TensorFlow : What Is TensorFlow?-How Does TensorFlow Compare to Alternatives?-Installing TensorFlow-Creating and Manipulating TensorFlow VariablesTensorFlow Operations-Placeholder Tensors

UNIT VI: Sessions in TensorFlow-Navigating Variable Scopes and Sharing Variables- Managing Models over the CPU and GPU-Specifying the Logistic Regression Model in TensorFlow-Logging and Training the Logistic Regression Model-Leveraging TensorBoard to Visualize

UNIT VII: Computation Graphs and Learning-Building a Multilayer Model for MNIST in TensorFlow. Applications: Deep learning for computer vision, Deep Learning Applications at the Enterprise Scale, Deep Learning Models for Healthcare Applications

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Text Books:

1. "Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms", Nikhil Buduma, Nicholas Locascio, O'Reilly Media, 2017.

Reference Books:

1. "Deep Learning (Adaptive Computation and Machine Learning series", Ian Goodfellow, Yoshua Bengio, Aaron Courville, MIT Press, 2017
2. Deep learning from first principle,2nd edition,tinniam v Ganesh,2018
3. Introduction to Deep Learning ,1st edition, by Eugene charniak,The MIT Press,2019

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Elective-III Business Analytics

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Business statistics- Intro to Probability, Discrete Random Variables- Measures of central tendency-measures of dispersion-correlation methods

UNIT II: Python and R programming- Data Types-Decision Structures-Functions –File operations and Libraries and packages

UNIT III: Managing data resources- types of databases- Big Data NoSQL databases-DataWarehousing and Data mining techniques

UNIT IV: Data science forecasting techniques/tools- Statistical Forecasting Models-Forecasting Models for Stationary Time Series-Forecasting Models for Time Series with a Linear Trend, Forecasting Time Series with Seasonality, Regression Forecasting with Casual Variables, Selecting Appropriate Forecasting Models

UNIT V: Data visualization- Visualization techniques for business data- Line charts-Bar charts-Pie charts-Bubble charts-Histograms-Heatmaps- Scatter plot st-SNE

UNIT VI: Business applications-E-business systems-digital marketing systems-Transactional processing systems-Enterprise Application architecture and integration.Case studies

UNIT VII: Development and security challenges in business analytics Ethical responsibility of Business professionals-Privacy issues-security challenges-Introduction to Access Control, Purpose and fundamentals of access control, brief history.Policies of Access Control, Models of Access Control

Text Books:

1. Ramesh Behl: Business information systems,McGraw Hill..

Reference Books:

1. James Evans:Business Analytics, Pearson Education, 2013.
2. S.C Gupta : Fundamentals of Statistics

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Elective-III High Performance Computing

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Parallel Computing: Scope of Parallel Computing, Implicit Parallelism: Trends in Microprocessor Architectures, Limitations of Memory System Performance, Dichotomy of Parallel Computing Platforms, Physical Organization of Parallel Platforms, Communication Costs in Parallel Machines. Taxonomy of parallel computing paradigms, Shared-memory computers, Distributed-memory computers.

UNIT II: Analytical Modelling of Parallel Programs: Sources of Overhead in Parallel Programs, Performance Metrics for Parallel Systems, The Effect of Granularity on Performance, Scalability of Parallel Systems, Minimum Execution Time and Minimum Cost-Optimal Execution Time, Asymptotic Analysis of Parallel Programs

UNIT III: Programming Using the Message-Passing Paradigm: Principles of Message-Passing Programming, The Building Blocks: Send and Receive Operations, MPI: the Message Passing Interface, Topologies and Embedding, Overlapping Communication with Computation, Groups and Communicators

UNIT IV: Distributed-memory parallel programming with MPI: Message passing, A short introduction to MPI, Example: MPI parallelization of a Jacobi solver, MPI performance tools, Communication parameters, Synchronization, serialization, contention, Reducing communication overhead

UNIT V: Shared-memory parallel programming with OpenMP: Short introduction to OpenMP, OpenMP-parallel Jacobi algorithm, Wavefront parallelization, Profiling OpenMP programs, Performance pitfalls, Case study: Parallel sparse matrix-vector multiply

UNIT VI: Locality optimizations on ccNUMA architectures: Locality of access on ccNUMA, Case study: ccNUMA optimization of sparse MVM, Placement pitfalls, ccNUMA issues with C++.

UNIT VII: Parallel Algorithms on Sorting, Dense Matrix Algorithms, Graph Algorithms

Text Books:

1. Georg Hager and Gerhard Wellein. Introduction to High Performance Computing for Scientists and Engineers (1st ed.). CRC Press, Chapman & Hall/CRC Computational Science, India, 2010.

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Reference Books:

1. Vipin Kumar , Ananth Grama , Anshul Gupta , George Karypis. Introduction to Parallel Computing (2nd ed.). Pearson India . 2003.
2. John L. Hennessy and David A. Patterson. Computer Architecture: A Quantitative Approach (5th ed.). Elsevier India Pvt. Ltd. 2011.
3. David B. Kirk and Wen-mei W. Hwu. Programming Massively Parallel Processors: A Hands-On Approach (1st ed.). Elsevier India Pvt. Ltd. 2010.
4. Michael T. Heath. Scientific Computing: An Introductory Survey (2nd ed.). McGraw Hill Education (India) Private Limited

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Elective-IV Geographic Information System

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to GIS Basic concepts: Definition and history, Components of GIS, Recent trends and applications of GIS; Data structure and formats, Spatial data models – Raster and vector, Data base design- editing and topology creation in GIS, Linkage between spatial and non-spatial data, Data inputting in GIS. Rectification, Transformation Methods; Root Mean Square (RMS) Error.

UNIT II: Data Types and Data Models Data Types; Spatial Data; Non-Spatial Data, Data Input; Existing GIS Data, Metadata; Conversion of Existing Data, Creating New Data, Data Models; Vector Data Model; Raster Data Model; Integration and Comparison of Vector and Raster Data Models

UNIT III: Spatial Data Editing Types of Digitizing Errors, Causes for Digitizing Errors; Topological Editing and Non-topological Editing; Other Editing Operations; Editing Using Topological Rules.

UNIT IV: Attribute Data and Data Exploration Attribute Data in GIS, Attribute Data Entry, Manipulation of Fields and Attribute Data, Data Exploration; Attribute Data Query, Raster Data Query, Map- Based Data Manipulation

UNIT V: Spatial Analysis Spatial Data: Definition, Analysis, Processes & Steps, Software and Tools, Geodatabase Model, Role of Databases in GIS, Creating, Editing and Managing, Classification scheme of Vector- Based and Raster- Based GIS Operation Raster- Based Techniques: Methods of reclassification, overlay analysis, Digital Terrain Analysis and Modeling- TIN and DEM, Surface representation and analysis, Slope and Aspect, Geographic Visualization Data Classification, Map Comparison

UNIT VI: Geo Statistical Analysis Techniques: Introduction to Spatial Interpolation: Control Points, Global Method- Trend surface analysis, regression model, local methods- Thiessen polygons, density estimation, Inverse Distance weighted Interpolation, Kriging- Ordinary Kriging and Universal Kriging, GIS and decision support system, Introduction to AHP, basic principal of AHP. Principal and components of multiple criteria decision making.

Text Books:

1. kang-tsung Chang (2007), 'Introduction to Geographic Information Systems' Tata MCGraw Hill, New Delhi.

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Reference Books:

1. C.P.Lo and Albert K.W. Yeung (2006) "Concepts and Techniques of Geographic information Systems" Prentice Hall of India, New Delhi
2. Burrough, Peter A. and Rachael McDonnell, (1998), 'Principles of Geographical Information Systems' Oxford University press, New York.
3. Magwire, D.J. Goodchild, M.F. and Rhind, D.M., (2005), 'Geographical Information Systems: Principles and Applications', Longman Group, U.K.
4. Burrough, P.A., 1986, Geographical Information System for land Resources System, Oxford Univ. Press, UK.
5. Fotheringham, S.; Rogerson, P. (ed.), 1994. Spatial analysis and GIS. Taylor and Francis, London, UK.
6. Laurini, Robert and Dierk Thompson, 1992, Fundamentals of Spatial Information Systems, Academics Press, ISBN 0-12-438380-7.
7. Maguire,D.J.; Goodchild, M.F.; Rhind,D.W. 1991.Geographical information System, Longman, London,UK
8. Siddiqui, M.A.; 2006, Introduction to Geographical Information System, Sharda Pustak Bhavan, Allahabad.
9. Siddiqui, M.A.; 2011, Concepts and Techniques of Geoinformatics, Sharda Pustak Bhavan, Allahabad.

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Elective-IV Block Chain Technology

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction: Scenarios, Challenges Articulated, Blockchain, Blockchain Characteristics, Opportunities Using Blockchain, History of Blockchain.
Evolution of Blockchain: Evolution of Computer Applications, Centralized Applications, Decentralized Applications, Stages in Blockchain Evolution, Consortia, Forks, Public Blockchain Environments, Type of Players in Blockchain Ecosystem, Players in Market.

UNIT II: Blockchain Concepts: Introduction, Changing of Blocks, Hashing, Merkle-Tree, Consensus, Mining and Finalizing Blocks, Currency aka tokens, security on blockchain, data storage on blockchain, wallets, coding on blockchain: smart contracts, peer-to-peer network, types of blockchain nodes, risk associated with blockchain solutions, life cycle of blockchain transaction

UNIT III: Architecting Blockchain solutions: Introduction, Obstacles for Use of Blockchain, Blockchain Relevance Evaluation Framework, Blockchain Solutions Reference Architecture, Types of Blockchain Applications, Cryptographic Tokens, Typical Solution Architecture for Enterprise Use Cases, Types of Blockchain Solutions, Architecture Considerations, Architecture with Blockchain Platforms, Approach for Designing Blockchain Applications

UNIT IV: Ethereum Blockchain Implementation: Introduction, Tuna Fish Tracking Use Case, Ethereum Ecosystem, Ethereum Development, Ethereum Tool Stack, Ethereum Virtual Machine, Smart Contract Programming, Integrated Development Environment, Truffle Framework, Ganache, Unit Testing, Ethereum Accounts, MyEtherWallet, Ethereum Networks/Environments, Infura, Etherscan, Ethereum Clients, Decentralized Application, Metamask, Tuna Fish Use Case Implementation, OpenZeppelinContract

UNIT V: Hyperledger Blockchain Implementation: Introduction, Use Case — Car Ownership Tracking, Hyperledger Fabric, Hyperledger Fabric Transaction Flow, FabCar Use Case Implementation, Invoking Chaincode Functions Using Client Application

UNIT VI: Advanced Concepts in Blockchain: Introduction, InterPlanetary File System (IPFS), Zero-Knowledge Proofs, Oracles, Self-Sovereign Identity, Blockchain with 10T and Al/ML Quantum Computing and Blockchain, Initial Coin Offering, Blockchain Cloud Offerings, Blockchain and its Future Potential.

UNIT VII: Technical challenges, Business model challenges, Scandals and Public perception, Government Regulations, Uses of Block chain in E-Governance, Land Registration, Medical Information Systems.

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Text Books:

1. "Blockchain for Enterprise Application Developers", Ambadas, Arshad SarfarzAriff, Sham Wiley.

Reference Books:

1. "Mastering Bitcoin: Programming the Open Blockchain", Andreas M. Antonpoulos,O'Reilly
2. Blockchain: A Practical Guide to Developing Business, Law, and Technology Solutions, Joseph Bambara, Paul R. Allen, Mc GrawHill.
3. Blockchain: Blueprint for a New Economy, Melanie Swan,O'Reilly

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Elective-IV Secure Software Design

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Secure Software Design Identify software vulnerabilities and perform software security analysis, Master security programming practices, Master fundamental software security design concepts, Perform security testing and quality assurance.

UNIT II: Enterprise Application Development Describe the nature and scope of enterprise software applications, Design distributed N-tier software application, Research technologies available for the presentation, business and data tiers of an enterprise software application, Design and build a database using an enterprise database system, Develop components at the different tiers in an enterprise system, Design and develop a multi-tier solution to a prob

UNIT III: Enterprise Systems Administration Design, implement and maintain a directory-based server infrastructure in a heterogeneous systems environment, Monitor server resource utilization for system reliability and availability, Install and administer network services (DNS/DHCP/Terminal Services/Clustering/Web/Email).

UNIT IV: Enterprise Network Obtain the ability to manage and troubleshoot a network running multiple services, Understand the requirements of an enterprise network and how to go about managing them

UNIT V: Defending Applications Handle insecure exceptions and command/SQL injection, Defend web and mobile applications against attackers, software containing minimum vulnerabilities and flaws

Text Books:

1. Theodor Richardson, Charles N Thies, Secure Software Design, Jones & Bartlett.

Reference Books:

1. Kenneth R. van Wyk, Mark G. Graff, Dan S. Peters, Diana L. Burley, Enterprise Software Security, Addison Wesley

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Elective-IV Data Storage Technologies and Networks

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Storage Media and Technologies – Magnetic, Optical and Semiconductor Media, Techniques for read/write Operations, Issues and Limitations.

UNIT II: Usage and Access – Positioning in the Memory Hierarchy, Hardware and Software Design for Access, Performance issues

UNIT III: Large Storages – Hard Disks, Networked Attached Storage, Scalability issues, Networking issues

UNIT IV: Storage Architecture - Storage Partitioning, Storage System Design, Caching, Legacy Systems

UNIT V: Storage Area Networks – Hardware and Software Components, Storage Clusters/Grids. Storage QoS– Performance, Reliability and Security issues

Text Books:

1. The Complete Guide to Data Storage Technologies for Network-centric Computing Paperback– Import, Mar 1998 by Computer Technology Research Corporation

Reference Books:

1. Data Storage Networking: Real World Skills for the CompTIA Storage by Nigel Poulton

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Elective-IV INFORMATION RETRIEVAL SYSTEMS

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Introduction to Information Retrieval: Motivation, Information Retrieval vs Data Retrieval, Domain Analysis of IR systems, The retrieval process. **Introduction to Data Structures and Algorithms related to Information Retrieval**: Basic Concepts, Data structures, Algorithms.**IR System Evaluation**: Recall and Precision, Alternative Measures, Reference Collections and Evaluation of IR systems.

UNIT II: Modelling: Classic information retrieval models- Boolean Model, Vector Space Model, Probabilistic Model, Alternative Models, and Comparison

UNIT III: Query Languages for IR: Introduction, Key words based: Single word, Boolean Queries, Context Queries, Natural Language Queries, Structural Queries

UNIT IV: Text Processing: Document Processing, Text Comparison.
Stemming Algorithms: Introduction, Types of Stemming Algorithms, Experimental Evaluations of Stemming to Compress Inverted Files
Thesaurus Construction: Introduction, Features of Thesauri, Thesaurus Construction, Thesaurus construction from Texts, Merging existing Thesauri

UNIT V: Indexing: Introduction, Inverted files, PAT Trees, Signature files.
Inverted files- Introduction, Structures used in Inverted Files, Building Inverted file using a sorted array, Modifications to Basic Techniques.

UNIT VI: New Indices for Text: PAT Trees and PAT Arrays: Introduction, PAT Tree structure, algorithms on the PAT Trees, Building PAT trees as PATRICA Trees, PAT representation as arrays

UNIT VII: Signature Files: Introduction, Concepts of Signature Files, Compression, Vertical Partitioning, Horizontal Partitioning

Text Books:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992..

Reference Books:

1. Modern Information Retrieval by Yates Pearson Education.
2. Information Storage & Retrieval by Robert Korfhage – John Wiley & Sons Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.
3. Information retrieval Algorithms and Heuristics, 2ed, Springer

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MACHINE LEARNING LAB

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 3**
Internal: 50 Marks	**External: 50 Marks**	**Total: 100 Marks**

List of Experiments:

1. Implement Principal Component Analysis (PCA) and Singular Value Decomposition (SVD) using NumPy
2. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.
3. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.
4. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
5. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
6. Write a program to implement the naïveBayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
7. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
8. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
9. Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.

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10. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
11. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.
12. Create the following plots using Matplotlib, Pandas Visualization, Seaborn on iris dataset, wine reviews datasets.
    a) Scatter Plot
    b) Line chart
    c) Histogram
    d) Heatmap

Text Books:

1. Hands–On Machine Learning with Scikit–Learn and TensorFlow 2e: Concepts, Tools, and Techniques to Build Intelligent Systems, AurelienGeron, 2019.

Reference Books:

1. https://scikit-learn.org/stable/tutorial/index.html
2. https://archive.ics.uci.edu/ml/index.php
3. https://towardsdatascience.com/pca-and-svd-explained-with-numpy-5d13b0d2a4d8
4. https://towardsdatascience.com/introduction-to-data-visualization-in-python-89a54c97fbed

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Annexure-XXXVI

Data Visualization using Tableau Lab

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 2**
Internal: 50 Marks	**External: 50 Marks**	**Total: 100 Marks**

List of Experiments:

Module 1: Tableau Course Material

- Start Page
- Show Me
- Connecting to Excel Files
- Connecting to Text Files
- Connect to Microsoft SQL Server
- Connecting to Microsoft Analysis Services
- Creating and Removing Hierarchies
- Bins
- Joining Tables
- Data Blendin

Module 2: Learn Tableau Basic Reports

- Parameters
- Grouping Example 1
- Grouping Example 2
- Edit Groups
- Set
- Combined Sets
- Creating a First Report
- Data Labels
- Create Folders
- Sorting Data
- Add Totals, Sub Totals and Grand Totals to Report

Module 3: Learn Tableau Charts

- Area Chart
- Bar Chart
- Box Plot
- Bubble Chart
- Bump Chart
- Bullet Graph
- Circle Views
- Dual Combination Chart

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- Dual Lines Chart
- Funnel Chart
- Traditional Funnel Charts
- Gantt Chart
- Grouped Bar or Side by Side Bars Chart
- Heatmap
- Highlight Table
- Histogram
- Cumulative Histogram
- Line Chart
- Lollipop Chart
- Pareto Chart
- Pie Chart
- Scatter Plot
- Stacked Bar Chart
- Text Label
- Tree Map
- Geographic map

Module 4: Custom SQL

- Convert to Custom SQL

Module 5: Learn Tableau Advanced Reports

- Dual Axis Reports
- Blended Axis
- Individual Axis
- Add Reference Lines
- Reference Bands
- Reference Distributions
- Basic Maps
- Symbol Map
- Use Google Maps

Module 6: Learn Tableau Calculations & Filters

- Calculated Fields
- Basic Approach to Calculate Rank
- Advanced Approach to Calculate Rank
- Calculating Running Total
- Filters Introduction
- Quick Filters
- Filters on Dimensions

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- Conditional Filters
- Top and Bottom Filters
- Filters on Measures
- Context Filters
- Slicing Filters
- Data Source Filters
- Extract Filters

Module 7: Learn Tableau Dashboards

- Create a Dashboard
- Format Dashboard Layout
- Create a Device Preview of a Dashboard
- Create Filters on Dashboard
- Dashboard Objects
- Create a Story

Module 8: Tableau data server

- Physical architecture overview
- User access
- Component functions & processes
- Tableau server on-premises
- Tableau reader
- Tableau online v tableau server

Module 9: Tableau Server UI

- Tableau server user interface
- Users
- Site roles
- Groups
- Schedules
- Tasks
- Tableau server menu
- Content display options

Text Books:

1. Fundamentals of Data Visualization, Claus O. Wilke, O'Reilly
2. Tableau Data Visualization Cookbook, Ashutosh Nandeshwar, Packt Publishing

Reference Links:

1. https://archi ableau Data Visualization Cookbook ve.ics.uci.edu/ml/index.php
2. https://www.coursera.org/specializations/data-visualization

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Annexure-12

ANNEXURE - IX

ANALOG AND DIGITAL CMOS VLSI DESIGN
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand the concepts of MOS Devices and Modeling
CO2:	Analyze the CMOS sub circuits
CO3:	Illustrate the concepts of MOS Design and compare the characteristics of a Psuedo-nMOS and CMOS Inverter.
CO4:	Design and analysis of Combinational Circuits using NMOS logic, CMOS logic and Transmission gate logic.
CO5:	Design and analysis of Sequential Circuits using nMOS logic, CMOS logic and Transmission gate logic.

UNIT-I

Technology Scaling and Road map, Scaling issues, Standard 4 mask NMOS Fabrication process

Digital CMOS Design:

Basic MOS structure and its static behavior, Quality metrics of a digital design: Cost, Functionality, Robustness, Power, and Delay, Stick diagram and Layout, Wire delay models. Inverter: Static CMOS inverter, Switching threshold and noise margin concepts and their Evaluation, Dynamic behavior, Power consumption.

UNIT-II

Physical design flow

Floor planning, Placement, Routing, CTS, Power analysis and IR drop estimation-static and dynamic, ESD protection-human body model, Machine model. Combinational logic: Static CMOS design, Ratioed logic, Pass transistor logic, Dynamic logic, Speed and power dissipation in dynamic logic, Cascading dynamic gates, CMOS transmission gate logic.

UNIT-III

Sequential logic

Static latches and registers, Bi-stability principle, MUX based latches, Static SR flip-flops, Master-slave edge-triggered register, Dynamic latches and registers, Concept of pipelining, ulse registers, non-bistable sequential circuit. Advanced technologies: Giga-scale dilemma, short channel effects, High–k, Metal Gate Technology, FinFET, TFET etc.

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UNIT-IV
Analog CMOS Design: Single Stage Amplifier CS stage with resistance load, Divide connected load, Current source load, Triode load, CS stage with source degeneration, Source follower, Common gate stage, Cascade stage, Choice of device models. Differential Amplifiers: Basic difference pair, Common mode response, Differential pair with MOS loads, Gilbert cell.

UNIT-V
Passive and active current mirrors Basic current mirrors, Cascade mirrors, Active current mirrors. Frequency response of CS stage: Source follower, Common gate stage, Cascade stage and difference pair, Noise. Operational amplifiers: One stage OPAMP.

Text Books:
1. J P Rabaey, A P Chandrakasan, B Nikolic, "Digital Integrated circuits: A design perspective", Prentice Hall electronics and VLSI series, 2nd Edition. 2. Baker, Li, Boyce, "CMOS Circuit Design, Layout, and Simulation", Wiley, 2nd Edition. 3. Behzad Razavi, "Design of Analog CMOS Integrated Circuits", TMH, 2007.
Reference Books:
1. Phillip E. Allen and Douglas R. Holberg, "CMOS Analog Circuit Design", Oxford, 3rd Edition. 2. R J Baker, "CMOS circuit Design, Layout and Simulation", IEEE Inc., 2008. 3. Kang, S. and Leblebici, Y., "CMOS Digital Integrated Circuits, Analysis and Design", TMH, 3rdEdition. 4. Pucknell, D.A. and Eshraghian, K., "Basic VLSI Design", PHI, 3rd Edition.

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ANNEXURE - X

EMBEDDED SYSTEMS DESIGN
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Analyze the quality principles and tools in embedded system during product development process and Design interface circuit with processor and memory devices.
CO2:	Understand the architectural and programming concepts of ARM controllers.
CO3:	Compare and select ARM processor core based SoC with several features/peripherals based on requirements of embedded applications.
CO4:	Develop software programs to control embedded system using C
CO5:	Develop software programs to control embedded system using Python Languages.

UNIT-I

Introduction to Embedded Electronic Systems and Microcontrollers:
An Embedded System-Definition, Embedded System Design and Development Life Cycle, An Introduction to Embedded system Architecture, The Embedded Systems Model, Embedded Hardware: The Embedded Board and the von Neumann Model, Embedded Processors: ISA Architecture Models, Internal Processor Design, Processor Performance, Board Memory: Read-Only Memory (ROM), Random-Access Memory (RAM), Auxiliary Memory, Memory Management of External Memory and Performance, Approaches to Embedded Systems, Small Microcontrollers, Anatomy of a Typical Small Microcontroller, Small Microcontrollers Memory, Embedded Software

UNIT-II

ARM Embedded Systems
The RISC Design Philosophy, The ARM Design Philosophy, Embedded System Hardware, Embedded System Software, ARM processor Families, Core extensions, Architecture Revisions.

UNIT-III

ARM Cortex-M3 processor: Applications, Programming model – Registers, Operation modes, Exceptions and Interrupts, Reset Sequence Instruction Set, Unified Assembler Language,
Memory Maps, Memory Access Attributes, Permissions, Bit-Band Operations, Unaligned and Exclusive Transfers. Pipeline, Bus Interfaces

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UNIT-IV

Embedded C

Introduction to Embedded C - Difference between C & Embedded C - Programming style - Basic structure of C program- Keywords & Identifiers - Data type & its memory representation - Arrays and strings- Types of Operators - Bitwise Operators - Control Structures – Loops - Functions.

UNIT-V

Python Programming

Basics of PYTHON Programming Syntax and Style – Python Objects– Dictionaries – comparison with C programming on Conditionals and Loops – Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

Text Books:

1. Tammy Noergaard "Embedded Systems Architecture: A Comprehensive Guide for Engineers and Programmers", Elsevier (Singapore) Pvt. Ltd. Publications, 2005.
2. David. E. Simon, "An Embedded Software Primer", Pearson Education, 2001.
3. Rajkamal, "Embedded Systems: Architecture, Programming and Design", TMH Publications, Second Edition, 2008.
4. Joseph Yiu, "The definitive guide to ARM Cortex-M3", Elsevier, 2nd Edition

Reference Books:

1 Michael J Pont, "Embedded C", Pearson Education, 2007.
2. Jivan S. Parab, Vinod G. Shelake, Rajanish K.Kamot, and Gourish M.Naik, "Exploring C for Microcontrollers- A Hands on Approach", Springer, 2007.
3. Mark Lutz, "Learning Python Powerful OOPs",O'reilly,2011.
4. Peter Barry, Patrick Crowley, "Modern Embedded Computing" Morgan Kaufmann Publishers, 2012.
5. Sloss Andrew N, Symes Dominic, Wright Chris, "ARM System Developer's Guide: Designing and Optimizing", Morgan Kaufman Publication

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ANNEXURE - XI

Elective I
APPLICATION SPECIFIC INTEGRATED CIRCUITS (ASIC)
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Architect ASIC library design
CO2:	Develop programmable ASIC logic cells
CO3:	Design I/O cells and interconnects
CO4:	Identify new developments in SOC and low power design.
CO5:	design cell design

UNIT-I

Introduction to ASICs – Types of ASICs, Design flow, Economics of ASICs, ASIC Cell Libraries, CMOS Logic, CMOS Design Rules, Logic Cells, I/O Cells, Cell Compilers.

UNIT-II

ASIC Library Design – Transistors as resistors, Transistor Parasitic Capacitance, Logical Effort, Cell Design, Programmable ASICs, Programmable ASIC Logic Cells, Programmable ASIC I/O Cells, Programmable ASIC Interconnect, Programmable ASIC Design Software.

UNIT-III

Low-level Design Entry, Schematic Entry, Low-Level Design Languages, PLA Tools, EDIF, An overview of VHDL and Verilog, Logic Synthesis, Simulation. ASIC Construction, Floor Planning and Placement.

UNIT-IV

CMOS System Core Studies: Dynamic Warp Processors: Introduction, The Problem, The Algorithm, A Functional Overview, Detailed Functional Specification, Structural Floor Plan, Physical Design, Fabrication, Hierarchical Layout and Design Of Single Chip 32 Bit CPU: Introduction, Design Methodology, Technology Updatability And Layout Verification.

UNIT-V

Practical Realities and Ground Rules: Further Thoughts on Floor Plans/Layout, Floor Plan Layout of The Four Bit Processors, Input/output (I/O) Pads, "Real estate", Further Thoughts on System Delays, Ground Rules for Successful Design, Scaling of MOS Circuits.

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Text Books:
1.Application Specific Integrated Circuits by J.S. Smith, Addison Wesley, 1997.
Reference Books:
1.Basic VLSI Design : Systems and Circuits, Doublas A. Pucknell& Kamran Eshraghian, Prentice Hall of India Private Ltd., New Delhi, 1989. 2. VLSI Design Techniques for analog and digital circuits, R.L. Geiger, P.E. Allen & N.R. Streder, McGraw Hill Int. 1990.

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ANNEXURE - XII

Elective I
ADVANCED OPERATING SYSTEMS
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand the objectives of computer system architecture, instruction execution, I/O functions, memory hierarchy, and operating system.
CO2:	Apply basic commands, I/O redirection, filters, editors, and shell operations in a Unix/Linux environment.
CO3:	Understand the concept of system calls, process management, and inter-process communication techniques like pipes, semaphores, and sockets.
CO4:	Outline the goals, design issues, and communication models in distributed systems.
CO5:	Apply synchronization techniques and deadlock management strategies in distributed systems.

UNIT-I

Introduction to Operating Systems
Overview of computer system hardware, Instruction execution, I/O function, Interrupts, Memory hierarchy, I/O Communication techniques, Operating system objectives and functions, Evaluation of operating System.

UNIT-II

Introduction to UNIX and LINUX
Basic Commands & Command Arguments, Standard Input, Output, Input / Output Redirection, Filters and Editors, Shells and Operations.

UNIT-III

System Calls: System calls and related file structures, Input / Output, Process creation & termination.
Inter Process Communication: Introduction, File and record locking, Client – Server example, Pipes, FIFOs, Streams & Messages, Name Spaces, Systems V IPC, Message queues, Semaphores, Shared Memory, Sockets & TLI.

UNIT-IV

Introduction to Distributed Systems:
Goals of distributed system, Hardware and software concepts, Design issues.
Communication in Distributed Systems:
Layered protocols, ATM networks, Client - Server model, Remote procedure call and Group communication.

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UNIT-V
Synchronization in Distributed Systems: Clock synchronization, Mutual exclusion, E-tech algorithms, Bully algorithm, Ring algorithm, Atomic transactions **Deadlocks:** Dead lock in distributed systems, distributed dead lock prevention and distributed dead lock detection.

Text Books:
1.The Design of the UNIX Operating Systems – Maurice J. Bach, 1986, PHI. 2. Distributed Operating System - Andrew. S. Tanenbaum, 1994, PHI. 3. The Complete Reference LINUX – Richard Peterson, 4th Ed., McGraw – Hill.
Reference Books:
1.Operating Systems: Internal and Design Principles - Stallings, 6th Ed., PE. 2. Modern Operating Systems - Andrew S Tanenbaum, 3rd Ed., PE. 3. Operating System Principles - Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 7th Ed., John Wiley 4. UNIX User Guide – Ritchie & Yates. 5. UNIX Network Programming - W.Richard Stevens, 1998, PHI.

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ANNEXURE - XIII

Elective I
PARALLEL PROCESSING
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Outline the concepts of parallel processing and pipelining systems.
CO2:	Classify pipelining processors and illustrate advanced pipelining techniques.
CO3:	Build various architectures for VLIW processors.
CO4:	Make use of latency hiding techniques for implementing multithreaded processors
CO5:	Analyze parallel programming techniques and operating systems for multiprocessors customizing applications.

UNIT-I
Overview of Parallel Processing and Pipelining, Performance analysis, Scalability.

UNIT-II
Principles and implementation of Pipelining, Classification of pipelining processors, Advanced pipelining techniques, Software pipelining.

UNIT-III
VLIW processors Case study: Superscalar Architecture- Pentium, Intel Itanium Processor, Ultra PARC, MIPS on FPGA, Vector and Array Processor, FFT Multiprocessor Architecture.

UNIT-IV
Multithreaded Architecture, Multithreaded processors, Latency hiding techniques, Principles of Multithreading, Issues and solutions.

UNIT-V
Parallel Programming Techniques: Message passing program development, Synchronous and asynchronous message passing, Shared Memory Programming, Data Parallel Programming, Parallel Software Issues. Operating systems for multiprocessors systems Customizing applications on parallel processing platforms

Text Books:
1. Kai Hwang, Faye A. Briggs, "Computer Architecture and Parallel Processing", MGH International Edition

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2. Kai Hwang, "Advanced Computer Architecture", TMH
3. V. Rajaraman, L. Sivaram Murthy, "Parallel Computers", PHI.

Reference Books:

1. William Stallings, "Computer Organization and Architecture, Designing for performance "Prentice Hall, Sixth edition
2. Kai Hwang, ZhiweiXu, "Scalable Parallel Computing", MGH
3. David Harris and Sarah Harris, "Digital Design and Computer Architecture", Morgan

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ANNEXURE - XIV

Elective II
CPLD AND FPGA ARCHITECTURES AND APPLICATIONS
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand the features and architectures of industrial CPLDs with different families.
CO2:	Understand the features and architectures of industrial FPGAs with different families.
CO3:	Know the programming techniques used in FPGA design methodology.
CO4:	Design and implement complex real time digital circuits.
CO5:	Analyze the behavior of Integrated digital applications

UNIT-I

Introduction to Programmable Logic Devices

Introduction, Simple Programmable Logic Devices – Read Only Memories, Programmable Logic Arrays, Programmable Array Logic, Programmable Logic Devices/Generic Array Logic; Complex Programmable Logic Devices – Architecture of Xilinx Cool Runner XCR3064XL CPLD, CPLD Implementation of a Parallel Adder with Accumulation.

UNIT-II

Field Programmable Gate Arrays

Organization of FPGAs, FPGA Programming Technologies, Programmable Logic Block Architectures, Programmable Interconnects, Programmable I/O blocks in FPGAs, Dedicated Specialized Components of FPGAs, Applications of FPGAs.

UNIT-III

SRAM Programmable FPGAs

Introduction, Programming Technology, Device Architecture, The Xilinx XC2000, XC3000 and XC4000 Architectures.

UNIT-IV

Anti-Fuse Programmed FPGAs

Introduction, Programming Technology, Device Architecture, The Actel ACT1, ACT2 and ACT3 Architectures.

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UNIT-V
Design Applications General Design Issues, Counter Examples, A Fast Video Controller, A Position Tracker for a Robot Manipulator, A Fast DMA Controller, Designing Counters with ACT devices, Designing Adders and Accumulators with the ACT Architecture.

Text Books:
1. Field Programmable Gate Array Technology - Stephen M. Trimberger, Springer International Edition. 2. Digital Systems Design - Charles H. Roth Jr, Lizy Kurian John, Cengage Learning.
Reference Books:
1. Field Programmable Gate Arrays - John V. Oldfield, Richard C. Dorf, Wiley India. 2. Digital Design Using Field Programmable Gate Arrays - Pak K. Chan/Samiha Mourad, Pearson Low Price Edition. 3. Digital Systems Design with FPGAs and CPLDs - Ian Grout, Elsevier, Newnes. 4. FPGA based System Design - Wayne Wolf, Prentice Hall Modern Semiconductor Design Series.

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ANNEXURE - XV

Elective II
ELECTRONIC DESIGN AUTOMATION TOOLS
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Design software system models in a suitable system-level modeling language
CO2:	Make use of functional models into hardware and software components
CO3:	Construct models Using effective optimization techniques
CO4:	Compare the complexity and efficiency of various algorithms at high level and low level
CO5:	Analyze the behaviour of Mixed signal Digital Applications

UNIT-I

IMPORTANT CONCEPTS IN VERILOG:
Basics Of Verilog Language, Operators, Hierarchy, Procedures and Assignments, Timing Controls and Delay. Tasks And Functions Control Statements, Logic-Gate Modeling, Modeling Delay, Altering Parameters, other Verilog Features.

UNIT-II

SYNTHESIS AND SIMULATION USING HDLS:
Verilog And Logic Synthesis. VHDL And Logic Synthesis, Memory Synthesis, FSM Synthesis, Memory Synthesis, Performance-Driven Synthesis.
Simulation-Types of Simulation, Logic Systems Working of Logic Simulation, Cell Models, Delay Models State Timing Analysis, Formal Verification, Switch-Level Simulation Transistor-Level Simulation. CAD Tools For Synthesis and Simulation Model sim And Leonardo Spectrum (Exemplar).

UNIT-III

TOOLS FOR CIRCUIT DESIGN AND SIMULATION USING HSPICE:
HSPICE net list implementation,Hspice GUI for windows, DC and Operating point analysis,MOSFET behavioral modeling,Verilog-A modeule setup.

UNIT-IV

AN OVER VIEW OF MIXED SIGNAL VLSI DESIGN:
Fundamentals Of Analog and Digital Simulation, Mixed Signal Simulator Configurations, Understanding Modeling, Integration To CAE Environments, Analyses Of Analog Circuits Eg. A/D, D/A Converters, Up And Down Converters, Companders Etc.

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UNIT-V
TOOLS FOR LAYOUT IMPLEMENTATION: An overview of Schematic generation,DRC verification,LVS generation,PEX implementation,GDSII verification.

Text Books:
1. J.Bhaskar, A Verilog Primer, BSP, 2003. 2. J.Bhaskar, A Verilog HDL Synthesis BSP, 2003
Reference Books:
1. HSpice user guide simulation and Analysis 2. SABER: Technical Reference Manual, Analogy Nic, USA. 3. M.J.S.SMITH :Aplication-Specific Integrated Circuits(1997). Addison Wesley 4. "Digital VLSI Systems Design: A Design Manual for Implementation of Projects on FPGAs and ASICs Using Verilog" by Seetharaman Ramachandra.

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ANNEXURE - XVI

Elective II
DIGITAL SYSTEM DESIGN
I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Apply CAMP algorithm for minimization of switching functions
CO2:	Make use of IISc and Compact algorithms in the development of minimized PLAs
CO3:	Develop Programmable Logic Devices using ASM charts
CO4:	Analyze various techniques for fault diagnosis in combinational circuits
CO5:	Analyze various techniques for fault diagnosis in sequential circuits

UNIT-I

Minimization Procedures and CAMP Algorithm

Review on minimization of switching functions using tabular methods, k-map, QM algorithm, CAMP-I algorithm, Phase-I: Determination of Adjacencies, DA, CSC, SSMs and EPCs,, CAMPI algorithm, Phase-II: Passport checking, Determination of SPC, CAMP-II algorithm: Determination of solution cube, Cube based operations, determination of selected cubes are wholly within the given switching function or not, Introduction to cube based algorithms.

UNIT-II

PLA Design, PLA Minimization and Folding Algorithms

Introduction to PLDs, basic configurations and advantages of PLDs, PLA-Introduction, Block diagram of PLA, size of PLA, PLA design aspects, PLA minimization algorithm (IISc algorithm), PLA folding algorithm (COMPACT algorithm)-Illustration of algorithms with suitable examples.

UNIT-III

Design of Large-Scale Digital Systems

Algorithmic state machine charts-Introduction, Derivation of SM Charts, Realization of SM Chart, control implementation, control unit design, data processor design, ROM design, PAL design aspects, digital system design approaches using CPLDs, FPGAs and ASICs.

UNIT-IV

Fault Diagnosis in Combinational Circuits

Faults classes and models, fault diagnosis and testing, fault detection test, test generation, testing process, obtaining a minimal complete test set, circuit under test methods- Path sensitization method, Boolean difference method, properties of Boolean differences, Kohavi algorithm, faults in PLAs, DFT schemes, built in self-test.

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UNIT-V
Fault Diagnosis in Sequential Circuits Fault detection and location in sequential circuits, circuit test approach, initial state identification, Haming experiments, synchronizing experiments, machine identification, distinguishing experiment, adaptive distinguishing experiments.

Text Books:
1. Logic Design Theory-N. N. Biswas, PHI 2. Switching and Finite Automata Theory-Z. Kohavi , 2nd Edition, 2001, TMH 3. Digital system Design using PLDd-Lala
Reference Books:
1. Fundamentals of Logic Design – Charles H. Roth, 5th Ed., Cengage Learning. 2. Digital Systems Testing and Testable Design – Miron Abramovici, Melvin A.Breuer and Arthur D. Friedman- John Wiley & Sons Inc.

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ANNEXURE - XVII

ANALOG AND DIGITAL CMOS VLSI DESIGN LAB

I Year M. Tech. I semester

(Branch: VLSI Design & Embedded Systems)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Develop different Analog Applications
CO2:	Analyze the functional behaviour of analog circuits and determine performance metrics
CO3:	Develop different digital Applications
CO4:	Analyze the functional behaviour of digital circuits and determine performance metrics
CO5:	Construct layout and GDSII implementation of digital circuits

The students are required to design and implement the Circuit and Layout of any **TEN** Experiments using CMOS 130nm Technology with Mentor Graphics Tool/Cadence/ Synopsys/Industry Equivalent Standard Software.

List of Experiments:

1. MOS Device Characterization and parametric analysis
2. Common Source Amplifier
3. Cascode amplifier
4. Cascode current mirror.
5. Wilson current mirror.
6. Full Adder
7. RS-Latch
8. Clock Divider
9. JK-Flip Flop
10. Synchronous Counter
11. Asynchronous Counter
12. Static RAM Cell

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ANNEXURE - XVIII

EMBEDDED SYSTEMS DESIGN LAB

I Year M. Tech. I semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Develop and execute Assembly Language Programs for arithmetic and bit manipulation on ARM Cortex M3.
CO2:	Interface and control hardware components like motors and DACs using Embedded C on an ARM Cortex M3 evaluation board.
CO3:	Utilize UART for serial communication and message display in Embedded C on ARM Cortex M3.
CO4:	Implement external interrupts to control LEDs and other outputs using Embedded C.
CO5:	Interface with sensors and read data using SPI ADC ICs on an ARM Cortex M3 evaluation board.

PART-A:

(Conduct the following experiments by writing Assembly Language Program (ALP) using ARM Cortex M3 Registers using an evaluation board/simulator and the required software tool.)

1. ALP to multiply two 16-bit binary numbers.
2. ALP to find the sum of first 10 integers.
3. ALP to find the number of 0's and 1's in a 32-bit data.
4. ALP to determine the given 16-bit number is ODD or EVEN.
5. ALP to write data in RAM.

PART-B:

(Conduct any **Five** experiments on an ARM CORTEX M3 evaluation board using evaluation version of Embedded 'C' &Keil Uvision-4tool/compiler.)

6. Display "Hello World" message using Internal UART.
7. Interface and Control a DC Motor.
8. Interface a Stepper motor and rotate it in clockwise and anti-clockwise direction.
9. Interface a DAC and generate Triangular and Square waveforms.
10. Interface a 4x4 keyboard and display the key code on an LCD.
11. Demonstrate the use of an external interrupt to toggle an LED On/Off.
12. Display the Hex digits 0 to F on a 7-segment LED interface, with an appropriate delay in between.
13. Measure Ambient temperature using a sensor and SPI ADC IC.

Beyond Syllabus:

1. Using the Internal PWM module of ARM controller generate PWM and vary its duty cycle.
2. Interface a simple Switch and display its status through Relay, Buzzer and LED.

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ANNEXURE - XIX

RTL DESIGN & VERIFICATION USING SYSTEM VERILOG

I Year M. Tech. II semester

(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand the importance of System Verilog
CO2:	Develop conditional constructs based digital applications using System Verilog
CO3:	Develop object oriented Programming(OOP) based digital applications
CO4:	Develop digital Applications using System Verilog
CO5:	Analyze functional coverage using System Verilog

UNIT-I

Introduction to System Verilog

Concepts of top-down design, Overview of RTL models, Overview of gate/switch models, The RTL design flow with simulation and synthesis, writing verification test benches in Verilog, running your preferred Verilog simulator, Debugging designs with simulation. Identifier names, Logic values and numbers, Data types and 2-state vs. 4-state guidelines, Enumerated types, User-defined types, Casting (Static and Dynamic). Structure and unions declarations and their element access. Dynamic arrays, Associative arrays, Queues and Strings

UNIT-II

System Verilog Interfaces, Packages and Compound types

Using interfaces to simplify inter-module connections, Mod ports in Interface, Clocking Blocking in interface, Transforming Verilog code into System Verilog using package, interface mod port and clocking block, Using tasks and functions in interfaces, Interfaces as an RTL modelling construct, Package declaration, Element access in package. System Verilog test bench using basic constructs, Program and Final block.

UNIT-III

System Verilog Procedural blocks and Assignments:

Procedural blocks, System Verilog enhanced procedural blocks, Blocking and non- blocking assignments, Continuous assignments, Programming statements – if else, case, case X, case Z, unique if, priority if, unique case, priority case. Operators and language rules, Loops: forever, for each, repeat, while do while and for loop.

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UNIT-IV

System Verilog Process Synchronization and OOPS

Fork—join variants for dynamic processes, Built-in mailbox classes, Built-in semaphore classes, Enhanced event data types, Test bench using mailbox, semaphores and event. System Verilog's class data type, defining class objects, Class methods, Class inheritance, Aggregate class, Abstraction class, Polymorphism, Virtual methods, Virtual classes, Public and private classes, Extending class definitions (inheritance), Virtual methods, Virtual classes, Public and private classes.

UNIT-V

System Verilog Constrained Random Value Generation, Functional Coverage and Assertions

Built-in System Verilog random classes, defining constrained random values, constrained random verification methodologies, system Verilog code coverage and functional coverage, Defining and constructing cover groups, Defining cover points and coverage bins, Coverage sampling, Cross coverage. Assertion concepts, Immediate and concurrent assertions, Assertion sequence definitions Testbench using constrained randomization, coverage. and Assertions

Text Books: 1."SystemVerilog for Design: A Guide to Using SystemVerilog for Hardware Design and Modeling" by Sutherland, Davidmann, and Flake.
2. "SystemVerilog Assertions and Functional Coverage: Guide to Language, Methodology and Applications" by Bergeron, Cerny, Hunter, and Nightingale

Reference Books:

1. "SystemVerilog Assertions Handbook: 2nd Edition" by Ben Cohen, Srinivasan Venkataramanan, and Ajeetha Kumari.
2. "SystemVerilog for Verification: A Guide to Learning the Testbench Language Features" by Chris Spear.
3. "A Practical Guide to Adopting the Universal Verification Methodology (UVM)" by Matt Rahl and Kathleen Meade.
4. "SystemVerilog Assertions Handbook: 4th Edition" by Ben Cohen, Srinivasan Venkataramanan, and Ajeetha Kumari.
5.SystemVerilog Unleashed" by Edmond Leung.
6. "SystemVerilog for Verification: A Guide to Learning the Testbench Language Features" by Chris Spear and Greg Tumbush.
7. "SystemVerilog for Verification: A Guide to Learning the Testbench Language Features" by Chris Spear, Greg Tumbush, and Cliff Cummings.

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ANNEXURE - XX

INTERNET OF THINGS AND ITS APPLICATIONS
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art Internet of things
CO2:	Identify the architecture and infrastructure of IoT.
CO3:	Choose the appropriate technologies, algorithms, and approaches for the related issues.
CO4:	Identify problems, and explain, analyze, and evaluate various IoT solutions
CO5:	Explain the core issues of IoT such as security, privacy, and interoperability

UNIT-I

THE IoT NETWORKING CORE

History of IoT, Review of Technologies involved in IoT Development, Internet/Web and Networking Basics -OSI Model, Data transfer referred with OSI Model, IP Addressing, Point to Point Data transfer, Point to Multi Point Data transfer & Network Topologies, Sub-netting, Network Topologies referred with Web, Introduction to Web Servers, Introduction to Cloud Computing. Basics of Big Data, Data Science.

UNIT-II

IoT Architecture:

M2M – Machine to Machine, Web of Things, IoT protocols, Introduction to wireless and mobile networks, ZigBee, BLE mesh, WiFi, MQTT, LoRa-Machine Applications: Remote Monitoring & Sensing, Remote Controlling, Performance Analysis.

The Architecture

The Layering concepts , IoT Communication Pattern, IoT protocol Architecture, The 6LoWPAN

Security aspects in IoT

UNIT-III

IoT Platform overview

Overview of IoT supported Hardware platforms such as: Raspberry pi, ARM Cortex Processors, Arduino and Intel Galileo boards.

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Overview and working principle of Wired Networking equipment's – Router, Switches, Overview and working principle of Wireless Networking equipment's – Access Points, Hubs etc. Linux Network configuration Concepts: Networking configurations in Linux Accessing Hardware & Device Files interactions.

UNIT-IV

IoT Application Development:

Application Protocols

MQTT, REST/HTTP, CoAP, MySQL

Back-end Application Designing

Apache for handling HTTP Requests, PHP & MySQL for data processing, MongoDB Object type Database, HTML, CSS & jQuery for UI Designing, JSON lib for data processing, Security & Privacy during development, Application Development for mobile Platforms: Overview of Android / IOS App Development tools.

UNIT-V

CASE STUDIES/INDUSTRIAL APPLICATIONS

IoT applications in home, infrastructures, buildings, security, Industries, Home appliances, other IoT electronic equipment's. Use of Big Data and Visualization in IoT, Industry 4.0 concepts.

Text Books:

1. Jean-Philippe Vasseur, Adam Dunkels, "Interconnecting Smart Objects with IP: The Next Internet", Morgan Kuffmann-2010
2. Vijay Madisetti , ArshdeepBahga, : Internet of Things (A Hands-on-Approach)" -2014
3. Adrian McEwen (Author), Hakim Cassimally, "Designing the Internet of Things" ,Wiley - 2013
4. Dr. OvidiuVermesan, Dr. Peter Friess, "Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems," River Publishers -2013

Reference Books:

1. Barrie Sosinsky, "Cloud Computing Bible", Wiley-India, 2010
2. Asoke K Talukder and Roopa R Yavagal, "Mobile Computing," Tata McGraw Hill, 2010.
3. Adelstein and S.K.S. Gupta, "Fundamentals of Mobile and Pervasive Computing," McGraw Hill, 2009
4. Ronald L. Krutz, Russell Dean Vines "Cloud Security: A Comprehensive Guide to Secure Cloud Computing", Wiley-India, 2010

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ANNEXURE - XXI

Elective III
LOW POWER VLSI DESIGN
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Illustrate the necessity of low power VLSI, Sources of power dissipation techniques and importance of Short-Channel effects
CO2:	Explain the concepts of Low-Power Design Approaches
CO3:	Analyze Low-Voltage Low-Power Adder Circuits
CO4:	Apply Low Power Design concept to Different Multiplier circuits
CO5:	Classify and Compare Low-Voltage Low-Power Memories

UNIT-I

Fundamentals of Low Power VLSI Design

Need for Low Power Circuit Design, Sources of Power Dissipation – Switching Power Dissipation, Short Circuit Power Dissipation, Leakage Power Dissipation, Glitching Power Dissipation, Short Channel Effects –Drain Induced Barrier Lowering and Punch Through, Surface Scattering, Velocity Saturation, Impact Ionization, Hot Electron Effect.

UNIT-II

Low-Power Design Approaches

Low-Power Design through Voltage Scaling – VTCMOS circuits, MTCMOS circuits, Architectural Level Approach –Pipelining and Parallel Processing Approaches.

Switched Capacitance Minimization Approaches

System Level Measures, Circuit Level Measures, Mask level Measures.

UNIT-III

Low-Voltage Low-Power Adders

Introduction, Standard Adder Cells, CMOS Adder's Architectures – Ripple Carry Adders, Carry Look-Ahead Adders, Carry Select Adders, Carry Save Adders, Low-Voltage Low-Power Design Techniques –Trends of Technology and Power Supply Voltage, Low-Voltage Low-Power Logic Styles.

UNIT-IV

Low-Voltage Low-Power Multipliers

Introduction, Overview of Multiplication, Types of Multiplier Architectures, Braun Multiplier, Baugh-Wooley Multiplier, Booth Multiplier, Introduction to Wallace Tree Multiplier.

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UNIT-V
Low-Voltage Low-Power Memories Basics of ROM, Low-Power ROM Technology, Future Trend and Development of ROMs, Basics of SRAM, Memory Cell, Precharge and Equalization Circuit, Low-Power SRAM Technologies, Basics of DRAM, Self-Refresh Circuit, Future Trend and Development of DRAM.

Text Books:
1. CMOS Digital Integrated Circuits – Analysis and Design – Sung-Mo Kang, Yusuf Leblebici, TMH, 2011. 2. Low-Voltage, Low-Power VLSI Subsystems – Kiat-Seng Yeo, Kaushik Roy, TMH Professional Engineering.
Reference Books:
1. Low Power CMOS Design – Anantha Chandrakasan, IEEE Press/Wiley International, 1998. 2. Low Power CMOS VLSI Circuit Design – Kaushik Roy, Sharat C. Prasad, John Wiley & Sons, 2000. 3. Practical Low Power Digital VLSI Design – Gary K. Yeap, Kluwer Academic Press, 2002. 4. Low Power CMOS VLSI Circuit Design – A. Bellamour, M. I. Elamasri, Kluwer Academic Press, 1995.

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ANNEXURE - XXII

Elective III
SYSTEM ON CHIP DESIGN
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Illustrate System on Chip design architecture, Memory and Addressing
CO2:	Compare different processor architectures like VLIW and Superscalar
CO3:	Build SOC Memory system design, Types of cache and Memory interaction
CO4:	Analyze interconnect architectures and Reconfiguration technologies
CO5:	Examine different SOC design application case studies

UNIT-I

Introduction to the System Approach

System Architecture, Components of the system, Hardware & Software, Processor Architectures, Memory and Addressing. System level interconnection, An approach for SOC Design, System Architecture and Complexity.

UNIT-II

Processors

Introduction, Processor Selection for SOC, Basic concepts in Processor Architecture, Basic concepts in Processor Micro Architecture, Basic elements in Instruction handling. Buffers: minimizing Pipeline Delays, Branches, More Robust Processors, Vector Processors and Vector Instructions extensions, VLIW Processors, Superscalar Processors.

UNIT-III

Memory Design for SOC

Overview of SOC external memory, Internal Memory, Size, Scratchpads and Cache memory, Cache Organization, Cache data, Write Policies, Strategies for line replacement at miss time, Types of Cache, Split – I, and D – Caches, Multilevel Caches, Virtual to real translation, SOC Memory System, Models of Simple Processor – memory interaction.

UNIT-IV

Interconnect Customization and Configuration

Inter Connect Architectures, Bus: Basic Architectures, SOC Standard Buses, Analytic Bus Models, Using the Bus model, Effects of Bus transactions and contention time. SOC Customization: An overview, Customizing Instruction Processor, Reconfiguration Technologies, Mapping design onto Reconfigurable devices, Instance- Specific design, Customizable Soft Processor, Reconfiguration - overhead analysis and trade-off analysis on reconfigurable Parallelism.

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UNIT-V
Application Studies / Case Studies SOC Design approach, AES algorithms, Design and evaluation, Image compression – JPEG compression.

Text Books:
1. Computer System Design System-on-Chip - Michael J. Flynn and Wayne Luk, Wiely India Pvt. Ltd. 2. ARM System on Chip Architecture – Steve Furber –2nd Ed., 2000, Addison Wesley Professional.
Reference Books:
1. Design of System on a Chip: Devices and Components – Ricardo Reis, 1st Ed., 2004, Springer 2. Co-Verification of Hardware and Software for ARM System on Chip Design (Embedded Technology) – Jason Andrews – Newnes, BK and CDROM. 3. System on Chip Verification – Methodologies and Techniques –Prakash Rashinkar, Peter Paterson and Leena Singh L, 2001, Kluwer Academic Publishers.

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ANNEXURE - XXIII

Elective III
DIGITAL SIGNAL AND IMAGE PROCESSING
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Analyze discrete-time signals and systems in various domains (i.e Time, Z and Fourier)
CO2:	Design the digital filters (both IIR and FIR) from the given specifications
CO3:	Analyze the quantization effects in digital filters and understand the basics of image sampling, quantization and image transforms.
CO4:	Understand the concepts of image enhancement, image restoration and image segmentation.
CO5:	Know the various methods involved in image compression and fundamentals in color image processing.

UNIT-I

Review of Discrete Time signals and systems, Characterization in time, Z and Fourier domain, Fast Fourier Transform using Decimation In Time (DIT) and Decimation In Frequency (DIF) Algorithms.

UNIT-II

IIR Digital Filters: Introduction, Analog filter approximations – Butter worth and Chebyshev, Design of IIR Digital filters from analog filters using Impulse Invariance, Bilinear Transformation methods.

FIR Digital Filters: Introduction, Design of FIR Digital Filters using Window Techniques, Frequency Sampling technique, Comparison of IIR & FIR filters.

UNIT-III

Analysis Of Finite Word length Effects: The Quantization Process and Errors, Quantization of Fixed-Point Numbers, Quantization of Floating-Point Numbers, Analysis of Coefficient Quantization effects.

Introduction To Digital Image Processing: Introduction, components in image processing system, Applications of Digital image processing, Image sensing and acquisition, Image sampling, Quantization, Basic Relationships between pixels, Image Transforms: 2D-DFT, DCT, Haar Transform.

UNIT-IV

Image Enhancement: Intensity transformation functions, histogram processing, fundamentals of spatial filtering, smoothing spatial filters, sharpening spatial filters, the basics of filtering in

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the frequency domain, image smoothing using frequency domain filters, Image Sharpening using frequency domain filters, Selective filtering.
Image Restoration: Introduction, restoration in the presence of noise only-Spatial Filtering, Periodic Noise Reduction by frequency domain filtering, Linear, Position –Invariant Degradations, Estimating the degradation function, Inverse filtering, Minimum mean square error (Wiener) filtering.
Image Segmentation: Fundamentals, point, line, edge detection, thresholding, region based segmentation.

UNIT-V

Image Compression: Fundamentals, Basic compression methods: Huffman coding, Arithmetic coding, Run-Length coding, Block Transform coding, Predictive coding, Wavelet coding.
Color Image Processing: color fundamentals, color models, pseudo color image processing, basics of full color image processing, color transformations, smoothing and sharpening. Image segmentation based on color, noise in color images, color image compression.

Text Books:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G.Manolakis, Pearson Education/PHI,2007.
2. S. K. Mitra. "Digital Signal Processing – A Computer based Approach", TMH, 3rd Edition,2006 3. Rafael C.Gonzalez and Richard E. Woods, "Digital Image Processing", Pearson Education, 2011.
4. S.Jayaraman, S.Esakkirajan, T.Veerakumar, "Digital Image Processing", Mc Graw Hill Publishers, 2009

Reference Books:

1. Digital Signal Processing: Andreas Antoniou, TATA McGraw Hill , 2006
2. Digital Signal Processing: MH Hayes, Schaum's Outlines, TATA Mc-Graw Hill, 2007.
3. Anil K. Jain, "Fundamentals of Digital Image Processing," Prentice Hall of India, 2012.

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ANNEXURE - XXIV

Elective IV
COMMUNICATION BUSES AND INTERFACES
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Compare serial buses like RS232, RS485, I2C, and SPI in terms of data rates, features, limitations, and applications.
CO2:	Understand CAN architecture, including ISO 11898 standards, data transmission, frame formats, and application layers.
CO3:	Outline PCIe revisions, configuration space, bus enumeration, hardware/software implementation, protocols, and applications.
CO4:	Understand USB transfer types, enumeration states, descriptor types, and device drivers.
CO5:	Learn about SFPDP configurations, flow control, and serial data transmission over fiber and copper cables.

UNIT-I
Serial Busses- Cables, Serial busses, serial versus parallel, Data and Control Signal- data frame, data rate, features Limitations and applications of RS232, RS485, I2C, SPI

UNIT-II
CAN **ARCHITECTURE**- ISO 11898-2, ISO 11898-3, Data Transmission- ID allocation, Bit timing, Layers- Application layers, Object layer, Transfer layer, Physical layer, Frame formats- Data frame, Remote frame, Error frame, Over load frame, Ack slot, Inter frame spacing, Bit spacing, Applications.

UNIT-III
PCIe Revision, Configuration space- configuration mechanism, Standardized registers, Bus enumeration, Hardware and Software implementation, Hardware protocols, Applications.

UNIT-IV
USB Transfer Types- Control transfers, Bulk transfer, Interrupt transfer, Isochronous transfer. Enumeration- Device detection, Default state, addressed state, Configured state, enumeration sequencing. Descriptor types and contents- Device descriptor, configuration descriptor, Interface descriptor, Endpoint descriptor, String descriptor. Device driver.

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UNIT-V
Data streaming Serial Communication Protocol- Serial Front Panel Data Port (SFPDP) configurations, Flow control, serial FPDP transmission frames, fiber frames and copper cable.

Text Books:
1. A Comprehensive Guide to controller Area Network – Wilfried Voss, Copperhill Media Corporation, 2nd Ed., 2005. 2. Serial Port Complete-COM Ports, USB Virtual Com Ports and Ports for Embedded Systems- Jan Axelson, Lakeview Research, 2nd Ed.,
Reference Books:
1. USB Complete – Jan Axelson, Penram Publications. 2. PCI Express Technology – Mike Jackson, Ravi Budruk, Mindshare Press.

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ANNEXURE - XXV

Elective IV
DESIGN FOR TESTABILITY
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Outline the testing process and fault modelling
CO2:	Analyze different algorithms for true value and fault simulation
CO3:	Test circuits for SCOAP measures and list various scan design methods
CO4:	Analyze BIST process and types of BISTs
CO5:	Analyze fault coverage using ATPG techniques

UNIT-I

Introduction to Testing
Testing Philosophy, Role of Testing, Digital and Analog VLSI Testing, VLSI Technology Trends affecting Testing, Types of Testing, Fault Modeling: Defects, Errors and Faults, Functional Versus Structural Testing, Levels of Fault Models, Single Stuck-at Fault.

UNIT-II

Logic and Fault Simulation
Simulation for Design Verification and Test Evaluation, Modeling Circuits for Simulation, Algorithms for True-value Simulation, Algorithms for Fault Simulation.

UNIT-III

Testability Measures
SCOAP Controllability and Observability, High Level Testability Measures, Digital DFT and Scan Design: Ad-Hoc DFT Methods, Scan Design, Partial-Scan Design, Variations of Scan.

UNIT-IV

Built-In Self-Test
The Economic Case for BIST, Random Logic BIST: Definitions, BIST Process, Pattern Generation, Response Compaction, Built-In Logic Block Observers, Test-Per-Clock, Test-Per-Scan BIST Systems, Circular Self Test Path System, Memory BIST, Delay Fault BIST.

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UNIT-V
ATPG Single stuck at fault, Fault collapsing, ATPG Algorithm and Tetra-max tool flow,Fault models,Single stuck at operation,Delay fault model,Bridge Fault models,ATPG models, Fault classes,ATPG effectiveness,ATPG modes,Coverge and improvement techniques

Text Books:
1. Essentials of Electronic Testing for Digital, Memory and Mixed Signal VLSI Circuits - M.L. Bushnell, V. D. Agrawal, Kluwer Academic Publishers.
Reference Books:
1. Digital Systems and Testable Design - M. Abramovici, M.A.Breuer and A.D Friedman, Jaico Publishing House. 2. Digital Circuits Testing and Testability - P.K. Lala, Academic Press.

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ANNEXURE - XXVI

Elective IV
DSP PROCESSORS AND ARCHITECTURES
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
3	0	0	3

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand DSP fundamentals and analyze computational accuracy and error sources in DSP implementations.
CO2:	Outline the basic architecture, computational blocks, memory, and external interfacing features of programmable DSP devices.
CO3:	Learn about the TMS320C54XX DSP's architecture, memory, instructions, peripherals, interrupts, and pipeline operation.
CO4:	Examine the Analog Devices DSP family, including ALU/MAC blocks, ADSP 2100, ADSP-2181, and Blackfin processor architecture.
CO5:	Analyze memory space organization, external bus interfacing, I/O methods, and DMA in programmable DSP devices.

UNIT-I

Introduction to Digital Signal Processing

Introduction, a Digital signal-processing system, the sampling process, discrete time sequences. Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT), Linear time-invariant systems, Digital filters, Decimation and interpolation.

Computational Accuracy in DSP Implementations

Number formats for signals and coefficients in DSP systems, Dynamic Range and Precision, Sources of error in DSP implementations, A/D Conversion errors, DSP Computational errors, D/A Conversion Errors, Compensating filter.

UNIT-II

Architectures for Programmable DSP Devices

Basic Architectural features, DSP Computational Building Blocks, Bus Architecture and Memory, Data Addressing Capabilities, Address Generation UNIT, Programmability and Program Execution, Speed Issues, Features for External interfacing.

UNIT-III

Programmable Digital Signal Processors

Commercial Digital signal-processing Devices, Data Addressing modes of TMS320C54XX DSPs, Data Addressing modes of TMS320C54XX Processors, Memory space of TMS320C54XX Processors, Program Control, TMS320C54XX Instructions and Programming, On-Chip Peripherals, Interrupts of TMS320C54XX Processors, Pipeline Operation of TMS320C54XX Processors.

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UNIT-IV
Analog Devices Family of DSP Devices Analog Devices Family of DSP Devices – ALU and MAC block diagram, Shifter Instruction, Base Architecture of ADSP 2100, ADSP-2181 high performance Processor. Introduction to Black fin Processor - The Black fin Processor, Introduction to Micro Signal Architecture, Overview of Hardware Processing Units and Register files, Address Arithmetic Unit, Control Unit, Bus Architecture and Memory, Basic Peripherals.

UNIT-V
Interfacing Memory and I/O Peripherals to Programmable DSP Devices Memory space organization, External bus interfacing signals, Memory interface, Parallel I/O interface, Programmed I/O, Interrupts and I/O, Direct memory access (DMA).

Text Books:
1. Digital Signal Processing – Avtar Singh and S. Srinivasan, Thomson Publications, 2004. 2. A Practical Approach To Digital Signal Processing - K Padmanabhan, R. Vijaya rajeswaran, Ananthi. S, New Age International, 2006/2009 3. Embedded Signal Processing with the Micro Signal Architecture: Woon-Seng Gan, Sen M. Kuo, Wiley-IEEE Press, 2007
Reference Books:
1. Digital Signal Processors, Architecture, Programming and Applications-B. Venkataramani and M. Bhaskar, 2002, TMH. 2. DSP Processor Fundamentals, Architectures & Features – Lapsley et al. 2000, S. Chand & Co. 3. Digital Signal Processing Applications Using the ADSP-2100 Family by The Applications Engineering Staff of Analog Devices, DSP Division, Edited by Amy Mar, PHI 4. The Scientist and Engineer's Guide to Digital Signal Processing by Steven W. Smith, Ph.D., California Technical Publishing, ISBN 0-9660176-3-3, 1997.

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ANNEXURE - XXVII

RTL DESIGN & VERIFICATION USING SYSTEM VERILOG LAB

I Year M. Tech. II semester

(Branch: VLSI Design & Embedded Systems)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Implementation of FSMs using System Verilog
CO2:	Transform Verilog RTL code to System verilog
CO3:	Design and Verify combinational digital applications using System Verilog
CO4:	Develop FIFO using conditional constructs
CO5:	Analyze the functional coverage for digital applications

List of Experiments:

1) Perform the following functions using System verilog
   a) Test all the 2-state and 4-state Data types.
   b) Design a 1010, 1011, 1110, and 1111 overlapped finite sequence, use enumerated data type, user defined data type and verify using system Verilog test-bench
   c) Declare structure and union, assign different values to the elements of structure and union, access the variables of the elements of the structure and unions using test-bench.
   d) Declare different arrays, assign values and test different access methods using test-bench.
   e) Declare a queue, assign values and test different access methods using test-bench.
2) Transform a Verilog RTL code to System Verilog code using packages, user defined data types, interface, mod port, clocking blocks.
3) Declare a program block and final block in a test-bench.
4) Design and verify the fixed priority arbiters using the following
   i) If – else
   ii) Case
   iii) Priority If
   iv) Priority Case

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5) Design and verify generic decoder using the following
   i) If – else
   ii) Case
   iii) Priority If
   iv) Priority Case
6) Design a Fibonacci series using loops and verify the same using test bench
7) Implementation of Priority based scheduler using System Verilog
8) Develop System-on-Chip (SoC) architecture
9) Develop a FIFO using the object-oriented programming
   i. Usage of Encapsulation and inheritance.
   ii. Modify the above developed test-bench using polymorphism.
10) Pick a scenario for each assertion type and execute.
   a. Modify the above test-bench to increase the functional coverage by using constrained random generation.
   b. Modify the above test-bench by writing specific assertions to enhance coverage further

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ANNEXURE - XXVIII

INTERNET OF THINGS AND ITS APPLICATIONS LAB
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
0	0	3	1.5

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Understand Arduino, Node MCU, Raspberry Pi, and cloud services like Thingspeak and Blynk.
CO2:	Interface with ESP8266/Raspberry Pi to control LED blinking, switching, and intensity using PWM.
CO3:	Transmit LED and ultrasonic sensor data to cloud services via ESP8266/Raspberry Pi.
CO4:	Develop IoT projects such as temperature/humidity loggers and automatic plant watering systems.
CO5:	Create remote control systems for street lights and motion detectors with email notifications.

List of Experiments

1. Introduction to Arduino, Node MCU, Raspberry Pi and Cloud Service (Thingspeak, Blynk, …)
2. Blinking an LED by interfacing with ESP8266 / Raspberry Pi
3. Controlling an LED with a switch by interfacing with ESP8266 / Raspberry Pi
4. Change intensity of an LED using PWM by interfacing with ESP8266 / Raspberry Pi
5. Send LED status to a Cloud Service by interfacing with ESP8266 / Raspberry Pi
6. Send Ultrasonic Sensor Status to a Cloud Service by interfacing with ESP8266 / Raspberry Pi
7. IoT based Motor control by interfacing with ESP8266 / Raspberry Pi

Mini Projects

1. IoT based Temperature and Humidity logger using any Cloud Service
2. Remote Monitoring and Automatic Control of Street Lights
3. IoT based Automatic Plant Watering System
4. IoT based Motion detector with email Notification

Additional Experiments

1. Publishing sensor data to Google Spreadsheets
2. Photo capture and video streaming using Raspberry Pi

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ANNEXURE - XXIX

MINI PROJECT WITH SEMINAR
I Year M. Tech. II semester
(Branch: VLSI Design & Embedded Systems)

L	T	P	C
0	0	4	2

Course Outcomes: At the end of the Course, the student shall be able to	
CO1:	Learn new concepts and apply them to the solution of engineering problems
CO2:	Demonstrate the skills for performing literature survey, identify gaps, analyze the technical content
CO3:	Formulate and conduct experiments and utilize modern tools for developing working models / process / system
CO4:	Clearly communicate their ideas in writing and prepare a well-documented report
CO5:	Create informative PPTs and clearly communicate their ideas orally demonstrating technical knowledge

Syllabus Contents

The students are required to search / gather the material / information on a specific a topic comprehend it and present / discuss in the class.

Evaluation of Mini Project

- For Mini Project with Seminar, a student under the supervision of a faculty member, shall collect the literature on a topic and critically review the literature and submit it to the department in a report form.
- The student shall make an oral presentation before the Project Review Committee consisting of Head of the Department, supervisor/mentor and two other senior faculty members of the department.
- For Mini Project with Seminar, there will be only internal evaluation of 100 marks. A candidate has to secure a minimum of 50% of marks to be declared successful.

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Annexure-13

Research Methodology & IPR

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 2**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

Unit 1: Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations.

Unit 2: Effective literature studies approaches, analysis Plagiarism, Research ethics

Unit 3: Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

Unit 4: Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

Unit 5: Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

Unit 6: New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.

Reference Books:

1. Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science& engineering students'"
2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
3. Ranjit Kumar, 2 ndEdition, "Research Methodology: A Step by Step Guide for beginners"
4. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd,2007.
5. Mayall, "Industrial Design", McGraw Hill, 1992.
6. Niebel, "Product Design", McGraw Hill, 1974.
7. Asimov, "Introduction to Design", Prentice Hall, 1962.
8. Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New Technological Age", 2016.
9. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

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Organizational Behavior (Audit Course)

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 0**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Organizational Behavior: Concept of Organization - Concept of Organizational Behavior - Nature of Organizational Behavior - Role of Organizational behavior - Disciplines contributing to Organizational Behavior.

UNIT II: Motivation: Definition - Nature of Motivation - Role of Motivation - Theories of Motivation: Maslow's Need Hierarchy Theory, Herzberg's Motivation Hygiene Theory and McGregor's Theory X and Theory Y.

UNIT III: Group Dynamics: Meaning - Concept of Group - Types of groups -Formal and Informal groups - Group development - Group cohesiveness and factors affecting group cohesiveness

UNIT IV: Leadership: Concept of Leadership - Difference between Leadership and Management - Importance of Leadership - Leadership styles: Autocratic leadership, Participative leadership and Free Rein leadership.

UNIT V: Communication: Meaning - Communication Process - Forms of communication: Oral, Written and Non- Verbal communication - Direction of communication: Downward, Upward and Horizontal communication.

UNIT VI: Organizational conflicts: Concept of conflict - Reasons for conflict - Types of Conflict:Intrapersonal conflict, Interpersonal conflict, Intragroup conflict, Intergroup conflict, Inter organizational conflict - Conflict management.

UNIT VII: Organizational Change: Nature - Factors in Organizational change -Planned change: Process of planned change - Resistance to change: Factors in resistance to change – Overcoming resistance to change.

Text Books:

1. L.M.Prasad: Organizational Behavior, Sultan Chand & Sons, New Delhi -110002.

Reference Books:

1. K. Aswathappa: Organizational Behavior, Himalaya Publishing House, New Delhi.
2. Stephen Robbins: Organizational Behavior, Pearsons Education, New Delhi.

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ENTREPRENEURSHIP (AUDIT COURSE)

M. Tech-Computer Science and Engineering (Data Science)

Instruction: 3 Periods/week	**Time: 3 Hours**	**Credits: 0**
Internal: 30 Marks	**External: 70 Marks**	**Total: 100 Marks**

UNIT I: Basic Concepts of Management: Definition, Nature and Importance ; Functions of the Management; Levels of Management; F.W Taylor's Scientific Management; Henry Fayol's Principles of Management.

UNIT II: Forms of Business Organizations: Introduction, Types of Business organizations: Private Sector- Individual Ownership , Partnership, Joint stock companies and Co-Operative organizations; Public sector- Departmental Organizations, Public Corporations and Government Companies; The Joint sector Management

UNIT III: Production and operations Management: Plant location- Factors to be considered in the selection of Plant location; Break - even analysis- Significance and managerial applications; Importance of Production Planning and Control and its Functions; Human Resource Management and Functions of Human Resource Manager (in brief); Functions of Marketing; Methods of Raising Finance

UNIT IV: Entrepreneurship: Definition, Characteristics and Skills , Types of Entrepreneurs, Entrepreneur vs. Professional Managers, , Growth of Entrepreneurs, Nature and Importance of Entrepreneurs, Women Entrepreneurs, Problems of Entrepreneurship.

UNIT V: Entrepreneurial Development and Project Management: Institutions in aid of Entrepreneurship Development, Idea generation: Sources and Techniques;, Stages in Project formulation ; Steps for starting a small enterprise - Incentives for Small Scale Industries by Government

Text Books:

1. Sharma,S.C, and Banga, T.R., Industrial Organization & Engineering Economics, Khanna Publishers, Delhi, 2000.

Reference Books:

1. VasantDesai ,The Dynamics of Entrepreneurial Development and Management (Planning for future Sustainable growth),HImalayan Publishing House, 2018
2. Aryasri , A.R., Management Science, McGraw HIll Education (India Private Limited , New Delhi 2014.
3. Sheela, P. , and JagadeswaraRao, K., Entrepreneurship, Shree Publishing House, Guntur

3/5/2024

Prof. P. VENKATESWARLU M.Com., MBA., Ph.D
Dept. of Commerce & Management Studies
Andhra University
VISAKHAPATNAM-530 003

PRINCIPAL
College of Arts & Commerce
Andhra University
Visakhapatnam

Detailed Syllabus for M.Tech – VLSI Design & Embedded Systems - First Semester

RESEARCH METHODOLOGY AND IPR

Instruction: 3Periods/week	**Time: 3 Hours**	**Credits: 2**
Internal: 30Marks	**External: 70 Marks**	**Total: 100Marks**

Unit 1: Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

Unit 2: Effective literature studies approaches, analysis Plagiarism, Research ethics,

Unit 3: Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

Unit 4: Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

Unit 5: Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

Unit 6: New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.

References:

1. Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science& engineering students"
2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
3. Ranjit Kumar, 2 ndEdition, "Research Methodology: A Step by Step Guide for beginners"
4. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd,2007.
5. Mayall, "Industrial Design", McGraw Hill, 1992.
6. Niebel, "Product Design", McGraw Hill, 1974.
7. Asimov, "Introduction to Design", Prentice Hall, 1962.
8. Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New Technological Age", 2016.
9. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

3/8/2024

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Audit Course
Organizational Behavior

M. Tech- VLSI Design and Embedded Systems

I -Semester	**Subject Code:**	**Instruction: 3 Periods/week**
Credits: 3	**Internal: 100 Marks**	**Total: 100 Marks**

Unit 1: Organizational Behavior

Concept of Organization - Concept of Organizational Behavior - Nature of Organizational Behavior - Role of Organizational behavior - Disciplines contributing to Organizational Behavior.

Unit 2: Motivation

Definition - Nature of Motivation - Role of Motivation - Theories of Motivation: Maslow's Need Hierarchy Theory, Herzberg's Motivation Hygiene Theory and McGregor's Theory X and Theory Y.

Unit 3: Group Dynamics

Meaning - Concept of Group - Types of groups -Formal and Informal groups - Group development - Group cohesiveness and factors affecting group cohesiveness

Unit 4: Leadership

Concept of Leadership - Difference between Leadership and Management - Importance of Leadership - Leadership styles: Autocratic leadership, Participative leadership and Free Rein leadership.

Unit 5: Communication

Meaning - Communication Process - Forms of communication: Oral, Written and Non- Verbal communication - Direction of communication: Downward, Upward and Horizontal communication.

Unit 6: Organizational conflicts

Concept of conflict - Reasons for conflict - Types of Conflict: Intrapersonal conflict, Interpersonal conflict, Intragroup conflict, Intergroup conflict, Inter organizational conflict - Conflict management.

Unit 7: Organizational Change

Nature - Factors in Organizational change -Planned change: Process of planned change - Resistance to change: Factors in resistance to change – Overcoming resistance to change.

Text Books:

1. L.M.Prasad: Organizational Behavior, Sultan Chand & Sons, New Delhi -110002.

Reference Books:

1. K. Aswathappa: Organizational Behavior, Himalaya Publishing House, New Delhi.
2. Stephen Robbins: Organizational Behavior, Pearsons Education, New Delhi.

3/8/2024

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Andhra University
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3/8/

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Visakhapatnam

Audit Course

ENTREPRENEURSHIP

M. Tech-VLSI Design and Embedded Systems

II- Semester	**Subject Code:**	**Instruction: 3 Periods/week**
Credits: 3	**Internal: 100 Marks**	**Total: 100 Marks**

Unit 1: Basic Concepts of Management: Definition, Nature and Importance; Functions of the Management; Levels of Management; F.W Taylor's Scientific Management; Henry Fayol's Principles of Management.

Unit 2: Forms of Business Organizations: Introduction, Types of Business organizations: Private Sector-Individual Ownership, Partnership, Joint stock companies and Co-Operative organizations; Public sector-Departmental Organizations, Public Corporations and Government Companies; The Joint sector Management

Unit 3: Production and operations Management: Plant location- Factors to be considered in the selection of Plant location; Break - even analysis- Significance and managerial applications; Importance of Production Planning and Control and its Functions; Human Resource Management and Functions of Human Resource Manager (in brief); Functions of Marketing; Methods of Raising Finance

Unit 4: Entrepreneurship: Definition, Characteristics and Skills , Types of Entrepreneurs, Entrepreneur vs. Professional Managers, , Growth of Entrepreneurs, Nature and Importance of Entrepreneurs, Women Entrepreneurs, Problems of Entrepreneurship.

Unit 5: Entrepreneurial Development and Project Management: Institutions in aid of Entrepreneurship Development, Idea generation: Sources and Techniques;, Stages in Project formulation ; Steps for starting a small enterprise - Incentives for Small Scale Industries by Government

Text Books:

1. Sharma,S.C, and Banga, T.R., Industrial Organization & Engineering Economics, Khanna Publishers, Delhi, 2000.

Reference Books:

1. Vasant Desai ,The Dynamics of Entrepreneurial Development and Management (Planning for future Sustainable growth),H Imalayan Publishing House, 2018
2. Aryasri , A.R., Management Science, McGraw Hill Education (India Private Limited , New Delhi 2014.
3. Sheela, P. , and Jagadeswara Rao, K., Entrepreneurship, Shree Publishing House, Guntur

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GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
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No.GVPW/Anti-Ragging/2024

Date:27/08/2024

ANTI-RAGGING COMMITTEE

Gayatri Vidya Parishad College of Engineering for Women has a zero tolerance policy towards Ragging. As per the AICTE guidelines on prevention and prohibition of Ragging in Technical Institutions, Committees and Teams have been formed for prevention of Ragging in the College.

ANTI-RAGGING COMMITTEE

S.No.	Name	Remarks	Phone No.
1	Principal	Chairman	88850-43361
2	Vice-Principal	Co-Chairman	88850-43344
3	Dr.P.Devendra, Assoc Professor, EEE	Convener	85558-27095
4	Ms.B.Bharathi, Asst Professor, Mathematics	Co-Convener	86396-66486
5	HOD,ECE	Member	98499-62648
6	HOD,CSE	Member	98484-83016
6	HOD,IT	Member	88850-43345
7	HOD,EEE	Member	70934-13324
8	HOD,CSM	Member	94904-58740
9	HOD,BS&H	Member	88850-43349
10	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	98660-00118
11	Dr.V.Lakshmana Rao, Asst Prof, CSE&IT	Member	90100-61779
12	Ms.P.Sridevi, Asst Prof, CSE&IT	Member	98491-19025
14	Mr.A.Srinivasa Rao, Asst. Prof., ME	Member	72077-04846
15	Mr.S.Ashok, Asst Prof, Chemistry	Member	99892-0501s
16	Mr.V.S.V.V.D.Prakash, Asst Prof, Mathematics	Member	98494-11611
17	Mr.N.V.Maheswara Rao, Asst Prof, ECE	Member	99124-34328
18	Ms.N.Roopavathi, Asst Prof, ECE	Mernber	97036-99748
19	Dr.V.Siva Jahnavy, Asst Prof, Physics	Member	94901-49036
20	Ms.B.Rama Devi, Asst Prof, English	Member	79958-80657

ANTI-RAGGING SQUAD

S.No.	Name	Remarks	Phone No.
1	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	93945-47032
2	Ms.B.V.R.Gowri, Asst Prof, ECE	Member	99637-74243
3	Ms.N.M. Gowri, Asst Director, Physical Education	Member	85009-30832
4	Dr.Ch.S.Lakshmi, Asst. Prof., Physics	Member	96420-02050
S	Ms.R.Archana, Asst Prof, CSE	Member	99896-88128
6	Ms.P.Hemalatha, Asst Prof, ME	Member	87907-19722
7	Ms.D.Santoshi, Asst Prof, CSM	Member	90007-19135

...2...

HOSTEL MEMBERS LIST

S.No.	Name	Remarks	Phone No.
1	Mrs.P.A.Bhavani,Warden	Member	94907-07647
2	Ms.Dhanalakshrni—Care Taker	Member	88850-43407
3	Ms.Lakshmi—Care Taker	Member	88850-43375
4	Ms.VaraLakshmi- Care Taker (Medical College Hostel)	Member	88850-43407
5	Ms.Satya (GVPCE Co-Ed)	Member	88850-43389

Student members list (Day Scholars):

Name	Phone Number	Year & Branch	Roll Number
Bongu Reshma	7995001394	IV EEE	21JG1A0203
G. Hemalatha	8688589905	IV IT	21JG1A1220
S. Sidvika	9440894414	IV CSE	21JG1A0540
K.Meghana	7989141240	IV CSE	21JG1A0549
A. Sharon Lilly	6303191251	IV CSE	21JG1A0507
P. Raj Tanuja	9381154357	IV CSM	21JG1A4243
K. Sri Sivanandini	9849390699	IV CSM	21JG1A4214
S. Yasaswini	7013749949	IV ECE	21JG1A0490
Reddi Divya	9346747933	III EEE	322103214050
T.Harshitha	8309170676	III IT	322103211053
E.Chandini	6301109772	III CSE	322103210039
R.Navya	9652241741	III CSE	322103210133
S.Yogitha	8309515055	III CSE	322103210135
A.S.M.Nandini	9390138641	III CSM	322103282002
P.Aparanjini	6303888650	III CSM	322103282072
U.Dhana Sri	9182407039	III ECE	322103212099
D.Ashritha	7093680755	III ECE	322103212019
P.Shanmukhi Srujana	8500928796	II EEE	323103214052
K.Deepika	9640994783	II IT	323103211005
T.Bhagya Sri	7730942479	II IT	323103211055
Aamina N.S.	9347607432	II CSE	323103210001
Renuka Ch.	7993702839	II CSE	323103210041
G.Vasavi	9000286333	II CSE	323103210071
N.Harichandana	7569409300	II CSE	323103210158
R.Bhumika	6304940498	II CSE	323103210191
T.Sindhu	8919847540	II CSE	323103210215
K.Gowri Sri	9154270268	II CSM	323103282046
P.Anjana Sravya	8247823518	II CSM	323103282083
B.Roshini	7675092990	II CSM	323103282090
Ch.B.S.Varshini	8328553395	II ECE	323103212022
Shaik Raheema	9182979843	II ECE	323103212104
E.Hemalatha	9381615546	II ECE	323103212123

Student members list (Hostlers):

Name	Phone Number	Year & Branch	Roll Number
V.Reshma	7674952904	IV EEE	21JG1A0222
K.Tanuja	8688724295	IV CSE	21JG1A0567
S.Varsha	9886003797	IV CSE	21JG1A05A6
G.Sowmya	8309595989	IV CSE	21JG1A0531
K.Uma Satya Mani Chandrika	9571134569	IV CSE	21JG1A0555
S.Jayasree	9346138917	IV ECE	21JG1A0493
Y.Sailaja	9391255006	IV ECE	21JG1A04A9
B.Bhuvana	9347281179	IV ECE	21JG1A0412
A.Shruthi	9182462520	III EEE	322103214032
M.Vardhini	7989881637	III IT	322103211033
S.Likhitha	8550020066	III IT	322103211045
~~T.Harshitha~~ Tanuja G.	8309170676	III IT	322103212019
V.Charitha	9014921557	III CSM	322103282121
Ch.Vardhini	7413012477	III CSM	322103282102
D.Keerthana	7893265058	III CSE	322103210031
U.Tejaswini	9177225132	III CSE	322103210164
V.Roshini Priyanka	6303182132	III CSE	322103210171
Ch.Kumari Ramya	9032299166	III ECE	322103212013
E.Praneetha	6305872348	III ECE	322103212025
A.Sowmya	9177429359	II EEE	323103214001
T.Deepika	9494126565	II IT	323103211054
G.P.S.Varshini	9492976677	II CSM	323103282032
K.Rakshitha	9000232277	II CSM	323103282055
A.Karthiya	9014056679	II CSE	323103210015
G.Jyoshna	7396488318	IICSE	323103210063
Ch.SatyaDevi	9100544566	II CSE	323103210042
G.Janaki	9052122608	II ECE	323103212029
B.Drakshayani	9502784941	II ECE	323103212007

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To

All the Members Concerned

Copy to:

1. All Heads of Departments
2. The I Year Coordinator
3. All Notice Boards

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No.GVPW/Anti-Ragging/2024

Date:12/08/2024

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S	Ms.R.Archana, Asst Prof, CSE	Member	99896-88128
6	Ms.P.Hemalatha, Asst Prof, ME	Member	87907-19722
7	Ms.D.Santoshi, Asst Prof, CSM	Member	90007-19135

...2....

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Dt:13-08-2024

Anti-Ragging Members interaction with the 1st Year Students



(Dr.P.Devendra)
Convener ARC

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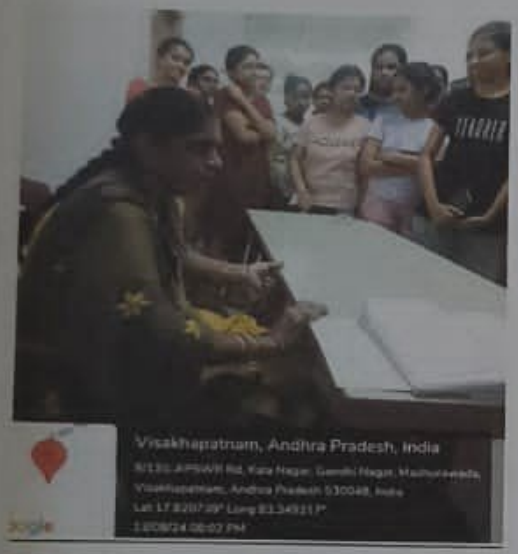
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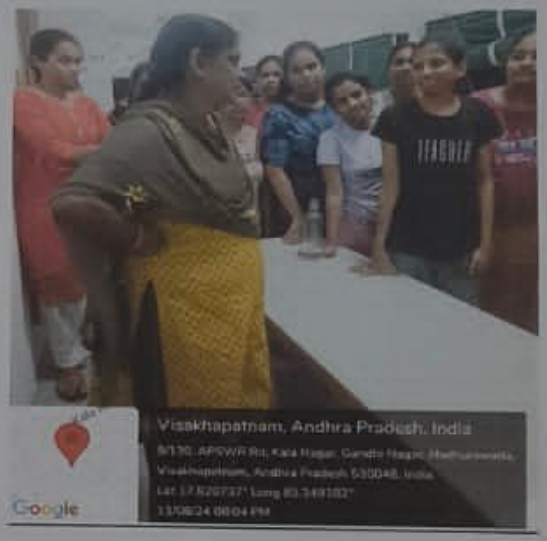
Dt: 06-08-2024 &13-08-2024

Anti-Ragging Committee Members visit to Hostel after 7:00pm













(Dr.P.Devendra)
Convener ARC

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

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Dt:14-08-2024

4th year students interaction with the 1st year students

(About Department Club Activities)

















(Dr.P.Devendra)
Convener ARC

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12th August, 2024

The first meeting of Anti-ragging committee constituted for the academic year 2024-25 was held on 12th August, 2024 at 11.00 AM in the seminar hall. The chairman, co-chairman, convener cordially welcomed faculty committee members, squad members of Anti-ragging Committee (ARC) to the meeting and suggested them to take measures to prevent ragging in and outside the college campus. It was decided by all the committee members and squad members of ARC to implement the guidelines mentioned below in order to prevent the ragging in and outside the college campus.

1. Squad members are informed to make surprise visits to the hostel after college working hours.
2. Squad members are suggested to make surprise visits frequently to the college canteen, hostel mess during the college hours (lunch break).
3. Members of ARC travelling in the college bus are advised to monitor activities of senior students in the bus and near bus stops in order to prevent ragging.
4. If there are any incidents of ragging found, are to be bought to the notice of the chairman immediately.
5. The committee members are informed to conduct an awareness program among the senior students about consequences of ragging.
6. ARC members are suggested to conduct meeting with first year students to guide them, to restrict their movements and interactions, especially with strangers.
7. The committee members are asked to take the anti-ragging affidavits from the students and their parent/guardian.
8. It is required to informlist of anti-ragging committee and squad members along with their phone numbers to all the first year students.

In this regard, the convener of ARC outlined the following duties and responsibilities of Committee members and squad members.

1. Dr.P.Devendra, Ms. B Bharathi, Mr. N.V.MaheswaraRao, Dr.V.Lakshmana Rao, Mr.S.Ashok, Ms.P.Hemalatha, Mr.V.S.S.V.D.Prakash, Ms.N.Roopavathi, Ms.B.V.R.Gowri, Mr.A.Srinivasa Rao, Ms.P.Sridevi, Ms.B.Ramadevi and Ms.R.Archana are assigned the duty to make surprise visits to college canteen and corridors during lunch hours.
2. Ms.N.M.Gowri, Dr.Ch.S.Lakshmi, Ms.R.Sridevi and Ms.D.Santoshi are assigned the duty of surprise visits to hostel after the college working hours.
3. Ms.R.Archana, Ms.N.Roopavathi , Ms.P.Hemalatha, Mr.S.Ashok, Dr.V.Lakshmana Rao and Mr.N.V.Maheswara Rao were assigned the duty to make visits to hostel canteen, during lunch hours.
4. Ms.N.Roopavathi, Ms.R.Archana and Ms.B.Ramadevi are assigned the duty to monitor the students in their respective buses and the nearest bus stops.
5. All squad members need to take anti- ragging online affidavits from the students.

The schedule of visits by the ARC quad members for identified places as below

Day	Squad at College Canteen during Lunch Hour	Squad at College Corridors (First year Block) During Lunch Hour	Squad at Hostel Canteen during Lunch Hour	Evening Visits to Hostel after 7:00PM
Monday	Mr.V.Lakshmana Rao	Ms.B.V.R.Gowri	Ms.R.Archana	Ms.N.M.Gowri
Tuesday	Mr.N.V.Maheswara Rao	Mr.V.S.S.V.D.Prakash	Ms.N.Roopavathi	Dr.Ch.S.lakshmi
Wednesday	Ms.B.V.R.Gowri	Mr.A.Srinivasa Rao	Ms.P.Hemalatha	Ms.R.Sridevi
Thursday	Ms.P.Hemalatha	Ms.B.Ramadevi	Mr.S.Ashok	Ms.N.M.Gowri
Friday	Mr.V.S.S.V.D.Prakash	Mr.A.Srinivasa Rao	Mr.N.V.Maheswara Rao	Ms.R.Sridevi
Saturday	Ms.P.Sridevi	Ms.R.Archana	Mr.V.Lakshmana Rao	Ms.D.Santoshi

All the other members are requested to assist the Convener, Dr.P.Devendra and Co-convener, Ms. B.Bharathi to carry out the actions that are to be taken in curbing the ragging menace.

DVR COLLEGE OF ENGG FOR WOMEN (A) * KANDLAKOYA * MEDCHAL

Convener of ARC

(Dr.P.Devendra)

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12th August, 2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Meeting held on 12th August, 2024 in Seminar hall at 11.00 AM.

1. Squad members are informed to make surprise visits to the hostel after college working hours.
2. Squad members are suggested to make surprise visits frequently to the college canteen, hostel mess during the college hours (lunch break).
3. Members of ARC travelling in the college bus are advised to monitor activities of senior students in the bus and near bus stops in order to prevent ragging.
4. If there are any incidents of ragging found, are to be bought to the notice of the chairman immediately.
5. The committee members are informed to conduct an awareness program among the senior students about consequences of ragging.
6. ARC members are suggested to conduct meeting with first year students to guide them, to restrict their movements and interactions, especially with strangers.
7. The committee members are asked to take the anti-ragging affidavits from the students and their parent/guardian.
8. It is required to inform list of anti-ragging committee and squad members along with their phone numbers to all the first year students.
9. ARC Committee members were assigned the squad duties and the schedule was forwarded to all the ARC Members.

GVP COLLEGE OF ENGINEERING FOR WOMEN (A) * VISAKHAPATNAM *

Convener of ARC
(Dr.P.Devendra)

Sigantures of ARC Members:

1	Ms.B.Bharathi, Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, B S & H	Member	
3	HOD, CSE	Member	
4	HOD, IT	Member	
5	HOD, EEE	Member	RVS
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	A Suseelatha

9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	
12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	
15	Ms. N. Roopavathi, Asst Prof, ECE	Mernber	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshrni — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

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04th September, 2024

NOTICE

All the ARC committee members are hereby requested to attend the meeting on 04th September, 2024 in the Seminar Hall at 3:30 PM.

Convener of ARC
(Dr.P.Devendra)

Copy to:

1. All notice boards

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04th September, 2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Meeting held on 04th September, 2024 in Seminar hall at 3:30PM.

- Senior students were instructed not to indulge in ragging.
- Consequences of ragging were explained.
- ARC student members are advised to monitor the activities in college buses, college canteen and Hostel.
- If there are any incidents of ragging found, are to be brought to the notice of the Chairman/Convener / Co-Convener immediately.

Convener of ARC
(Dr.P.Devendra)

Sigantures of ARC Members:

1	Ms.B.Bharathi,Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, BS&H	Member	
3	HOD, CSE	Member	—
4	HOD, IT	Member	
5	HOD, EEE	Member	
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Yr Coordinator	A Suseelatha
9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	P. Sridevi
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	

12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	R. Sridevi
15	Ms. N. Roopavathi, Asst Prof, ECE	Member	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	Ch. S. Lakshmi
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshmi — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

Signatures of ARC Student Members :

Sl.No.	Name Of the Student	Year & Branch	Signature
1	V. Sai Charitha	3rd CSM	V. Sai Charitha
2	Rhaga Venkata Vardhini Rudra	3rd IT	R. Vardhini
3	Aamina Naazneen Sulthana	2nd CSE	Aamina
4	N. Harichandana	2nd CSE	N. Harichan

5			
6	U. Dhana Sri	3rd ECE	U. Dhana Sri
7	D. Ashritha	3rd ECE	D. Ashritha
8	A. Harika	2nd CSE	A. Harika.
9	Ch. Renuka	2nd CSE	Ch. Renuka
10	R. Navya	3rd CSE	R. Navya
11	A. Shruthi	3rd EEE	A. shruthi
12	Ch. Vardhana Kanthi	3rd CSM	
13	P. Aparanjini	3rd CSM	P. Aparanjini
14	V. Priyanka	3rd CSE	V. Priyanka
15	A. S. M. Nandini	3 CSM-1	A. S. M. Nandini
16	P. Anjana Navya	2nd CSM2	P. A. Navya
17	M. Deepthi	2 CSM-1	M. Deepthi
18	K. Meghana	4 CSE-1	K. Meghana
19	K. Gowri Sri	2 CSM-1	Gowri Sri
20	G. Tanuja	3rd IT	G. Tanuja
21	E. Chandini	3 CSE 1	Chandini
22	D. Keerthana	3 CSE 1	
23	S. Yogitta	3 CSE 3	S. Yogitta
24	Ch. Bhargava Sri Varshini	2 ECE-1	Ch. B. S. Varshini
25	B. Dharayini	2 ECE-1	B. Dharayini
26	Ch. Kumari Ramya.	3rd ECE 1	Ch. Kumari Ramya
27	G. Janaki	2 ECE-1	G. Janaki
28	Ch. Satya Devi	2nd CSE	Ch. Satya
29	S. Likhitha	3rd IT	S. Likhitha
30	B. Gopikapriya	2nd CSE	B. Gopikapriya
31	E. Praveetha	3rd ECE	E. Praveetha
32	R. Divya	3rd EEE	R. Divya
33	U. Tejaswini	3rd CSE	U. Tejaswini
	S. Jayasree	4th ECE	S. Jayasree

34	E. Hemalatha	2 ECE-2	E. Hemalatha
35	Y. Sailaja	4 ECE 2	Y. Sailaja
36	K. Tanuja	4 CSE-2	K. Tanuja
37	T. Deepika	2 IT-	T. Deepika
38	Shaik. Raheema	2 ECE-2	Shaik. Raheema
39	V. Reshma	4 EEE	V. Reshma
40	A. Sowmya Meeraz	EEE	A. Sowmya
41	P.S.L. Shanmukhi Srujana	EEE	P. Shanmukhi
42	B. Reshma	4-EEE	B. Reshma
43	G. Jyothsna	2 CSE-2	G. Jyothsna
44	K. Bhavya Deepika	2 IT	K. Bhavya
45	T. Bhagya Sri	2 IT	T. Bhagya Sri
46	G. Vasavi	2 CSE-2	Vasavi G
47	G. Jyothsna	2 CSE-2	G. Jyothsna
48	R. Bhomika	2 CSE-4	R. Bhomika.
49	A. Kanthija	2 CSE-1	Akanthij.
50	G. Sri Sivanandini	4 CSM	G. S. S. Nandini
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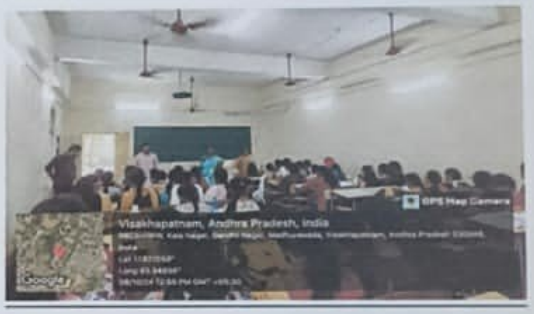
Dt: 7th Oct & 8th Oct, 2024

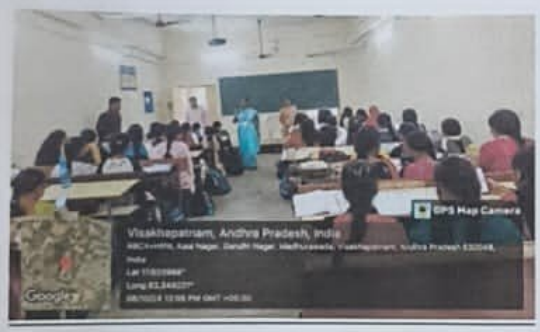
Anti-Ragging Affidavit Filling by First Year Students

















(Dr.P.Devendra)
Convener ARC

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Dt:18-11-2024 & 19-11-2024

Interaction of II & I Year Students for Freshers Party



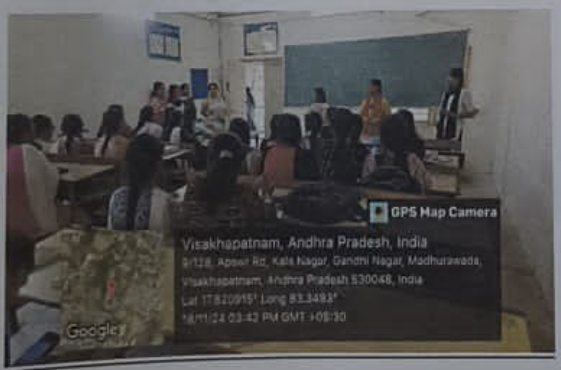














(Dr.P.Devendra)
Convener ARC

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16th November,2024

NOTICE

All the ARC committee members are hereby requested to attend the review meeting on 16th November,2024 in the Seminar Hall at 4:00PM .

GVP COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM *

Convener of ARC
(Dr.P.Devendra)

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16th November,2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Review Meeting held on 16th November,2024 in Seminar hall at 4:00PM.

- ARC members informed to the convener that no ragging incidents were found.

Convener of ARC
(Dr.P.Devendra)

Signatures of ARC Members:

1	Dr.B.Bharathi, Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, BS & H	Member	
3	HOD, CSE	Member	
4	HOD, IT	Member	
5	HOD, EEE	Member	
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	A. Suseelatha
9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	P. Sridevi
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	A.A.Rao

12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	R. Sridevi
15	Ms. N. Roopavathi, Asst Prof, ECE	Member	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	Ch. S. Lakshmi
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshmi — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

Signatures of ARC Student Members :

Sl.No.	Name Of the Student	Year & Branch	Signature
1	P. Aparanjini	3 CSM	P. Aparanjini
2	Ch. Renuka	2nd CSE	Ch. Renuka.
3	Ch Satya devi	2nd CSE	ch. Satya.
4	A.S.M. Nandini	3 CSM-1	A.S.M. Nandini

5	Namina Naazneen Sulthana	2nd CSE-1	Namina.N.S.
6	Akula Harika	2nd CSE	A. Harika
7	N. Harichandana	2nd CSE	N. Harich
8	D. Ashritha	3rd ECE	D. Ashritha
9	A. Shruthi	3rd ECE	A. Shruthi
10	R. Divya	3rd ECE	R. Divya
11	P. Anjana Manya	2nd CSM	P. A. Manya
12	E. Hemalatha	2nd ECE-2	E. Hemalatha
13	ch Kumari Ramya.	3rd ECE-1	Ch. Kumari Ramya
14	Y. Sailaja	4th ECE-2	Y. Sailaja
15	V. Sai Charitha	3rd CSM	V. Sai Charitha
16	G. Janaki	2ECE-1	G. Janaki
17	R. Navya	3rd CSE	R. Navya
18	ch. Bhargava sai Varshini	2ECE-1	ch. B. S. varshini
19	B. Dsavayini	2ECE-1	B. Dsavayini
20	Ch. Vardhana Karthi	3rd CSM	
21	R. Bhumika	2 CSE 4	R. Bhumika.
22	E Chandini	3CSE1	E. chandu
23	U. Dhana Sri	3 ECE 2	U. Dhana Sri
24	S. Yogitha	3 CSE 3	S. Yogitha
25	U. Tejaswini	3CSE-3	U. Tejaswini
26	M. Deepthi	2CSM-1	M. Deepthi
27	K. Gowri Sri	2CSM-1	Gowri Sri
28	K. Meghana	4 CSE-1	K. Meghana
29	B. Gopika Priya	3rd CSE	Gopika
30	S. Jayasree	4th ECE	S. Jayasree
31	G. Jyothsna	2CSE-2	G. Jyo
32	V. Priyanka	3rd CSE	V. Priyanka
33	Naga Venkata Vardhini Rudra	3rd IT	R. Vardhini

34			
35	K. Tanuja	4 CSE 2	K. Tanuja
36	D. Keerthana	3 CSE 1	
37	K. Bhavya Deepika	2 IT	K. Bhavya
38	T. Bhagya Sri	2 IT	T. Bhagyasri
39	T. Deepika	2 IT	T. Deepika
40	A. Kanthija	2 CSE-1	A. Kanthija
41	A. Sowmya Meeraz	EEE	A. Sowmya
42	G. Sri Sivanandini	4 CSM	G. S. S. Nandini
43			
44	Shaik. Raheema	2 ECE-2	Shaik. Raheema
45	S. Likhitha	3rd IT	S. Likhitha
46	G. Jyothsna	2 CSE-2	G. Jyothsna
47	G. Vasavi	2 CSE-2	Vasavi G
48	G. Tanuja	3rd IT	G. Tanuja
49	E. Praveetha	3rd ECE	E. Praveetha
50	V. Reshma	4th EEE	V. Reshma
51	P. S. L. Shanmukhi Soujana	2nd EEE	P. Shanmukhi
52	B. Reshma	4th EEE	B. Reshma
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GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)
Madhurawada :: Visakhapatnam – 530 048

No.GVPW/GC/63

Date: 19/11/2024

CIRCULAR

1. The GVP College of Engineering for women is happy to inform all the staff and students that the **FRESHERS' Day Celebrations** will be as per the following schedule:

Branch	Students	Date & Time	Time	Venue
CSE – 2 & 3	I & II Years	23/11/2024	1.30 PM TO 4.00 PM	Room No.106
CSE – 1 & 4	I & II Years	23/11/2024	1.30 PM TO 4.00 PM	Auditorium
IT	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Room No.102
ECE	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Auditorium
CSM	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Room No.106
EEE	I & II Years	23/11/2024	1.30 PM TO 04.00 PM	Room No.102

2. The following is the list of faculty coordinators for respective branch

CSE – 2 & 3	Ms.Y Sowmya, Mr. S Ashok, Dr.Ch Alekya
CSE – 1 & 4	Ms.KVS Mounica, Ms.R Archana, Dr.Rani Nanda
CSM	Ms.H Gowtami, Ms. D Santoshi, Dr.Ch.S Lakshmi
ECE	Dr.M Mani Kumari, Ms.N Roopavathi, Dr. B Rajesh Babu
EEE	Ms.K Kusuma Kumari, Ms.P. Hemalatha
IT	Ms.R Sridevi, Ms.P Sridevi, Ms B Rama Devi

3. The CRs of the respective class/branch are to discuss the events planned with respective faculty coordinators and get their approval.

4. All the Anti-Ragging committee members are required to ensure the smooth conduct of the programme.

Principal

To
All I & II Year students

Copy to: for information please
1. Secretary, GVP
2. Vice-principal, GVPW
3. I Year Coordinator
4. All Heads of Departments
5. All faculty members

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Dt:23-11-2024

FRESHERS DAY CELEBRATIONS













DVP COLLEGE OF ENGG FOR WOMEN (W) VISAKHAPATNAM

(Dr.P.Devendra)
Convener ARC

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Dt:23-11-2024

FRESHERS DAY CELEBRATIONS













GVPCEW COLLEGE OF ENGG FOR WOMEN VISAKHAPATNAM

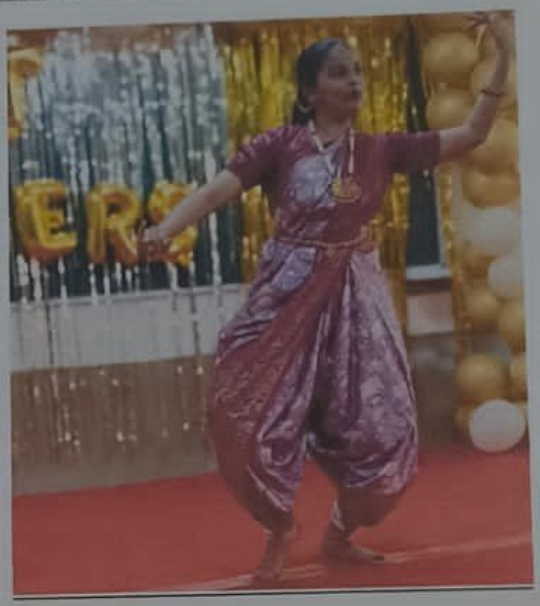
(Dr.P.Devendra)
Convener ARC

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DI:23-11-2024

FRESHERS DAY CELEBRATIONS









COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM *

(Dr.P.Devendra)
Convener ARC

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26th December, 2024

From

The Convener,
Anti Ragging Committee,
GVP College of Engineering for Women,
Madhurawada, Visakhapatnam.

To

The Chairman, Anti Ragging Committee,
GVPCEW, Visakhapatnam.

Dear Sir,

Sub: Final Report of the Anti Ragging Committee (AY: 2024-2025) – Reg.

NO INCIDDENT OF RAGGING IS BROUGHT TO THE NOTICE OF THE COMMITTEE.

Thanking you sir,

Yours faithfully,

(Dr.P.Devendra)
Convener ARC

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Visakhapatnam
30th December, 2024

REPORT ON RAGGING CASES IN THE CAMPUS

No incident of ragging is either occurred or reported during the academic year 2024-2025, so far.

Chairman,
Anti-Ragging Committee

JUNE 1, 2024

Minutes of meetings

Members Present:

1.	Dr. B. Vijaya Lakshmi	Presiding officer
2.	Dr. Rani Rava Nanda	Member
3.	Mrs. A. Sridevi	Member
4.	Mrs. B. V. S. Renuka Devi	Member
5.	Mrs. Tripura Sundari	Member

Members Present & Review

A meeting has been called for to review activities of the ICC and plan for the Coming Semesters.

Some of the suggestions recieved by members are noted below: Suggestions:

1. Plan for some activities in March including health and hygiene.
2. More interaction with class representatives needed.

June 1, 2024 Awareness Session on
Personal Hygiene

Minutes of meetings

Members Present:		Signature
1.	Dr. B. Vijaya Lakshmi	Presiding officer
2.	Dr. Rani Prava Nanda	Member
3.	Mrs. R. Sridevi	Member
4.	Mrs. B.V.S. Renuka Devi	Member
5.	Mrs. Tripura Sundari	Member

A Session on "Importance of Maintaining Personal Hygiene" was Conducted by Dr. V. Usha Ramani, Assistant Professor, BSH.

Focus Areas:

- Importance of daily hygiene and personal Cleanliness
- Menstrual hygiene awareness
- Infection prevention measures
- Guidance on healthy diet and Stress management
- Interactive discussion and practical health tips for Students.

Sept 2-13, 2024 - ICC Sensitization Sessions

Minutes of meeting:

Members present:

1.	Dr. B. Vijaya Lakshmi	Presiding officer
2.	Dr. Rani Prava Nanda	Member
3.	Mrs. R. Sridevi	Member
4.	Mrs. B.V.S. Renuka Devi	Member
5.	Mrs. Tripura Sundari	Member

A two-week Sensitization programme was Organised for all Second-year students of CSE, CSE-AIML, ECE, EEE, and IT departments.

Objectives:

- Explain the roles and responsibilities of the Internal Complaints Committee (ICC)
- Create awareness about the POSH Act 2013.
- Provide information on Complaint filing mechanisms
- Promote understanding of Safe and Confidential reporting Channels.

Activities:-

- Class-wise visits by ICC members
- Explanation of grievance and Confidentiality norms.
- Sharing ICC Contact details displayed on the Website and notice boards.

Jan 4-6, 2025 - Special Counselling Sessions

Minutes of Meeting:

Members present:

1. Dr. B. Vijayalakshmi — Presiding officer
2. Dr. Rani Prava Nanda — Member
3. Mrs. R. Sridevi — Member
4. Mrs. B.V.S. Renuka Devi — Member
5. Mrs. Tripura Sundari — Member

A clinical psychologist from Nibiraj Solutions Conducted special Counselling Sessions alongside the regular weekly Counselling Schedule.

Objectives & Outcomes:

- Provide psychological and emotional Support
- Offer Confidential one-on-one Counselling to Students
- Teach Coping Strategies for stress, anxiety, and time management.
- Promote Student well-being and mental resilience
- Continued Counselling Support twice weekly throughout the year.

4 March 7, 2025 - Disha App Awareness Session

Minutes of Meeting:

Members present:

1. Dr. B. Vijayalakshmi — Presiding officer
2. Dr. Rani Prava Nanda — Member
3. Mrs. R. Sridevi — Member
4. Mrs. B.V.S. Renuka Devi — Member
5. Mrs. Tripura Sundari — Member

As part of Women's Day Celebrations, a Police Inspector Conducted a Session on the Disha SOS App. Coordinated by Dr. B. Vijayalakshmi, Associate Professor, ECE, and the faculty team.

Highlights:

- Overview of Disha App features.
- Steps for SOS activation & emergency response
- Live demonstration of the app.
- Encouragement for Students to install and use the app for safety.

June 6, 2025 - POSH Act 2013 Online Workshop

Minutes of Meeting:

Members present:

1. Dr. B. Vijaya Lakshmi — Presiding officer
2. Dr. Rani Prava Nanda — Member
3. Mrs. R. Sridevi — Member
4. Mrs. B.V.S. Renuka Devi — Member
5. Mrs. Tripura Sundari — Member

ICC members Dr. Rani Prava Nanda and Dr. B. Vijaya Lakshmi attended an online workshop on the POSH Act 2013, Organized by Tech Teachers and Testers, Pune.

Key learnings:

- Legal procedures for handling Complaints
- Case Studies and preventive strategies.
- Improved methods for ICC documentation and Sensitization.

GAYATRI VIDYA PARISHAD
COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)
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EEE Course Accredited by NBA (2023-2026)

Annual Report of Internal complaints committee, (ICC)

Internal complaints committee, (ICC) of GayatriVidyaParishad college of Engineering for Women, conducted the following programs for ensuring the safety and well-being of faculty, staff and students in the academic year 2024-25.

ICC Activities Report – 2024–25

June 14, 2024 – Awareness Session on Personal Hygiene

A session on *"Importance of Maintaining Personal Hygiene"* was conducted by **Dr. V. Usha Ramani, Assistant Professor, BSH**.
Focus Areas:

- Importance of daily hygiene and personal cleanliness
- Menstrual hygiene awareness
- Infection prevention measures
- Guidance on healthy diet and stress management
- Interactive discussion and practical health tips for students

2. Sept 2–13, 2024 – ICC Sensitization Sessions

A two-week sensitization programme was organized for all second-year students of **CSE, CSE-AIML, ECE, EEE, and IT** departments.
Objectives:

- Explain the roles and responsibilities of the Internal Complaints Committee (ICC)
- Create awareness about the *POSH Act 2013*
- Provide information on complaint filing mechanisms
- Promote understanding of safe and confidential reporting channels

Activities:

- Class-wise visits by ICC members
- Explanation of grievance procedures and confidentiality norms
- Sharing ICC contact details displayed on the website and notice boards

3. Jan 4–6, 2025 – Special Counselling Sessions

A clinical psychologist from **Nihiraj Solutions** conducted special counselling sessions alongside the regular weekly counselling schedule.
Objectives & Outcomes:

- Provide psychological and emotional support
- Offer confidential one-on-one counselling to students
- Teach coping strategies for stress, anxiety, and time management
- Promote student well-being and mental resilience
- Continued counselling support twice weekly throughout the year

4. March 7, 2025 – Disha App Awareness Session

As part of Women's Day celebrations, a **Police Inspector** conducted a session on the *Disha SOS App*, coordinated by **Dr. B. Vijaya Lakshmi, Associate Professor, ECE**, and the faculty team.
Highlights:

- Overview of Disha App features
- Steps for SOS activation and emergency response
- Live demonstration of the app
- Encouragement for students to install and use the app for safety

5. June 6, 2025 – POSH Act 2013 Online Workshop

ICC members **Dr. Rani Prava Nanda** and **Dr. B. Vijaya Lakshmi** attended an online workshop on the *POSH Act 2013*, organized by Tech Teachers and Testers, Pune.
Key Learnings:

- Legal procedures for handling complaints
- Case studies and preventive strategies
- Improved methods for ICC documentation and sensitization

Conclusion

Throughout **2024–25**, the Internal Complaints Committee (ICC) organized multiple programmes focusing on hygiene, legal awareness, safety, and mental health. These initiatives collectively strengthened campus safety, promoted respect, and fostered an inclusive environment for students and staff.

June 14, 2024 – Awareness Session on Personal Hygiene

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Highlights:

- Overview of Disha App features
- Steps for SOS activation and emergency response
- Live demonstration of the app
- Encouragement for students to install and use the app for safety

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5. June 6, 2025 – POSH Act 2013 Online Workshop

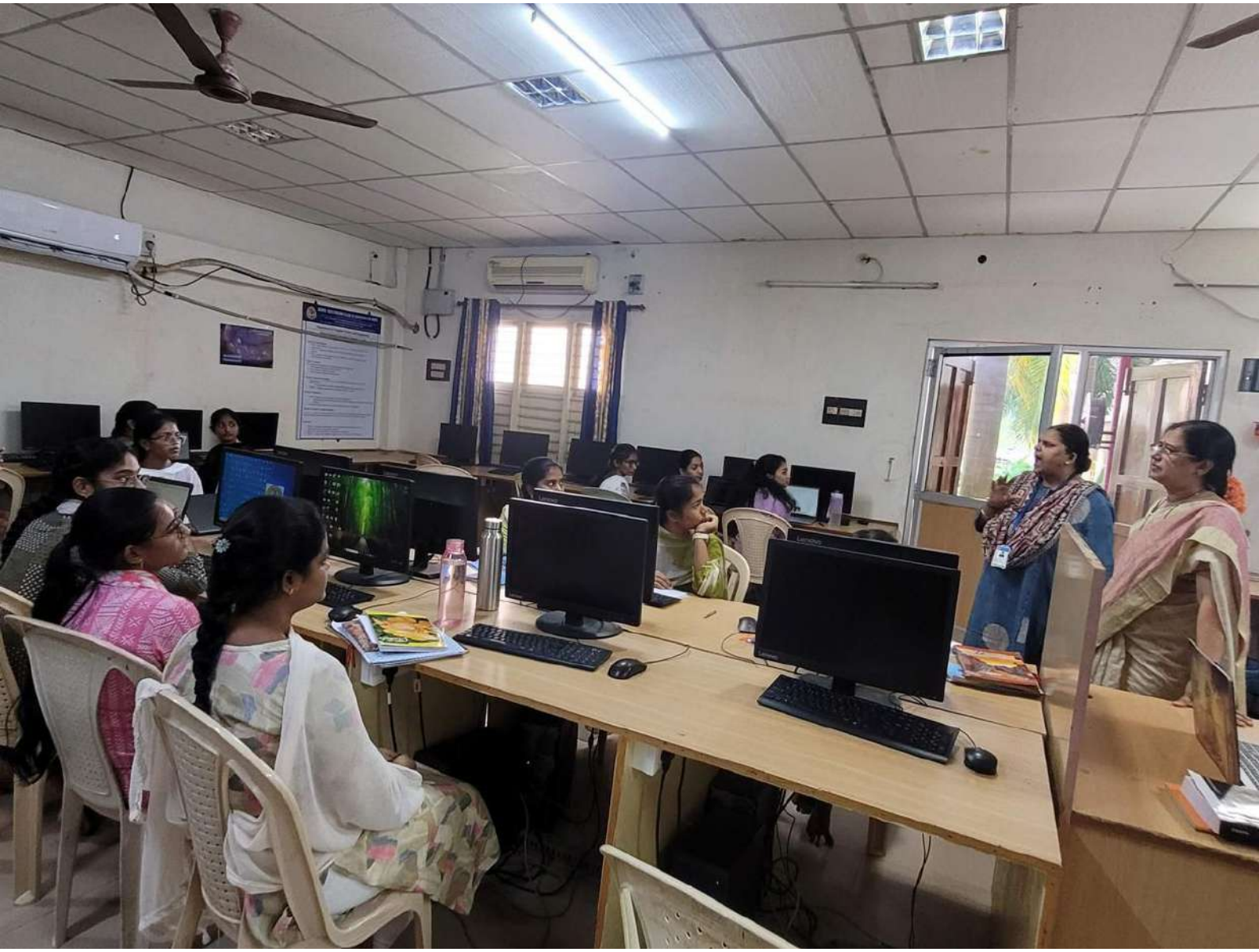
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Key Learnings:

- Legal procedures for handling complaints
- Case studies and preventive strategies
- Improved methods for ICC documentation and sensitization

Conclusion

Throughout **2024–25**, the Internal Complaints Committee (ICC) organized multiple programmes focusing on hygiene, legal awareness, safety, and mental health. These initiatives collectively strengthened campus safety, promoted respect, and fostered an inclusive environment for students and staff.


Safe, Secure, Discrimination-free,
Harassment-free workplace is a
fundamental Human Right of all
Employees,
And it is the duty of all Employers &
Employees to ensure this.





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Certificate

AWARDED TO

DR. RANI PRAVA NANDA

FOR COMPLETION OF TRAINING ON POSH ACT 2013

THE SEXUAL HARASSMENT OF WOMEN AT WORKPLACE (PREVENTION, PROHIBITION AND REDRESSAL) ACT, 2013 INCLUSIVE OF UGC REGULATIONS 2015.

THE ABOVE CANDIDATE HAS BEEN REGISTERED FOR AND HAS ATTENDED A ONE-DAY TRAINING ON THE MENTIONED TOPIC ON THIS DAY, SATURDAY SIX OF JUNE, TWO THOUSAND AND TWENTY-FIVE, AND IS HEREBY AWARDED THIS CERTIFICATE.

DR. PRASHANT GODGHATE
SECRETARY
TECH TRAINERS AND TESTERS PUNE

TECH TRAINERS AND TESTERS PUNE

DR. MANOJ R. WAGH - PMP
CHAIRPERSON
TECH TRAINERS AND TESTERS PUNE

Tech Trainers And Testers Pune

DATE OF ISSUE: JUNE 06, 2025
CERT. BATCH NO.: 250 / 42 / 01
CODE: S-42

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No.GVPW/Anti-Ragging/2024

Date:12/08/2024

ANTI-RAGGING COMMITTEE

Gayatri Vidya Parishad College of Engineering for Women has a zero tolerance policy towards Ragging. As per the AICTE guidelines on prevention and prohibition of Ragging in Technical Institutions, Committees and Teams have been formed for prevention of Ragging in the College.

ANTI-RAGGING COMMITTEE

S.No.	Name	Remarks	Phone No.
1	Principal	Chairman	88850-43361
2	Vice-Principal	Co-Chairman	88850-43344
3	Dr.P.Devendra, Assoc Professor, EEE	Convener	85558-27095
4	Ms.B.Bharathi, Asst Professor, Mathematics	Co-Convener	86396-66486
5	HOD,ECE	Member	98499-62648
6	HOD,CSE	Member	98484-83016
6	HOD,IT	Member	88850-43345
7	HOD,EEE	Member	70934-13324
8	HOD,CSM	Member	94904-58740
9	HOD,BS&H	Member	88850-43349
10	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	98660-00118
11	Mr.V.Lakshmana Rao, Asst Prof, CSE&IT	Member	90100-61779
12	Ms.P.Sridevi, Asst Prof, CSE&IT	Member	98491-19025
14	Mr.A.Srinivasa Rao, Asst. Prof., ME	Member	72077-04846
15	Mr.S.Ashok, Asst Prof, Chemistry	Member	99892-0501s
16	Mr.V.S.V.V.D.Prakash, Asst Prof, Mathematics	Member	98494-11611
17	Mr.N.V.Maheswara Rao, Asst Prof, ECE	Member	99124-34328
18	Ms.N.Roopavathi, Asst Prof, ECE	Member	97036-99748
19	Dr.V.Siva Jahnavy, Asst Prof, Physics	Member	94901-49036
20	Ms.B.Rama Devi, Asst Prof, English	Member	79958-80657

ANTI-RAGGING SQUAD

S.No.	Name	Remarks	Phone No.
1	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	93945-47032
2	Ms.B.V.R.Gowri, Asst Prof, ECE	Member	99637-74243
3	Ms.N.M. Gowri, Asst Director, Physical Education	Member	85009-30832
4	Dr.Ch.S.Lakshmi, Asst. Prof., Physics	Member	96420-02050
S	Ms.R.Archana, Asst Prof, CSE	Member	99896-88128
6	Ms.P.Hemalatha, Asst Prof, ME	Member	87907-19722
7	Ms.D.Santoshi, Asst Prof, CSM	Member	90007-19135

...2....

HOSTEL MEMBERS LIST

S.No.	Name	Remarks	Phone No.
1	Mrs.P.A.Bhavani,Warden	Member	94907-07647
2	Ms.Dhanalakshmi—Care Taker	Member	88850-43407
3	Ms.Lakshmi—Care Taker	Member	88850-43375
4	Ms.VaraLakshmi- Care Taker (Medical College Hostel)	Member	88850-43407
5	Ms.Satya (GVPCE Co-Ed)	Member	88850-43389

PRINCIPAL

To

All the Members Concerned

Copy to:

1. All Heads of Departments
2. The I Year Coordinator
3. All Notice Boards

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Dt:13-08-2024

Anti-Ragging Members interaction with the 1st Year Students



(Dr.P.Devendra)
Convener ARC

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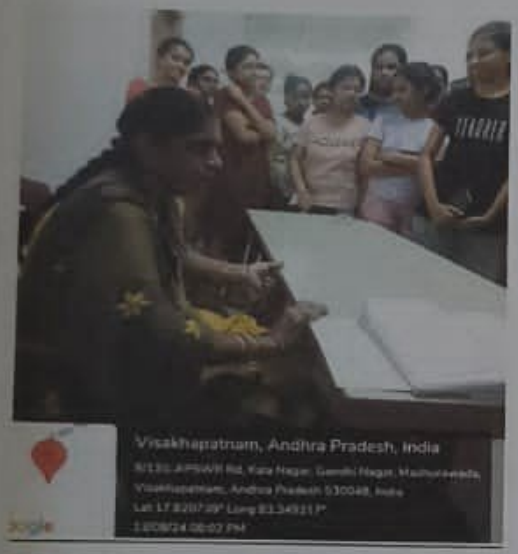
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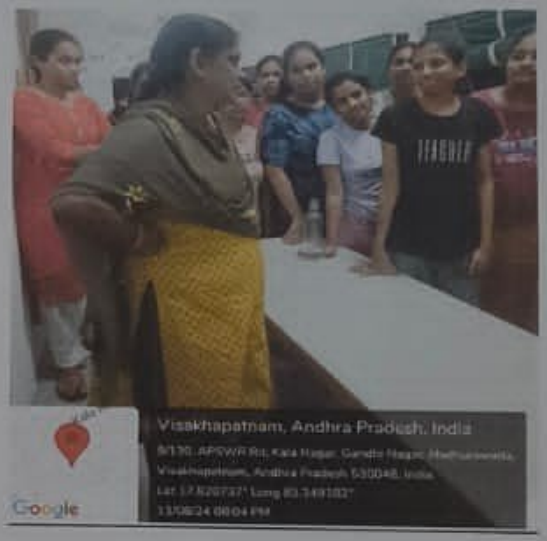
Dt: 06-08-2024 &13-08-2024

Anti-Ragging Committee Members visit to Hostel after 7:00pm













(Dr.P.Devendra)
Convener ARC

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Dt:14-08-2024

4th year students interaction with the 1st year students

(About Department Club Activities)

















(Dr.P.Devendra)
Convener ARC

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12th August, 2024

The first meeting of Anti-ragging committee constituted for the academic year 2024-25 was held on 12th August, 2024 at 11.00 AM in the seminar hall. The chairman, co-chairman, convener cordially welcomed faculty committee members, squad members of Anti-ragging Committee (ARC) to the meeting and suggested them to take measures to prevent ragging in and outside the college campus. It was decided by all the committee members and squad members of ARC to implement the guidelines mentioned below in order to prevent the ragging in and outside the college campus.

1. Squad members are informed to make surprise visits to the hostel after college working hours.
2. Squad members are suggested to make surprise visits frequently to the college canteen, hostel mess during the college hours (lunch break).
3. Members of ARC travelling in the college bus are advised to monitor activities of senior students in the bus and near bus stops in order to prevent ragging.
4. If there are any incidents of ragging found, are to be bought to the notice of the chairman immediately.
5. The committee members are informed to conduct an awareness program among the senior students about consequences of ragging.
6. ARC members are suggested to conduct meeting with first year students to guide them, to restrict their movements and interactions, especially with strangers.
7. The committee members are asked to take the anti-ragging affidavits from the students and their parent/guardian.
8. It is required to informlist of anti-ragging committee and squad members along with their phone numbers to all the first year students.

In this regard, the convener of ARC outlined the following duties and responsibilities of Committee members and squad members.

1. Dr.P.Devendra, Ms. B Bharathi, Mr. N.V.MaheswaraRao, Dr.V.Lakshmana Rao, Mr.S.Ashok, Ms.P.Hemalatha, Mr.V.S.S.V.D.Prakash, Ms.N.Roopavathi, Ms.B.V.R.Gowri, Mr.A.Srinivasa Rao, Ms.P.Sridevi, Ms.B.Ramadevi and Ms.R.Archana are assigned the duty to make surprise visits to college canteen and corridors during lunch hours.
2. Ms.N.M.Gowri, Dr.Ch.S.Lakshmi, Ms.R.Sridevi and Ms.D.Santoshi are assigned the duty of surprise visits to hostel after the college working hours.
3. Ms.R.Archana, Ms.N.Roopavathi , Ms.P.Hemalatha, Mr.S.Ashok, Dr.V.Lakshmana Rao and Mr.N.V.Maheswara Rao were assigned the duty to make visits to hostel canteen, during lunch hours.
4. Ms.N.Roopavathi, Ms.R.Archana and Ms.B.Ramadevi are assigned the duty to monitor the students in their respective buses and the nearest bus stops.
5. All squad members need to take anti- ragging online affidavits from the students.

The schedule of visits by the ARC quad members for identified places as below

Day	Squad at College Canteen during Lunch Hour	Squad at College Corridors (First year Block) During Lunch Hour	Squad at Hostel Canteen during Lunch Hour	Evening Visits to Hostel after 7:00PM
Monday	Mr.V.Lakshmana Rao	Ms.B.V.R.Gowri	Ms.R.Archana	Ms.N.M.Gowri
Tuesday	Mr.N.V.Maheswara Rao	Mr.V.S.S.V.D.Prakash	Ms.N.Roopavathi	Dr.Ch.S.lakshmi
Wednesday	Ms.B.V.R.Gowri	Mr.A.Srinivasa Rao	Ms.P.Hemalatha	Ms.R.Sridevi
Thursday	Ms.P.Hemalatha	Ms.B.Ramadevi	Mr.S.Ashok	Ms.N.M.Gowri
Friday	Mr.V.S.S.V.D.Prakash	Mr.A.Srinivasa Rao	Mr.N.V.Maheswara Rao	Ms.R.Sridevi
Saturday	Ms.P.Sridevi	Ms.R.Archana	Mr.V.Lakshmana Rao	Ms.D.Santoshi

All the other members are requested to assist the Convener, Dr.P.Devendra and Co-convener, Ms. B.Bharathi to carry out the actions that are to be taken in curbing the ragging menace.

DVR COLLEGE OF ENGG FOR WOMEN (A) * KANDLAKOYA * MEDCHAL

Convener of ARC

(Dr.P.Devendra)

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12th August, 2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Meeting held on 12th August, 2024 in Seminar hall at 11.00 AM.

1. Squad members are informed to make surprise visits to the hostel after college working hours.
2. Squad members are suggested to make surprise visits frequently to the college canteen, hostel mess during the college hours (lunch break).
3. Members of ARC travelling in the college bus are advised to monitor activities of senior students in the bus and near bus stops in order to prevent ragging.
4. If there are any incidents of ragging found, are to be bought to the notice of the chairman immediately.
5. The committee members are informed to conduct an awareness program among the senior students about consequences of ragging.
6. ARC members are suggested to conduct meeting with first year students to guide them, to restrict their movements and interactions, especially with strangers.
7. The committee members are asked to take the anti-ragging affidavits from the students and their parent/guardian.
8. It is required to inform list of anti-ragging committee and squad members along with their phone numbers to all the first year students.
9. ARC Committee members were assigned the squad duties and the schedule was forwarded to all the ARC Members.

GVP COLLEGE OF ENGINEERING FOR WOMEN (A) * VISAKHAPATNAM *

Convener of ARC
(Dr.P.Devendra)

Sigantures of ARC Members:

1	Ms.B.Bharathi, Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, B S & H	Member	
3	HOD, CSE	Member	
4	HOD, IT	Member	
5	HOD, EEE	Member	RVS
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	A Suseelatha

9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	
12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	
15	Ms. N. Roopavathi, Asst Prof, ECE	Mernber	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshrni — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

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04th September, 2024

NOTICE

All the ARC committee members are hereby requested to attend the meeting on 04th September, 2024 in the Seminar Hall at 3:30 PM.

Convener of ARC
(Dr.P.Devendra)

Copy to:

1. All notice boards

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04th September, 2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Meeting held on 04th September, 2024 in Seminar hall at 3:30PM.

- Senior students were instructed not to indulge in ragging.
- Consequences of ragging were explained.
- ARC student members are advised to monitor the activities in college buses, college canteen and Hostel.
- If there are any incidents of ragging found, are to be brought to the notice of the Chairman/Convener / Co-Convener immediately.

Convener of ARC
(Dr.P.Devendra)

Sigantures of ARC Members:

1	Ms.B.Bharathi,Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, BS&H	Member	
3	HOD, CSE	Member	—
4	HOD, IT	Member	
5	HOD, EEE	Member	
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Yr Coordinator	A Suseelatha
9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	P. Sridevi
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	

12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	R. Sridevi
15	Ms. N. Roopavathi, Asst Prof, ECE	Member	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	Ch. S. Lakshmi
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshmi — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

Signatures of ARC Student Members :

Sl.No.	Name Of the Student	Year & Branch	Signature
1	V. Sai Charitha	3rd CSM	V. Sai Charitha
2	Rhaga Venkata Vardhini Rudra	3rd IT	R. Vardhini
3	Aamina Naazneen Sulthana	2nd CSE	Aamina
4	N. Harichandana	2nd CSE	N. Harichan

5			
6	U. Dhana Sri	3rd ECE	U. Dhana Sri
7	D. Ashritha	3rd ECE	D. Ashritha
8	A. Harika	2nd CSE	A. Harika.
9	Ch. Renuka	2nd CSE	Ch. Renuka
10	R. Navya	3rd CSE	R. Navya
11	A. Shruthi	3rd EEE	A. shruthi
12	Ch. Vardhana Kanthi	3rd CSM	
13	P. Aparanjini	3rd CSM	P. Aparanjini
14	V. Priyanka	3rd CSE	V. Priyanka
15	A. S. M. Nandini	3 CSM-1	A. S. M. Nandini
16	P. Anjana Navya	2nd CSM2	P. A. Navya
17	M. Deepthi	2 CSM-1	M. Deepthi
18	K. Meghana	4 CSE-1	K. Meghana
19	K. Gowri Sri	2 CSM-1	Gowri Sri
20	G. Tanuja	3rd IT	G. Tanuja
21	E. Chandini	3 CSE 1	Chandini
22	D. Keerthana	3 CSE 1	
23	S. Yogitta	3 CSE 3	S. Yogitta
24	Ch. Bhargava Sri Varshini	2 ECE-1	Ch. B. S. Varshini
25	B. Dharayini	2 ECE-1	B. Dharayini
26	Ch. Kumari Ramya.	3rd ECE 1	Ch. Kumari Ramya
27	G. Janaki	2 ECE-1	G. Janaki
28	Ch. Satya Devi	2nd CSE	Ch. Satya
29	S. Likhitha	3rd IT	S. Likhitha
30	B. Gopikapriya	2nd CSE	B. Gopikapriya
31	E. Praveetha	3rd ECE	E. Praveetha
32	R. Divya	3rd EEE	R. Divya
33	U. Tejaswini	3rd CSE	U. Tejaswini
	S. Jayasree	4th ECE	S. Jayasree

34	E. Hemalatha	2 ECE-2	E. Hemalatha
35	Y. Sailaja	4 ECE 2	Y. Sailaja
36	K. Tanuja	4 CSE-2	K. Tanuja
37	T. Deepika	2 IT-	T. Deepika
38	Shaik. Raheema	2 ECE-2	Shaik. Raheema
39	V. Reshma	4 EEE	V. Reshma
40	A. Sowmya Meeraz	EEE	A. Sowmya
41	P.S.L. Shanmukhi Srujana	EEE	P. Shanmukhi
42	B. Reshma	4-EEE	B. Reshma
43	G. Jyothsna	2 CSE-2	G. Jyothsna
44	K. Bhavya Deepika	2 IT	K. Bhavya
45	T. Bhagya Sri	2 IT	T. Bhagya Sri
46	G. Vasavi	2 CSE-2	Vasavi G
47	G. Jyothsna	2 CSE-2	G. Jyothsna
48	R. Bhomika	2 CSE-4	R. Bhomika.
49	A. Kanthija	2 CSE-1	Akanthij.
50	G. Sri Sivanandini	4 CSM	G. S. S. Nandini
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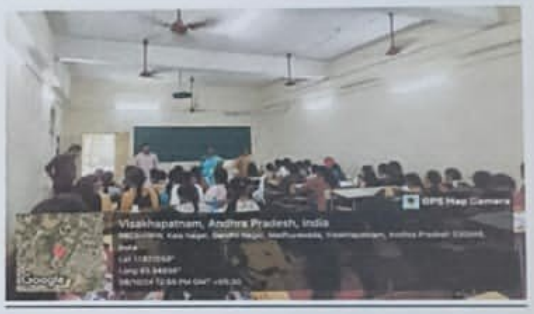
Dt: 7th Oct & 8th Oct, 2024

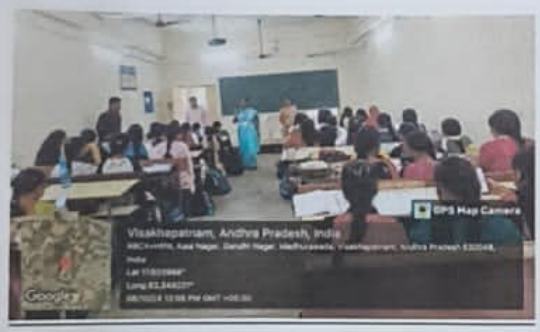
Anti-Ragging Affidavit Filling by First Year Students

















(Dr.P.Devendra)
Convener ARC

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Dt:18-11-2024 & 19-11-2024

Interaction of II & I Year Students for Freshers Party



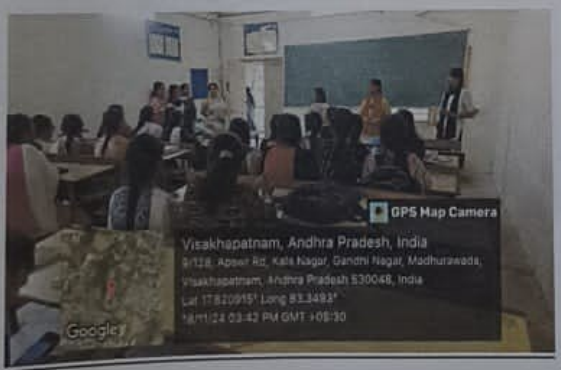














(Dr.P.Devendra)
Convener ARC

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16th November,2024

NOTICE

All the ARC committee members are hereby requested to attend the review meeting on 16th November,2024 in the Seminar Hall at 4:00PM .

GVP COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM *

Convener of ARC
(Dr.P.Devendra)

Copy to:

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16th November,2024

Minutes of the Meeting

The following are the minutes of the meeting prepared for the Anti Ragging Committee Review Meeting held on 16th November,2024 in Seminar hall at 4:00PM.

- ARC members informed to the convener that no ragging incidents were found.

Convener of ARC
(Dr.P.Devendra)

Signatures of ARC Members:

1	Dr.B.Bharathi, Asst Professor, Mathematics	Co-Convener	B. Bharathi
2	HOD, BS & H	Member	
3	HOD, CSE	Member	
4	HOD, IT	Member	
5	HOD, EEE	Member	
6	HOD,CSM	Member	
7	HOD, ECE	Member	
8	Dr.A.Suseelatha, Asst Prof, Mathematics	I Year Coordinator	A. Suseelatha
9	Dr.V.LakshmanaRao,Asst Prof,CSE&IT	Member	
10	Ms.P.Sridevi, Asst Prof, CSE & IT	Member	P. Sridevi
11	Mr.A.Srinivasa Rao, Asst.Prof., ME	Member	A.A.Rao

12	Mr.S.Ashok, Asst Prof, Chemistry	Member	
13	Mr.V S S V D Prakash, Asst Prof, Maths	Member	
14	Ms.R.Sridevi, Asst Prof, CSE & IT	Member	R. Sridevi
15	Ms. N. Roopavathi, Asst Prof, ECE	Member	
16	Ms.N.M.Gowri, Asst Director, Physical Edu.	Member	
17	Dr.Ch.S.Lakshmi, Asst.Prof., Physics	Member	Ch. S. Lakshmi
18	Mr. N V Maheswara Rao, Asst Prof, ECE	Member	
19	Ms. P Hemalatha, Asst Prof, ME	Member	
20	Ms.B.V.R.Gowri, Asst.Prof., ECE	Member	
21	Ms.D.Santoshi, Asst Prof, CSM	Member	
22	Ms.B.RamaDevi, Asst Prof., English	Member	
23	Mrs.P.A.Bhavani, Warden	Member	
24	Ms.Dhanalakshmi — Care Taker	Member	
25	Ms. Lakshmi — Care Taker	Member	
26	Ms.VaraLakshmi –Care Taker(Medical College Hostel)	Member	
27	Ms.Satya (GVPCE Co-Ed)	Member	

Signatures of ARC Student Members :

Sl.No.	Name Of the Student	Year & Branch	Signature
1	P. Aparanjini	3 CSM	P. Aparanjini
2	Ch. Renuka	2nd CSE	Ch. Renuka.
3	Ch Satya devi	2nd CSE	ch. Satya.
4	A.S.M. Nandini	3 CSM-1	A.S.M. Nandini

5	Namina Naazneen Sulthana	2nd CSE-1	Namina.N.S.
6	Akula Harika	2nd CSE	A. Harika
7	N. Harichandana	2nd CSE	N. Harich
8	D. Ashritha	3rd ECE	D. Ashritha
9	A. Shruthi	3rd ECE	A. Shruthi
10	R. Divya	3rd ECE	R. Divya
11	P. Anjana Manya	2nd CSM	P. A. Manya
12	E. Hemalatha	2nd ECE-2	E. Hemalatha
13	ch Kumari Ramya.	3rd ECE-1	Ch. Kumari Ramya
14	Y. Sailaja	4th ECE-2	Y. Sailaja
15	V. Sai Charitha	3rd CSM	V. Sai Charitha
16	G. Janaki	2ECE-1	G. Janaki
17	R. Navya	3rd CSE	R. Navya
18	ch. Bhargava sai Varshini	2ECE-1	ch. B. S. varshini
19	B. Dsavayini	2ECE-1	B. Dsavayini
20	Ch. Vardhana Karthi	3rd CSM	
21	R. Bhumika	2 CSE 4	R. Bhumika.
22	E Chandini	3CSE1	E. chandu
23	U. Dhana Sri	3 ECE 2	U. Dhana Sri
24	S. Yogitha	3 CSE 3	S. Yogitha
25	U. Tejaswini	3CSE-3	U. Tejaswini
26	M. Deepthi	2CSM-1	M. Deepthi
27	K. Gowri Sri	2CSM-1	Gowri Sri
28	K. Meghana	4 CSE-1	K. Meghana
29	B. Gopika Priya	3rd CSE	Gopika
30	S. Jayasree	4th ECE	S. Jayasree
31	G. Jyothsna	2CSE-2	G. Jyo
32	V. Priyanka	3rd CSE	V. Priyanka
33	Naga Venkata Vardhini Rudra	3rd IT	R. Vardhini

34			
35	K. Tanuja	4 CSE 2	K. Tanuja
36	D. Keerthana	3 CSE 1	
37	K. Bhavya Deepika	2 IT	K. Bhavya
38	T. Bhagya Sri	2 IT	T. Bhagyasri
39	T. Deepika	2 IT	T. Deepika
40	A. Kanthija	2 CSE-1	A. Kanthija
41	A. Sowmya Meeraz	EEE	A. Sowmya
42	G. Sri Sivanandini	4 CSM	G. S. S. Nandini
43			
44	Shaik. Raheema	2 ECE-2	Shaik. Raheema
45	S. Likhitha	3rd IT	S. Likhitha
46	G. Jyothsna	2 CSE-2	G. Jyothsna
47	G. Vasavi	2 CSE-2	Vasavi G
48	G. Tanuja	3rd IT	G. Tanuja
49	E. Praveetha	3rd ECE	E. Praveetha
50	V. Reshma	4th EEE	V. Reshma
51	P. S. L. Shanmukhi Soujana	2nd EEE	P. Shanmukhi
52	B. Reshma	4th EEE	B. Reshma
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GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(Autonomous)
Madhurawada :: Visakhapatnam – 530 048

No.GVPW/GC/63

Date: 19/11/2024

CIRCULAR

1. The GVP College of Engineering for women is happy to inform all the staff and students that the **FRESHERS' Day Celebrations** will be as per the following schedule:

Branch	Students	Date & Time	Time	Venue
CSE – 2 & 3	I & II Years	23/11/2024	1.30 PM TO 4.00 PM	Room No.106
CSE – 1 & 4	I & II Years	23/11/2024	1.30 PM TO 4.00 PM	Auditorium
IT	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Room No.102
ECE	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Auditorium
CSM	I & II Years	23/11/2024	9.30 PM TO 12.00 PM	Room No.106
EEE	I & II Years	23/11/2024	1.30 PM TO 04.00 PM	Room No.102

2. The following is the list of faculty coordinators for respective branch

CSE – 2 & 3	Ms.Y Sowmya, Mr. S Ashok, Dr.Ch Alekya
CSE – 1 & 4	Ms.KVS Mounica, Ms.R Archana, Dr.Rani Nanda
CSM	Ms.H Gowtami, Ms. D Santoshi, Dr.Ch.S Lakshmi
ECE	Dr.M Mani Kumari, Ms.N Roopavathi, Dr. B Rajesh Babu
EEE	Ms.K Kusuma Kumari, Ms.P. Hemalatha
IT	Ms.R Sridevi, Ms.P Sridevi, Ms B Rama Devi

3. The CRs of the respective class/branch are to discuss the events planned with respective faculty coordinators and get their approval.

4. All the Anti-Ragging committee members are required to ensure the smooth conduct of the programme.

Principal

To
All I & II Year students

Copy to: for information please
1. Secretary, GVP
2. Vice-principal, GVPW
3. I Year Coordinator
4. All Heads of Departments
5. All faculty members

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Dt:23-11-2024

FRESHERS DAY CELEBRATIONS













DVP COLLEGE OF ENGG FOR WOMEN (W) VISAKHAPATNAM

(Dr.P.Devendra)
Convener ARC

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
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Dt:23-11-2024

FRESHERS DAY CELEBRATIONS













GVPCEW COLLEGE OF ENGG FOR WOMEN VISAKHAPATNAM

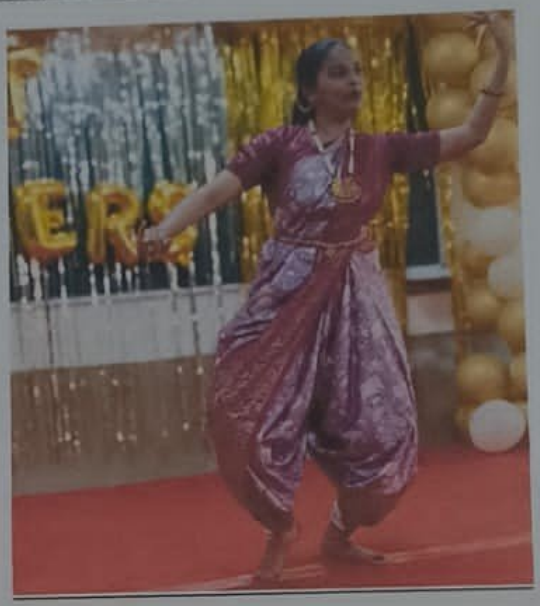
(Dr.P.Devendra)
Convener ARC

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DI:23-11-2024

FRESHERS DAY CELEBRATIONS









COLLEGE OF ENGG FOR WOMEN (A) * VISAKHAPATNAM *

(Dr.P.Devendra)
Convener ARC

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26th December, 2024

From

The Convener,
Anti Ragging Committee,
GVP College of Engineering for Women,
Madhurawada, Visakhapatnam.

To

The Chairman, Anti Ragging Committee,
GVPCEW, Visakhapatnam.

Dear Sir,

Sub: Final Report of the Anti Ragging Committee (AY: 2024-2025) – Reg.

NO INCIDDENT OF RAGGING IS BROUGHT TO THE NOTICE OF THE COMMITTEE.

Thanking you sir,

Yours faithfully,

(Dr.P.Devendra)
Convener ARC

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Visakhapatnam
30th December, 2024

REPORT ON RAGGING CASES IN THE CAMPUS

No incident of ragging is either occurred or reported during the academic year 2024-2025, so far.

Chairman,
Anti-Ragging Committee



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EEE Course Accredited by NBA (2023-2026)

THE LIST OF STUDENTS ADMITTED UNDER MINORITY QUOTA

Academic Year: 2024-2025

S.No.	Branch	Year	Roll No.	Name	Category of Admission
1	INF	IV YR	21JG1A1235	NALLI AMITHA SUJI	BC_C
2	INF	IV YR	21JG1A1202	AFREEN BEGUM	BC_E
3	INF	IV YR	21JG1A1253	SHAIK NAFISA NAZ	BC_E
4	ECE	IV YR	21JG1A0471	NISSIE RUBY VANTIMI	BC_C
5	ECE	IV YR	21JG1A0494	SHAIK RESHMA	BC_E
6	CSM	IV YR	21JG1A4220	JUSTIN JESLIN	BC_C
7	CSM	IV YR	21JG1A4232	MOHAMMAD BASHEERA SULTANA	BC_E
8	CSM	IV YR	21JG1A4233	MOHAMMED ARSHIYA FIRDOUS	BC_E
9	CSE	IV YR	21JG1A0507	AZHIKKAGATH SHARON LILLY	BC_C
10	CSE	IV YR	21JG1A0575	MOHAMMAD SOFIA	BC_E
11	CSE	IV YR	21JG1A0576	MOHAMMED NAZNEEN SULTANA	BC_E
12	CSE	IV YR	21JG1A05A8	SHAIK RESHMA	BC_E
13	CSE	III YR	322103210029	CHUNDURI AMULYA	BC_C
14	CSE	III YR	322103210040	G SUCHITRA	BC_C
15	CSE	III YR	322103210044	GANTA CHRISTINA	BC_C
16	CSE	III YR	322103210118	PILLI SARAHPATMOS	BC_C
17	CSE	III YR	322103210140	SHAIK BASHEERA	BC_E
18	CSE	III YR	322103210141	SHAIK JUVARIYA	BC_E
19	CSE	III YR	322103210198	SHAIK SAMEENA	BC_E
20	CSM	III YR	322103282001	ABDUL RABIA BASHRI	BC_E
21	CSM	III YR	322103282064	MOHAMMED ARSHIA NIGAAR	BC_E
22	CSM	III YR	322103282091	SHAIK FARHAT HASHMI	BC_E
23	ECE	III YR	322103212090	SHAIK HAZRAM BEEBI	BC_E
24	ECE	III YR	322103212091	SHAIK SYED BIBI	BC_E
25	ECE	III YR	322103212113	MOHAMMAD AZIZA PARVEEN	BC_E
26	INF	III YR	322103211044	SHAIK AYESHA SIDDIQA	BC_E
27	CSE	II YR	323103210150	NAKKA ANGELIN PRAJVINI	BC_C
28	CSE	II YR	323103210151	NAKKA SOWMYA	BC_C
29	CSM	II YR	323103282092	SAKILAY REENA JACINTHA	BC_C
30	CSM	II YR	323103282102	TELI JOYCEE VARSHITHA	BC_C
31	CSE	II YR	323103210001	AAMINA NAAZNEEN SULTHANA	BC_E
32	CSE	II YR	323103210138	MOHAMMAD SHAHANAZ	BC_E
33	CSE	II YR	323103210139	MOHAMMAD SUMIYA KHATOON	BC_E
34	CSE	II YR	323103210145	MUSKAN FATHIMA	BC_E
35	CSE	II YR	323103210147	NABEEHA NAHEEN	BC_E
36	CSE	II YR	323103210160	NOOR ASHYA	BC_E
37	CSE	II YR	323103210206	SHAIK AYESHA	BC_E
38	CSE	II YR	323103210207	SHAIK RAFFATH	BC_E
39	CSE	II YR	323103210255	SHAIK ABIDA	BC_E
40	CSM	II YR	323103282084	RAFANA KAUSER	BC_E
41	CSM	II YR	323103282124	MOMMINA KAUSHAR	BC_E
42	ECE	II YR	323103212104	SHAIK RAHEEMA	BC_E

43	INF	II YR	323103211052	SHAIK ASMA	BC_E
44	CSE	I YR	324103210031	CHIGURUPATI HADHASSA	BC_C
45	CSM	I YR	324103282077	MATHI NARSHITHA PRIYA	BC_C
46	EEE	I YR	325103214L06	KAKILETI SNEHITHA MADHU HASINI	BC_C
47	CSE	I YR	324103210093	KHUSHBU SULTHANA	BC_E
48	CSE	I YR	324103210135	MOHAMMAD LEENISHA	BC_E
49	CSE	I YR	324103210159	PARVEEN BEGUM	BC_E
50	CSE	I YR	324103210183	SABAH NOOR	BC_E
51	CSE	I YR	324103210200	SHAIK GOWSYA	BC_E
52	CSE	I YR	324103210201	SHAIK PARVEEN	BC_E
53	CSE	I YR	324103210202	SHAIK SHAHEEN	BC_E
54	CSE	I YR	324103210203	SHASHMEEN MASTHAN	BC_E
55	CSE	I YR	325103210L25	SHAIK UMESHA	BC_E
56	CSM	I YR	324103282107	SHAIK FAZILATH	BC_E
57	CSM	I YR	324103282108	SHAIK FIRDOZ	BC_E
58	CSM	I YR	324103282109	SHAIK KARIMUNNISA	BC_E
59	CSM	I YR	324103282111	SHAIK NOWRIN	BC_E
60	ECE	I YR	324103212059	MOHAMMAD SHAHERA BHANU	BC_E
61	ECE	I YR	324103212101	SHAIK SAHEEDA BEGAM	BC_E
62	ECE	I YR	324103212102	SHEIK FATHIMUNNISA	BC_E
63	INF	I YR	324103211049	SAYYAD AARIFA	BC_E
64	INF	I YR	324103211051	SHAIK NEHAMATUNISA	BC_E
65	INF	I YR	325103211L06	MOHAMMAD LATHIEFA	BC_E

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN,

MADHURAWADA: VISAKHAPATNAM – 530048

Date: 23/09/2024

CIRCULAR

Sub: Meeting of the Equal Opportunities Cell

The meeting of the Equal Opportunities Cell is scheduled to be held at 3.00 PM on 25/09/2024 (Wednesday) in the Principal's Office. All the members of the Committee are requested to be present.

Dr. N. Sharmili,

Member Secretary, EOC.

Copy to:

1. Principal, GVPCEW.
2. Vice-Principal, GVPCEW
3. All members of the EOC.

1. Dr. M. Bhanu Sridhar
2. Dr. N. Sharmili
3. K. Sreenivasu
4. V. V. Kalyani

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
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MOM/Equal Opportunities Cell (EOC) 28-9-2024

MINUTES OF THE MEETING – EQUAL OPPORTUNITIES CELL

1. A meeting under the chairmanship of the Principal was held at 1500 hrs on 25 Sept 2024 in the Principal's office to discuss issues pertaining to the Equal Opportunity Cell (EOC). The following members were present:
   (a) Dr. G. Sudheer, Vice Principal
   (b) Dr. M. Bhanu Sridhar, Associate Professor, IT
   (c) Dr. N. Sharmili, Associate Professor, CSE
   (d) Mr. K. Sreenivasu, Technician, ECE
   (e) Mrs. V. V. Kalyani, Technician, EEE
   (f) Ms. A. Vasavi – 22JG5A0203, IV-EEE
   (g) Ms. Shaik Sameena – 322103210198, III-CSE-2
   (h) Ms. Mohammad Shahanaz – 323103210138, II-CSE-3
   (i) Ms. Shaik Saheeda Begum – 324103212101, I-ECE-2
   (j) Ms. Sheik Fathimunnisa – 324103212102, I-ECE-2
2. The Chairman welcomed all the members and requested Dr. N. Sharmili, Member Secretary, to commence the proceedings. The following points were discussed:
   (a) Enhancement of facilities for physically challenged persons, including increasing the number of lifts.
   (b) Improved accessibility of college facilities for minority students through awareness campaigns promoting equal opportunities.
3. After discussions, the following decisions were made:
   (a) Check the current status of facilities available for physically challenged students and faculty, and ensure that projects are developed to promote equal opportunities.
   (b) Ensure adequate campus facilities that support free movement for students with disabilities, including the availability of wheelchairs on every floor.
   (c) The college should make consistent efforts to inform students about eligible scholarships and conduct awareness programs for freshers.
4. There being no further points, the meeting was adjourned.

(Dr. M. Bhanu Sridhar)
(Chairman)

(Dr. N. Sharmili)
(Member Secretary)

Copy to: -

1. Principal
2. Vice-Principal

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN,

MADHURAWADA: VISAKHAPATNAM – 530048

Date: 05/08/2024

NOTICE

Sub: Equal Opportunity Cell – List for the Academic Year 2024–25

With reference to the above, the following students are inducted into the Equal Opportunity Cell:

1. Ms. Mohammad Shahanaz- 323103210138 – II-CSE-3 ….Student Member
2. Ms. Shaik Saheeda Begum – 324103212101- I-ECE-2 ….Student Member
3. Ms. Sheik Fathimunnisa– 324103212102- I-ECE-2 ….Student Member

With the new student members, the committee members of the Equal Opportunity Cell for the academic year **2024–2025** are as follows:

1. Dr. M. Bhanu Sridhar, Associate Professor, IT — *Chairman*
2. Dr. N. Sharmili, Associate Professor, CSE — *Member Secretary*
3. Mr. K. Sreenivasu, Technician, ECE — *Member*
4. Mrs. V. V. Kalyani, Technician, EEE — *Member*
5. Ms. A. Vasavi – 22JG5A0203, IV-EEE — *Student Member*
6. Ms. Shaik Sameena – 322103210198, III-CSE-2 — *Student Member*
7. Ms. Mohammad Shahanaz – 323103210138, II-CSE-3 — *Student Member*
8. Ms. Shaik Saheeda Begum – 324103212101, I-ECE-2 — *Student Member*
9. Ms. Sheik Fathimunnisa – 324103212102, I-ECE-2 — *Student Member*

Dr. N. Sharmili,
Member Secretary, EOC.

Copy to:

1. Principal, GVPCEW.
2. Vice-Principal, GVPCEW
3. All members of the EOC.

GVP COLLEGE OF ENGG. FOR WOMEN * VISAKHAPATNAM

Date: 17th August 2024

The suggestions/Grievances obtained during the previous academic year have been taken for discussion in the meeting.

Grievances/Suggestions:

1. Students have requested an improvement in the canteen infrastructure, including better seating arrangements and a wider variety of food options to cater to different dietary preferences.

2. Students have suggested extending the operational hours of the health centre to ensure medical assistance is available especially for hostel residents.

Actions taken on the suggestions/Grievances

1. Recognizing the importance of a well-maintained dining space, the administration has taken steps to enhance the canteen's infrastructure. Upgrades include improved seating capacity, enhanced ventilation, and stricter hygiene measures. The food menu has also been revised to offer a more diverse range of healthy and affordable meal options, ensuring that students have access to nutritious and hygienic food.

2. The health centre operating hours have been increased and now it is available from 9 am to 4 pm. In addition the availability of trained medical staff during these hours is bound to be of help to the students. The hospital operated by the management is only 1 km away from campus and in case of emergency students are taken to the hospital.

Date: 17/08/24

A Committee meeting was held to review the suggestions and grievances, evaluate the actions taken in response, and ensure the effective implementation of appropriate measures to address the concerns.

The Action taken report (ATR) is attached alongside.

RVSL
HOD(EEE)

1. Dr R V S Lakshmi Kumari — RVSL
2. Dr A Suseelatha — A Suseelatha
3. Mrs K Suneetha — K. Suneetha
4. Mrs P Sridevi — P. Sridevi
5. Mr G Tirupathi — G. Tirupathi
6. Mrs B Lakshmi — B. Lakshmi
7. Mrs V Kalyani

Date: 15th March 2025

The suggestions/Grievances obtained during the previous academic year have been taken for discussion in the meeting.

Grievances/Suggestions:

1. Students have suggested the establishment of a well-stocked general store on campus, offering essential daily-use items, stationery, as they often struggle to find these items conveniently.

2. Students have requested the establishment of a juice stall on campus, providing fresh and hygienic fruit juices and healthy beverages as an alternative to carbonated drinks and packaged refreshments.

Actions taken on the suggestions/Grievances

1. To address the students' needs, the college has increased the facilities in the stores available in campus. The store is well stocked with essential items such as stationery, snacks, toiletries, and other daily necessities, ensuring that students have easy access to basic commodities without the need to leave campus frequently.

2. The administration has acknowledged the demand for a juice stall and has initiated to introduce one on campus soon. Plans are in progress to ensure that the stall maintains proper hygiene standards and offers a variety of fresh fruit juices, smoothies, and other nutritious drinks at affordable prices. This initiative aims to promote healthier beverage choices for students and staff.

Dr V 5/8/25

A Committee meeting was conducted to review the suggestions and grievances, assess the actions taken, and ensure the effective implementation of appropriate measures to address the concerns.

The Action taken report is attached alongside.

RVS Lakshmi K
HOD (EEE)

1. Dr RVS Lakshmi Kumari — RVS Lakshmi K
2. Dr A Suseelatha — A Suseelatha
3. Mrs K Sunitha — K. Suseetha
4. Mrs P Sridevi — P. Sridevi
5. Mr G Tirupathi — G Tirupathi
6. Mrs B Lakshmi — B. Lakshmi
7. Mrs V Kalyani

GAYATRI VIDYA PARISHAD
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INTERNAL QUALITY ASSURANCE CELL (IQAC)

IQAC/1/2024-2025 Date:01.07.2024

Minutes of Meeting

Minutes of Meeting held on 01.07.2024
Venue: Seminar hall **Time:** 3:30PM

Agenda:
1. Activity Plan for the Academic year 2024-2025
2. Activities related to Autonomous Status
3. Consideration of DAC report

The meeting started with a brief note of welcome by the chairman, IQAC

Item No.1
Activity Plan for the Academic year 2024-2025
Resolution No.1
It was decided to plan academic calendar and activities in line with the academic calendars of affiliating universities-JNTUK, Kakinada and Andhra University, Visakhapatnam.

Item No.2
Activities related to Autonomous Status
Resolution No.2
(i) Form an Academic council in line with the guidelines of UGC
(ii)IQAC resolved to finalize the academic rules and regulations for presentation and approval by the academic council.
(iii)Finalize the list of possible BOS members for approval by academic council.

Item No.3
Consideration of DAC report
Resolution No.3
The IQAC considered the reports submitted by the Department Advisory Committees (DACs) of all departments and, after due deliberation, resolved the following:
(i)The possible course structure for the First-year students under autonomous stream.
(ii)The elective courses to be opted in Third and Fourth year for students of Andhra university and JNTUK.

Coordinator

Chairman, IQAC

Principal
GVP College of Engineering for Women
Visakhapatnam-48.

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INTERNAL QUALITY ASSURANCE CELL (IQAC)

The following members attended the IQAC meeting at 3:30PM on 01-07-2024 in seminar hall.

Members Present

S.No	NAME	DESIGNATION
1	Dr. Raj Kumar Goswami	Chairman- Principal
2	Dr. G. Sudheer	Member- Vice Principal
3	Dr. M. Mani kumari	Member, Assistant Professor, ECE
4	Dr. K. P. Naidu	Member, Assistant Professor, CSE (AI &ML)
5	Ms. B. Bharathi	Member, Assistant Professor, BSH (Mathematics)
6	Ms Ch Sirisha	Member, Assistant Professor, ECE
7	Dr. M. Krishna	Member, Assistant Professor, EEE
8	Ms.P.Abhilasha	Alumni Member
9	Dr.K.L.Sai Prasad	HOD-BSH
10	Dr.P.V.S.L.Jagadamba	HOD-CSE
11	Dr.P.M.K.Prasad	HOD-ECE
12	Dr.R.V.S.Lakshmi Kumari	HOD-EEE
13	Dr.D.K.Bebarta	HOD-CSE (AI & ML)
14	Dr.M.Bhanu Sridhar	HOD-IT
15	Dr.P.Devendra	Member Coordinator, Associate Professor, EEE

Coordinator

Chairman, IQAC

Principal
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INTERNAL QUALITY ASSURANCE CELL (IQAC)

IQAC/2/2024-2025 Date:30.07.2024

Minutes of Meeting

Minutes of Meeting held on 30.07.2024
Venue: Seminar hall **Time:** 3:30PM

Agenda:
1. Circulation of Rules and Regulations R24
2. Submission of Draft Course Structure and Syllabus for B.Tech and M.Tech 1st Year under the Autonomous stream.
3. Formation of guidelines for conduct of BOS meeting

The meeting started with a brief note of welcome by the chairman IQAC

Item No.1
Circulation of Rules and Regulations R24
Resolution No.1
It was resolved to widely disseminate the approved Academic Rules and Regulations R24 framed for the autonomous stream.

Item No.2
Submission of Draft Course Structure and Syllabus for B.Tech and M.Tech 1st Year under the Autonomous stream.
Resolution No.2
After confirming that the draft course structure and syllabus of all departments aligns with the guidelines of AICTE, APSCHE, Affiliating University and the Vision and Mission of the institute, the IQAC resolved to forward the same to the respective Boards of Studies (BoS) for their recommendations.

Item No.3
Formation of guidelines for conduct of BOS meeting
Resolution No.3
The IQAC resolved to conduct the forthcoming First BOS meeting of all departments in hybrid mode to ensure wider participation of external experts and members who are unable to attend physically. Further, the necessary arrangements to be made have been approved.

Coordinator

Chairman, IQAC

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EEE Course Accredited by NBA (2023-2026)

INTERNAL QUALITY ASSURANCE CELL (IQAC)

The following members attended the IQAC meeting at 3:30PM on 30-07-2024 in seminar hall.

Members Present

S.No	NAME	DESIGNATION
1	Dr. Raj Kumar Goswami	Chairman- Principal
2	Dr. G. Sudheer	Member- Vice Principal
3	Dr. M. Mani kumari	Member, Assistant Professor, ECE
4	Dr. K. P. Naidu	Member, Assistant Professor, CSE (AI &ML)
5	Dr. N. Sharmili	Member, Associate Professor, CSE
6	Ms. B. Bharathi	Member, Assistant Professor, BSH (Mathematics)
7	Ms Ch Sirisha	Member, Assistant Professor, ECE
8	Dr. M. Krishna	Member, Assistant Professor, EEE
9	Ms.P.Abhilasha	Alumni Member
10	Dr.K.L.Sai Prasad	HOD-BSH
11	Dr.P.M.K.Prasad	HOD-ECE
12	Dr.R.V.S.Lakshmi Kumari	HOD-EEE
13	Dr.D.K.Bebarta	HOD-CSE (AI & ML)
14	Dr.M.Bhanu Sridhar	HOD-IT
15	Dr.P.Devendra	Member Coordinator, Associate Professor, EEE

Coordinator

Chairman, IQAC

Principal
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INTERNAL QUALITY ASSURANCE CELL (IQAC)

IQAC/3/2024-2025 Date:07.10.2024

Minutes of Meeting

Minutes of Meeting held on 07.10.2024
Venue: Seminar hall **Time:** 3:30PM

Agenda:
1. Activities related to Autonomous Status.

The meeting started with a brief note of welcome by the chairman IQAC

Item No.1
Activities related to Autonomous Status.

Resolution No.1

(i) Resolved to make Minor changes in Academic rules and regulations R24 for B.Tech program as per the suggestions received during the first academic council meeting to stay in line with the guidelines of AICTE.

(ii) Resolved to incorporate the changes in the First-Year course structure and syllabus as per the suggestions provided in the First BoS meetings of the respective departments.

(iii) The IQAC intends to conduct FDPs based on the curriculum approved by BOS of different departments to improve the quality of teaching-learning process.

(iv) The IQAC has resolved to conduct the academic audit of all departments in the month of December.

(v) It was decided to conduct the second Academic Council meeting in hybrid mode to seek the approval of the changes made in (i) the Rules and Regulations (R24) and (ii) the syllabi of all departments.

Coordinator

Chairman, IQAC

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INTERNAL QUALITY ASSURANCE CELL (IQAC)

The following members attended the IQAC meeting at 3:30PM on 07-10-2024 in seminar hall.

Members Present

S.No	NAME	DESIGNATION
1	Dr. Raj Kumar Goswami	Chairman- Principal
2	Dr. G. Sudheer	Member- Vice Principal
3	Dr. K. P. Naidu	Member, Associate Professor, CSE (AI &ML)
4	Dr. N. Sharmili	Member, Professor, CSE
5	Ms. M. Deepthi	Member, Assistant Professor, IT
6	Ms. B. Bharathi	Member, Assistant Professor, BSH (Mathematics)
7	Ms Ch Sirisha	Member, Assistant Professor, ECE
8	Dr. M. Krishna	Member, Assistant Professor, EEE
9	Mr. Seela Srikanth	Member, Accounts Manager
10	Ms.P.Abhilasha	Alumni Member
11	Dr.K.L.Sai Prasad	HOD-BSH
12	Dr.P.V.S.L.Jagadamba	HOD-CSE
13	Dr.P.M.K.Prasad	HOD-ECE
14	Dr.R.V.S.Lakshmi Kumari	HOD-EEE
15	Dr.D.K.Bebarta	HOD-CSE (AI & ML)
16	Dr.M.Bhanu Sridhar	HOD-IT
17	Dr.P.Devendra	Member Coordinator, Professor, EEE

Coordinator

Chairman, IQAC

Principal
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INTERNAL QUALITY ASSURANCE CELL (IQAC)

IQAC/4/2024-2025 Date:23.12.2024

Minutes of Meeting

Minutes of Meeting held on 23.12.2024
Venue: Seminar hall **Time**: 2:30PM

Agenda:
1. Approval of draft copy of AQAR 2023-2024.
2. Preparation of course structure and syllabus for the autonomous batch.

The meeting started with a brief note of welcome by the chairman IQAC

Item No.1
Approval of draft copy of AQAR 2023-2024.

The central coordinators of different criterion presented the data corresponding to each criterion.

Criterion 1	Dr.L.Ganesh and Ms.BVS Renuka devi
Criterion 2	Dr.ASV Vijayalakshmi
Criterion 3	Dr.V.Lakshmana Rao
Criterion 4	Dr.B.Vijaya Lakshmi
Criterion 5	Dr.T.Poornakantha
Criterion 6	Dr.K.L.Sai Prasad
Criterion 7	Dr.N.Sharmili

The suggestions put forward by the members of IQAC were incorporated in the document.

Resolution No.1
The IQAC approved the draft copy of AQAR for submission to NAAC.

Item No.2
Preparation of course structure and syllabus for the autonomous batch.
Resolution No.2
The IQAC advised all departments to prepare the course structure and syllabi for B.Tech II, III, and IV years, and M.Tech II year programs under the autonomous stream, in accordance with the AICTE Model Curriculum, APSCHE guidelines, NEP-2020 framework and as per industry requirements.

Coordinator

Chairman, IQAC

Principal
GVP College of Engineering for Women
Visakhapatnam-48

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EEE Course Accredited by NBA (2023-2026)

INTERNAL QUALITY ASSURANCE CELL (IQAC)

The following members attended the IQAC meeting at 2:30PM on 23-12-2024 in seminar hall.

Members Present

S.No	NAME	DESIGNATION
1	Dr. Raj Kumar Goswami	Chairman- Principal
2	Dr. G. Sudheer	Member- Vice Principal
3	Dr. M. Mani kumari	Member, Assistant Professor, ECE
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15	Dr.D.K.Bebarta	HOD-CSE (AI & ML)
16	Dr.M.Bhanu Sridhar	HOD-IT
17	Dr.L.Ganesh	Special Invitee
18	Ms.BVS Renuka devi	Special Invitee
19	Dr.ASV Vijayalakshmi	Special Invitee
20	Dr.V.Lakshmana Rao	Special Invitee
21	Dr.B.Vijaya Lakshmi	Special Invitee
22	Dr.T.Poornakantha	Special Invitee
23	Dr.P.Devendra	Member Coordinator, Professor, EEE

Coordinator

Chairman, IQAC

Principal
GVP College of Engineering for Women
Visakhapatnam-48.

GAYATRI VIDYA PARISHAD
COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)
Madhurawada :: Visakhapatnam – 530 048
(Approved by AICTE, New Delhi and Affiliated to Andhra University)
Accredited by NAAC with "A" grade from 2022 to 2027
CSE, ECE and IT Courses Accredited by NBA (2019-2022) and Re-accredited by NBA (2022-2025)
EEE Course Accredited by NBA (2023-2026)

INTERNAL QUALITY ASSURANCE CELL (IQAC)

IQAC/5/2024-2025 Date:28.03.2025

Minutes of Meeting

Minutes of Meeting held on 28.03.2025
Venue: Seminar hall **Time:** 3:30PM

Agenda:
1. Submission of Draft Course Structure and Syllabus for the B.Tech II, III, and IV Years and M.Tech II year under the Autonomous stream
2. Formation of guidelines for conduct of Second BOS meeting.

The meeting started with a brief note of welcome by the chairman IQAC

Item No.1
Submission of Draft Course Structure and Syllabus for the B.Tech II, III, and IV Years and M.Tech II year under the Autonomous stream
Resolution No.1
After verifying that the course structure and syllabus of all departments align with the AICTE and APSCHE guidelines, the IQAC resolved to forward the draft copies to the respective Boards of Studies (BoS) for their suggestions and recommendations.

Item No.2
Formation of guidelines for conduct of Second BOS meeting.
Resolution No.2
The IQAC resolved to conduct the forthcoming second BOS meetings of all the departments in hybrid mode to ensure wider participation of external experts and members who are unable to attend physically.

Coordinator

Chairman, IQAC

Principal
GVP College of Engineering for Women
Visakhapatnam-48.

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INTERNAL QUALITY ASSURANCE CELL (IQAC)

The following members attended the IQAC meeting at 3:30PM on 28-03-2025 in seminar hall.

Members Present

S.No	NAME	DESIGNATION
1	Dr. Raj Kumar Goswami	Chairman- Principal
2	Dr. G. Sudheer	Member- Vice Principal
3	Dr. M. Mani kumari	Member, Assistant Professor, ECE
4	Dr. K. P. Naidu	Member, Associate Professor, CSE (AI &ML)
5	Dr. N. Sharmili	Member, Professor, CSE
6	Ms. M. Deepthi	Member, Assistant Professor, IT
7	Dr. B. Bharathi	Member, Assistant Professor, BSH (Mathematics)
8	Ms Ch Sirisha	Member, Assistant Professor, ECE
9	Dr. M. Krishna	Member, Assistant Professor, EEE
10	Mr. Seela Srikanth	Member, Accounts Manager
11	Ms.P.Abhilasha	Alumni Member
12	Dr.K.L.Sai Prasad	HOD-BSH
13	Dr.P.V.S.L.Jagadamba	HOD-CSE
14	Dr.P.M.K.Prasad	HOD-ECE
15	Dr.R.V.S.Lakshmi Kumari	HOD-EEE
16	Dr.D.K.Bebarta	HOD-CSE (AI & ML)
17	Dr.M.Bhanu Sridhar	HOD-IT
18	Dr.D.V.A.N.Ravi Kumar	Member Coordinator, Associate Professor, ECE

Coordinator

Chairman, IQAC

Principal
GVP College of Engineering for Women
Visakhapatnam-48.

AQAR

Part A

12. Plan of action chalked out by IQAC at the beginning of the academic year towards quality enhancement and the outcome achieved by the end of the academic year:

Plan of Action	Achievements/Outcomes
IQAC aimed to support the framing and updating of academic rules and regulations in accordance with UGC guidelines by working closely with statutory bodies and ensuring their timely adoption to strengthen academic procedures and overall governance.	IQAC facilitated the drafting and approval of updated academic rules and regulations, which improved (i) academic governance and (ii) the timeline for the timely declaration of student results.
To strengthen curriculum development across all departments by ensuring effective BoS functioning as per AICTE, APSCHE, affiliating university norms, and the institute's vision, with guidance from eminent academicians, industry experts, and researchers.	The departments adopted a more structured and industry-oriented curriculum, resulting in improved Course Outcome (CO) attainment and better alignment of academic programs with the institute's mission, and vision.
To strengthen the institutional research ecosystem by organizing Research Forum lectures, ensuring effective implementation of the research incentive policy, and recommending the provision of reasonable resources to support quality research activities.	These research-support initiatives significantly contributed to achieving quality publications and facilitated the sanction of a DRDO-sponsored project.
To enhance students' industry readiness through skill-focused training, expert guidance, access to resources, and active collaboration with companies.	The initiatives helped students enhance their industry skills, gain practical experience, and successfully secure paid internships.
To promote GATE preparedness by motivating students through awareness sessions and guest lectures, and by advising faculty to integrate GATE-oriented questions and discussions into regular teaching.	The initiatives improved students' readiness for the exam, and several students secured GATE ranks. Though low at present, we hope to strengthen the eco-system.
To promote innovation and entrepreneurship by encouraging the Entrepreneurship Development Cell (EDC) to conduct startup-oriented workshops and mentoring sessions for students and faculty.	A startup idea was successfully incubated through the entrepreneurship initiatives facilitated and guided by IQAC.

11. Significant contributions made by IQAC during the current year (maximum five bullets)

1) Facilitated the institute's transition to autonomous status by forming statutory bodies such as the Academic Council, Boards of Studies (BoS), and others.

2) Played a vital role in framing the institute's academic rules and regulations in accordance with UGC guidelines.

3) Coordinated the preparation and review of course structure and syllabi for B.Tech and M.Tech programs under the autonomous stream, ensuring alignment with AICTE Model Curriculum, APSCHE guidelines, Affiliating university norms, NEP-2020 framework, and industry needs.

4) Encouraged the professional growth of both teaching and non-teaching staff through workshops, training sessions, and value-added courses. Also arranged guest lectures and industry interactions to help connect classroom learning with practical, real-world experience.

5) Strengthened the research ecosystem by facilitating the approval and initiation of a DRDO-sponsored project.

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

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EEE Course Accredited by NBA (2023-2026)

Ph : 0891-2739144, 2526639 Email : gvpcew@gmail.com Website : www.gvpcew.ac.in

No.GVPWA/SC-ST CELL/2025 Date: 25/11/2025

INTERNAL NOTE

Sub : Constitution of Committee for SC/ST

A committee for SC/ST is established as per the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities Act, 1989 No.33 dated 11/09/1989 for a period of two years. Following are the members

1) Dr. M Mani Kumari ... Convener
   Asst Prof, Department of ECE
2) Ms.CH Sirisha ... Member
   Asst Prof, Department of ECE
3) Dr.Neelima Ramireddy ... Member
   Asst Prof, Department of BSH (Management Studies)
4) Dr. CH Alekya ... Member
   Asst Prof, Department of BS & H (English)
5) Mr. Y Ramu ... Member
   Asst Prof, Department of EEE

The committee is requested to function and conduct its deliberations as per the provisions contained in the above referred Act and any other rules/amendments to the act notified from time to time

PRINCIPAL
Principal
G.V.P College of Engineering for Wo
Madhurawada
Visakhapatnam-530048

To:- All the members concerned

Copy to:

1) All Heads of Departments
2) All Faculty members – for circulation

5/1/24

Minutes of the Meeting

A meeting is conducted for Students to improve the academic perbomance as well as building a Confidence the following measures were adopted.

The following are the delibrations ob the meeting.

1. The academic perbomance ob the Students were observed and identiby the students who were dibbicult to understand the coding subjects.

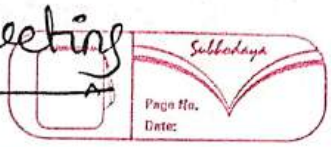
2. Requested the concerned faculty to conduct special classes and provide the basic material to follow the subject and improve the skills easily.

3. Inbom the students about schemes which are available bor abroad education.

M. Mani Kumari
Ch. Sirisha
A. Uday Kumar
Ch. Alekya
Y. Ramu

12/4/24

Minutes of the Meeting



A meeting is conducted for Students to discuss about the academics and facilities available to them.

1. They were utilize the book bank books available in the college

2. The academic dibbicalties and Grievances ib any should be immediately brought to the notice of any ob the committee members

3. Council towards the career guidance and academics.

M. Mani Kumari
CH. Sirisha
A. Uday Kumar
CH. Alekhya
Y. Ramu

18/9/24

Minutes of the Meeting

A meeting is conducted to I year Students to create awareness among them and explain the objectives and importance of the SC/ST cell.

The following are the deliberations of the meeting

1. They were welcomed into the college Discuss with them about the facilities and opportunities are available for them. To they are interested in courses brief about them

2. The members of the SC/ST cell are introduced to them. They feel free to interact with them for any career guidance advices.

3. To any dibficulties they are facing and any requirements they immediately report into the Memebers.

1. M. Mani Kumari
2. CH. Sirisha
3. A. Uday Kumar
4. CH. Alekhya
5. Y. Rama

18/9/24

Minutes of the Meeting

A meeting is conducted to the IV year students to inform them about the Embedded Software Engineer course.

→ The detailed description of the course:
Duration 90 Days
→ The course cost worth 5,000
→ The course completely worth free for all SC/ST students.
→ Informed the students about the benifits after learning the course.
→ They are getting good opportunities in the Embedded domain.
→ The detailed course description and registed students details are placed in the file.

Dr. M. Mani Kumari
CH. Sirisha
A. Uday Kumar
CH. Alekhya
Y. Ramu

Minutes of the Meeting

A meeting is conducted for III & IV year students to inform about the work-based learning (WBL) programme (of Ministry of Electronics and IT, Govt. of India) is designed for fresh Graduate Engineers of Scheduled caste (SC), ST women and Economically weaker section (EWS) to gain practical experience and exposure in information Technology, Electronics and related areas to acquire technical skills in emerging technologies to up-skill their perennial career and as per the requirement of industrial needs.

→ The selected candidates will be mentored by the Scientis and experts of CDAC at Bengaluru

→ The no of vacancies which are especially available for SC, ST women, and EWS category are 16.

→ Motivate the students to opt for their Interested domain and clarified their doubts in the Registration fees.

→ The complete details are placed in the file

Dr. M. Mani kumari M.E.,

23/11/25

Minutes of the Meeting

A meeting is conducted to I & II year Students.

To improve the academic performance as well as building a Confidence the following measures were adopted.

The following are the deliberations of the meeting

1. The preparation of the students about the MID as well as the University examinations.

2. The difficulties they are facing understanding the core subjects and programming subjects. Towards this requested the concerned subject faculty to clarify the doubts and encourage them.

1. Dr. M. Mani Kumari
2. Dr. A. Uday Kumar
3. CH. Sirisha
4. CH. Alekhya
5. Y. Ramu

3/5/25

Minutes of Meeting

A meeting is conducted for IV ECE Students to inform about the work-based learning programme in Energy Technology at C-DAC Hyderabad.

→ Different domains that are offered by the programme are Embedded Systems, Internet of things (IoT), Artificial Intelligence, Cyber security, Block chain and Web Technologies.

→ Only SC, ST, EWS and women Candidates are eligible for this course.

→ The main perks that are offered by this course are Hands on Experience on level State and national level projects.

→ Number of Openings are 15.
The details are placed in the file.

Dr. M. Mani Kumari
Ch. Sirisha
Ch. Alekhya
Y. Rama

AY 24-25

Students List

S.No.	Student Id	Student Name	Course Name	Course Year
1	202413530017	NAGAVAMSAPU MYTHILI	B TECH (ECE)	1
2	202413693694	VARA LAKSHMI PRASANNA	BTECH (IT)	1
3	202413752865	BUDITHI DEVI	B TECH (ECE)	1
4	202415334895	LOTETI KAVYANJALI	B.TECH (CSE- AML)	1
5	202413830853	KUDITHI GOWTHAMI	B TECH (ECE)	1
6	202413821875	MADUGULA SONIYA	B TECH (CSE))	1
7	202413998139	CHEVALA SIRISHA	B TECH (CSE))	1
8	202413564891	MARIDIBURI MARY	B TECH (EEE)	1
9	202413738806	GIDLA GEETHA ADI VARSHINI	B TECH (CSE))	1
10	202413839420	KALIGITHI YAMUNA	B.TECH (CSE- AML)	1
11	202413667970	MAILIPILLI SRI LATHA	B TECH (ECE)	1
12	202413918327	KOTTHAPALLI BHAVYA	B TECH (ECE)	1
13	202413730423	DANNANA LAVANYA	BTECH (IT)	1
14	202413716007	KELLA HEMAVATHI	B.TECH (CSE- AML)	1
15	202413875522	SUNKARA TULASI	B TECH (CSE))	1
16	202413941051	ROHINI MATHA	BTECH (IT)	1
17	202413643160	CHODAGIRI SARANYA	B TECH (CSE))	1
18	202413784099	DEVA VINDHYA HASINI	B TECH (CSE))	1
19	202413763327	KANITHI CHERISHMA	B.TECH (CSE- AML)	1
20	202413784057	DOLA LALITHA	B TECH (CSE))	1
21	202413963444	VEGI AKSHAYA	B TECH (ECE)	1
22	202413837502	BAYYA EESHA	B TECH (CSE))	1
23	202413655240	SUKKA CHITRA	B TECH (CSE))	1
24	202413383695	SIYYADRI GAYATHRI	B TECH (EEE)	1
25	202413688525	TALADA HRUDAYASWARIDEVI	B TECH (CSE))	1
26	202413650261	MUDDADA GNANESWARI	B TECH (CSE))	1
27	202413740314	MUTYALA RESHMA	B TECH (ECE)	1
28	202413877836	DODDE PRANATHI	BTECH (IT)	1
29	202413862336	KISHORE KUMAR GAYATRI	BTECH (IT)	1
30	202413728865	MATTA RICHITHA	B TECH (CSE))	1
31	202412847588	SARAVAKOTA BHOOMIKA	B TECH (ECE)	1
32	202413812966	JONNADA PAVITHRA	B TECH (CSE))	1
33	202413579225	YEDDU THANU SRI	BTECH (IT)	1
34	202413835490	BALAGA VAISHALI	B TECH (ECE)	1
35	202413531968	SAKETI RUPAKUMARI	B.TECH (CSE- AML)	1
36	202415336970	TALE CHARISHMA	B TECH (CSE))	1
37	202413372231	GANJI SWATHI CHANDANA	B TECH (CSE))	1
38	202413874031	KONKI AMRUTHA BHAVANI	BTECH (IT)	1
39	202413899167	DUKKA VANI	B TECH (CSE))	1
40	202413781524	DHANANI RUTH PRATHUSH GUNAVATHI	B.TECH (CSE- AML)	1
41	202413742421	YARRA DIVYA	B TECH (CSE))	1
42	202413691622	KOSURU SHARON ROJA	B TECH (CSE))	1
43	202413531871	KANITHI KEERTHI	B.TECH (CSE- AML)	1
44	202413920898	DIDLA VALLI	B TECH (CSE))	1
45	202414010708	DULI MATHA KARUNA SRI	B TECH (CSE))	1
46	202415334915	MAMADURI POOJITHA	B.TECH (CSE- AML)	1
47	202413570272	PUTTA REVATHI	B TECH (CSE))	1
48	202413615917	ENUMUKKALA AKANKSHA	B.TECH (CSE- AML)	1
1	202413579245	TOKURU NAVYASRI	B TECH (CSE))	1
2	202413988742	GORLE PREETHI JOY	B TECH (CSE))	1

Course Prospectus

Course Name: Embedded Software Engineer (Online Mode)

Course Code: ED 321

NSQF Level: 06

Duration: 960 Hours (120 OJT)

Last Date of Registration: 22-09-2024

Date of publishing Provisional Selection List: 23-09-2024

Payment of first installment fee: 23-09-2024 to 24-09-2024

Course Start Date: 25-09-2024

Fee Details:

- Registration Fee- Rs. 1000 /-
- Course Fee- Rs. 51,000 /- (Instalment option mentioned in Course Fee Section)
- Total Fee - Rs. 52,000 /- for General, For SC/ST – NIL

Preamble:

In today's rapidly advancing technological landscape, embedded systems are ubiquitous, found in homes, offices, cars, factories, hospitals, and consumer electronics. Their value lies in their seamless integration into various electronic products, from consumer electronics to office automation, automotive systems, medical devices, and communication tools. We live in an era where information is instantly accessible, and communication is just a touch away. The future is driven by the Internet of Things (IoT), where everyday objects with embedded hardware and software are connected to the network, enabling smarter and more efficient living. This course will equip you with the skills and knowledge to design, develop, and maintain the software that powers these essential embedded systems.

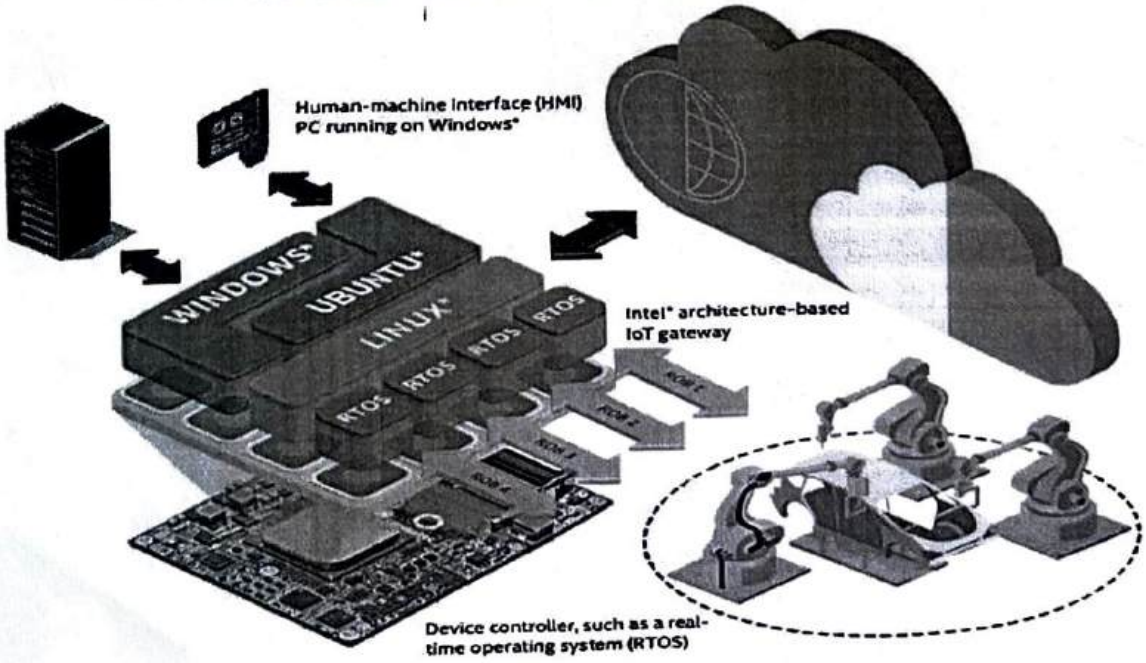
The Embedded and IoT industry is rapidly expanding with the introduction of diverse products for various applications, catering to different sector demands. This growth increases the complexity of embedded system design, resulting in a shortage of qualified engineers with strong Embedded and IoT design and development skills. As the sector continues to innovate and introduce new products and applications, the demand for skilled engineers will only grow. Therefore, an advanced training program in the embedded field is essential. This course focuses on the architecture and programming of embedded processors, the development of applications using Embedded Operating Systems and Real-Time Operating Systems, porting applications to ARM platforms, and IoT-based application development.

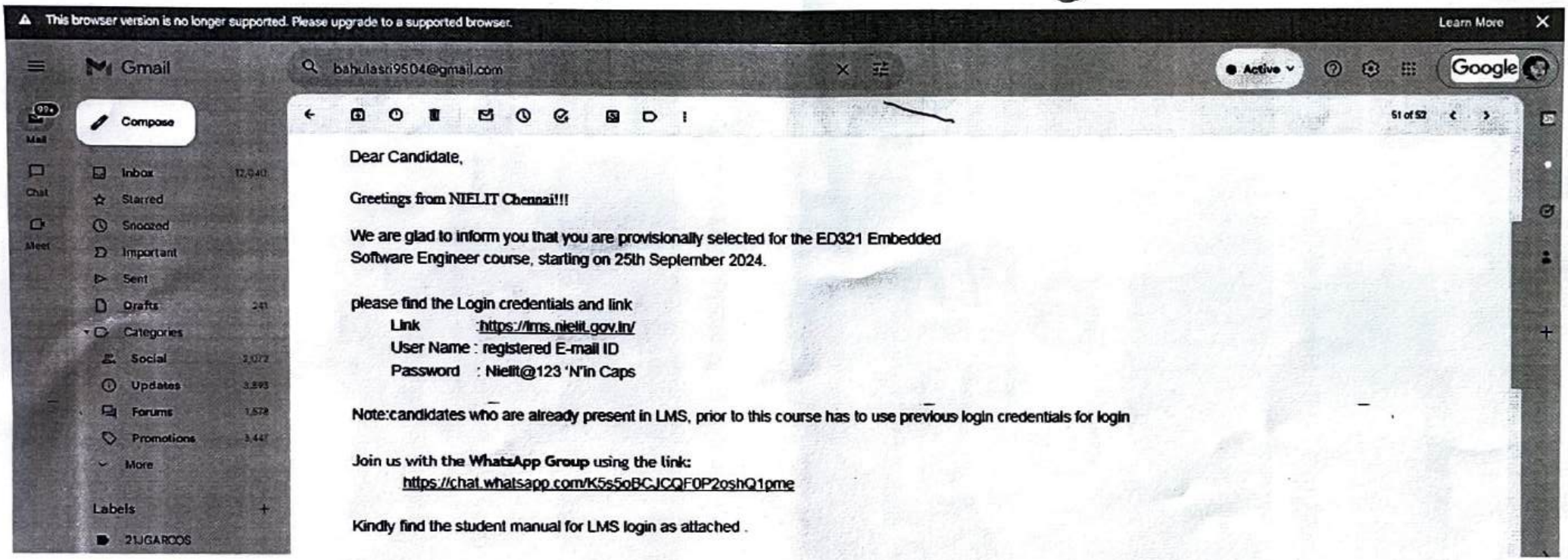
नेशनल इंस्टीट्यूट ऑफ इलेक्ट्रॉनिक्स एंड इंफॉर्मेशन टेक्नोलॉजी, चेन्नई
National Institute of Electronics and Information Technology, Chennai
Autonomous Scientific Society of Ministry of Electronics & Information Technology (MeitY), Govt. of India
ISTE Complex, 25, Gandhi Mandapam Road, Chennai - 600025

Course Prospectus

Embedded Software Engineer (NSQF Level-6)

Mode: Online

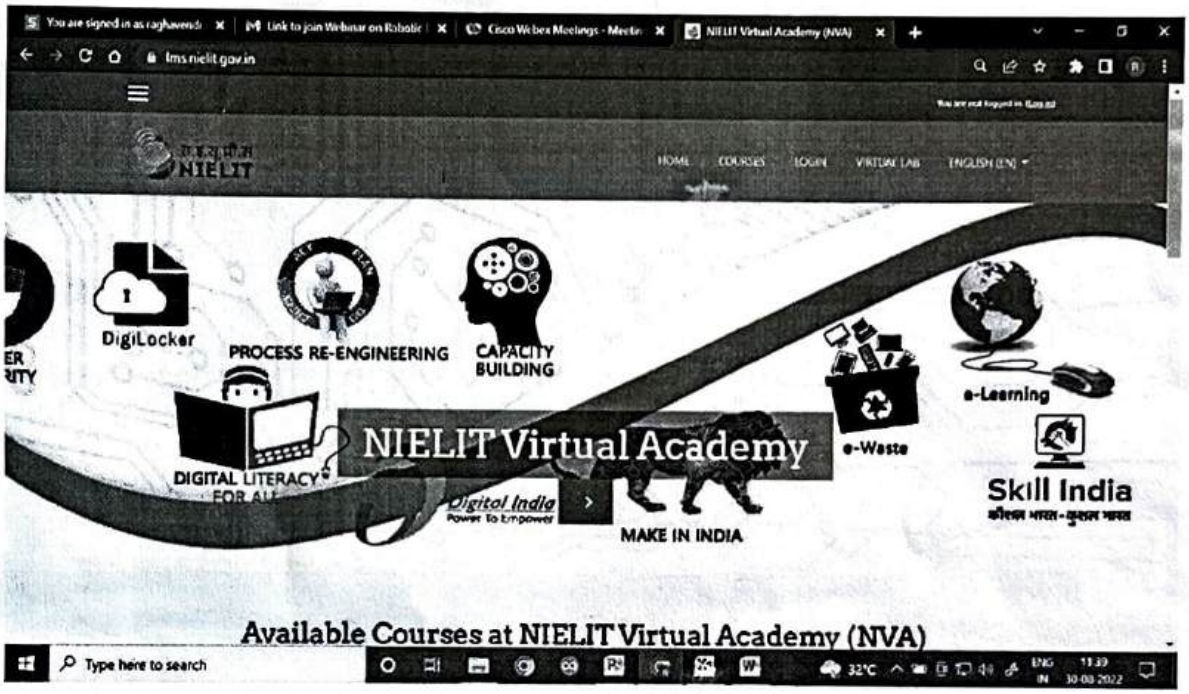



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Sent
Drafts 241
Categories
Social 2,072
Updates 3,893
Forums 1,578
Promotions 3,447
More
Labels
21JGAR005
51 of 52
Dear Candidate,
Greetings from NIELIT Chennai!!!
We are glad to inform you that you are provisionally selected for the ED321 Embedded Software Engineer course, starting on 25th September 2024.
please find the Login credentials and link
Link :https://lms.nielit.gov.in/
User Name : registered E-mail ID
Password : Nielit@123 'N'in Caps
Note:candidates who are already present in LMS, prior to this course has to use previous login credentials for login
Join us with the WhatsApp Group using the link:
https://chat.whatsapp.com/K5s5oBCJCQF0P2oshQ1pme
Kindly find the student manual for LMS login as attached .

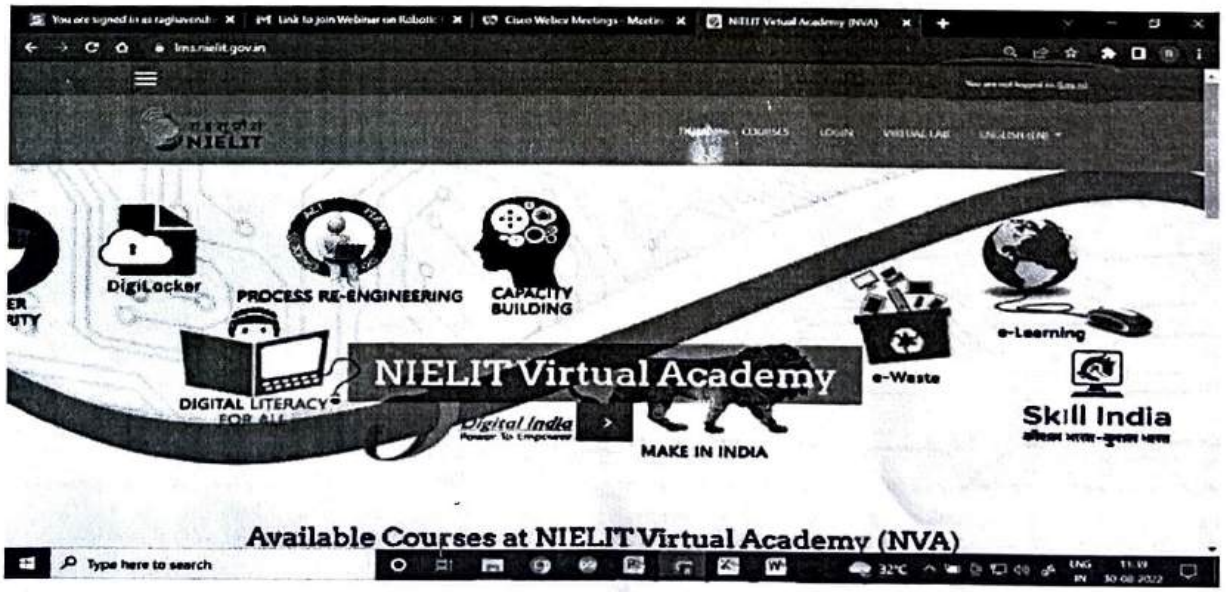
Login Manual for "ED321 & VL281 Sep 2024 Common Modules"

Stepwise Login Process

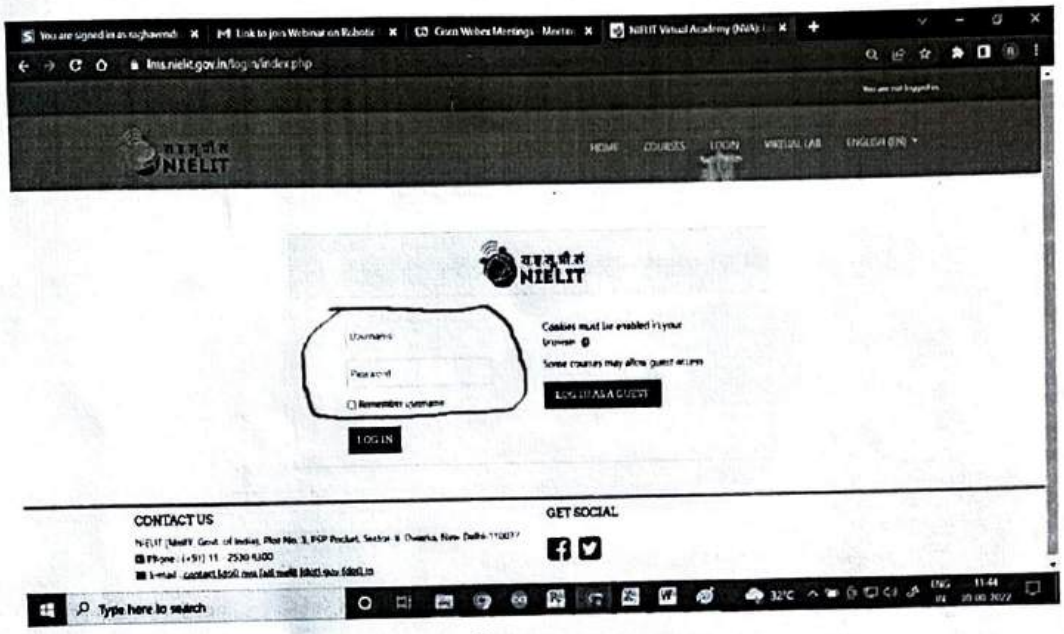
1. Open the link following link https://lms.nielit.gov.in/



2. click on Login in top right corner



3. **After click in login it will prompt to enter user name and password as**



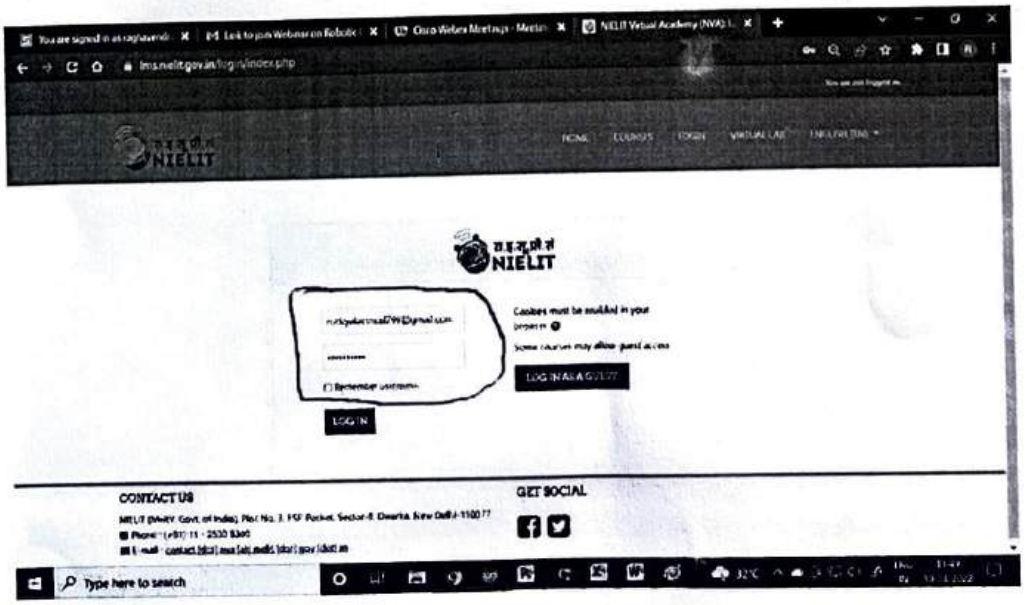
In username and password type your

Mail-ID (registered email ID) as username

Nielit@123 as password

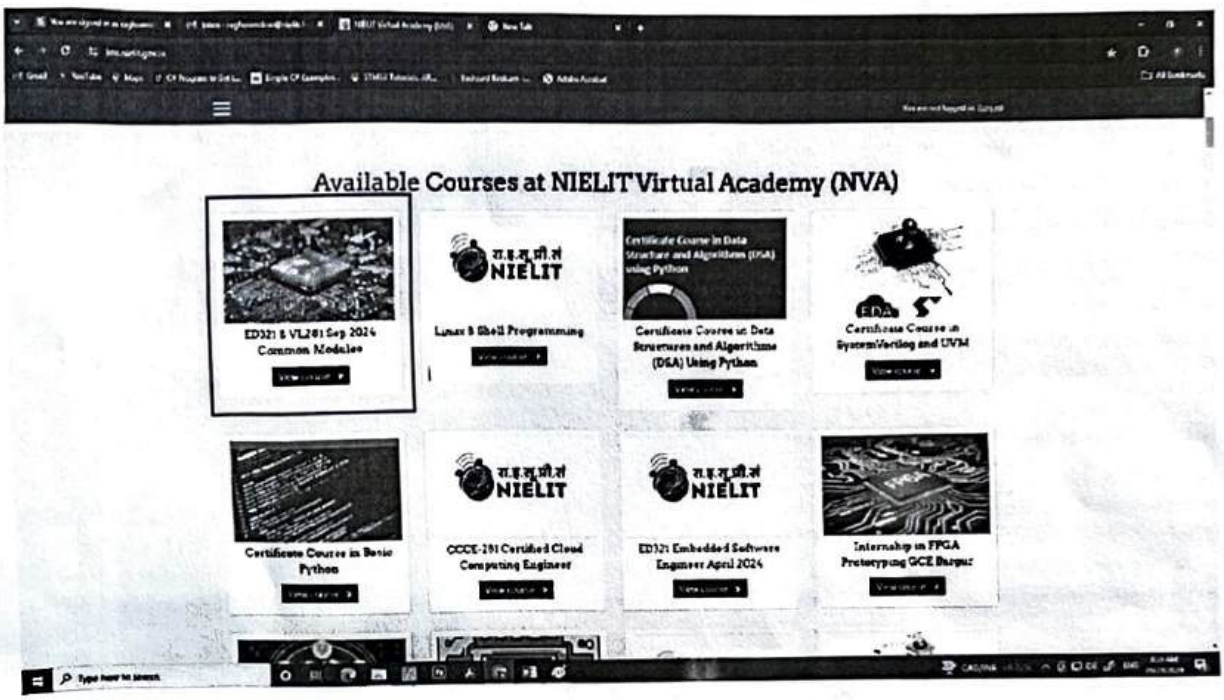
For Example username as rockyelectrical799@gmail.com

password as Nielit@123



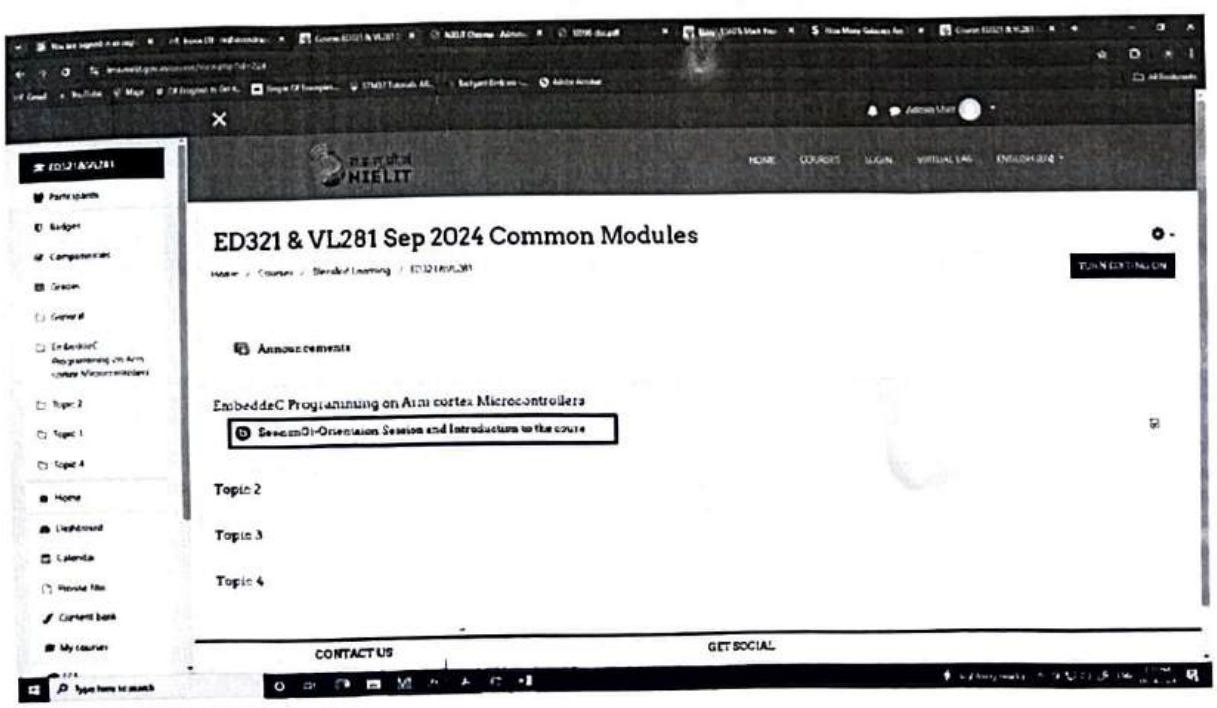
4)After successful login **navigate to "ED321 & VL281 Sep 2024 Common Modules)"**

And **click view course** in ED321 & VL281 Sep 2024 Common Modules



5.In that click on the "session-01 Orientation session"

Note:***"session will be added daily" ...***



****HAPPY LEARNING****

Respected Sir/Madam,

Greetings from CSC Academy.

I'm writing on behalf of CSC Academy, CSC e-Governance Services India Limited, under the Ministry of Electronics and Information Technology, Government of India.

As part of the Skill Development Program of the Government of India, in collaboration with CSC Academy & C-DAC & IEEE is organizing an Up-skilling program on IoT Technology, worth of Rs. 13680+GST at Free of Cost only for SC & ST students/ Faculties of B.Tech/M.Tech(All streams) /MCA/BCA/B.SC/M.SC/ Diploma/ITI for batches 2019/2020/2021/2022/2023/2024/2025.

Total Training will be 280 Hrs through virtual mode with a certification by the Ministry of Electronics and Information Technology, C-DAC, NEILIT- Govt. of India & IEEE. Seat allocation will be on first come first serve basis. You are hereby requested you to encourage your institute's eligible SC/ST students/faculties only for maximum benefit by registering through the given below link and last date is 5th October 2023.

Registration Link: https://forms.gle/BoB9woztjaLfFUrF9

I kindly request the opportunity to discuss this proposal further and explore the feasibility of MOU(if enrollments more than 450+ students/faculty members available to register) at your esteem organization. Please feel free to reach out to us at +91 9666500222 and rammohan@csc-academy.in to schedule a meeting at your convenience. Thank you for your time and consideration.

--

Thanks & Regards

Yamalapalli Rammohana Rao

MBA, PGDM (IIFT, Delhi)

Learning Consultant & Co-Ordinator
CSC Academy | CSC e-Governance Services India Limited
Ministry of Electronics and Information Technology,
Government of India

Mobile No: +91 9666500222

Work Based Learning Programme

The Work-Based Learning (WBL) programme (of Ministry of Electronics and IT , Govt. of India) is designed for fresh Graduate Engineers of Scheduled Caste (SC), Scheduled Tribe (ST), Women and Economically Weaker Section (EWS), to gain practical experience and exposure in Information Technology, Electronics and related areas to acquire technical skills in emerging technologies to up-skill their professional career and as per the requirement of industrial needs.
DAC Centers offers Work Based Learning Programme in the following domains:

1. Application Aware Firewall
2. IoT
3. Blockchain Technology
4. Quantum Computing
5. Cyber Security
6. Identity and Access Management for IoT
7. DNS Security
8. Health Applications
9. Accessibility Based Applications
10. High Performance Computing
11. AI & and ML
12. SCADA
13. Android Application Development
14. Hardware Security
15. Cloud Computing
16. System Software
17. Big Data Analytics
18. Web Application Development
19. Web Designing
20. System Administration

21. Language Computing

22. Health and Life Science based Applications.

The selected candidates will be mentored by the scientists and experts of CDAC Bengaluru.

Number of Vacancies- 16 Nos (SC: 4, ST: 4, Women: 4 & EWS: 4)

Number of vacancies may vary, depending on the requirements of the centre.

Eligibility

Only SC, ST, EWS and Women candidates are eligible. 2. Seventh or Eighth semester of B.Tech. OR Last 3-year pass outs of B.Tech. or M.C.A. or M.Sc. candidates are eligible. 3. Candidates of the seventh and eighth semester engineering graduates and last year candidates of M.Sc and M.C.A must submit their N.O.C issued by their respective institutes before the interview.

1. B.Tech. / B.E./ Equivalent,M.Sc,M.C.A

2. Specialization from Computer Science, Computer Science and Engineering, Electronics and Communication Engineering,Electronics Engineering,Information Technology,Computer Science,Information Technology,M.C.A

3. Available for duration of 6 Months

4. Have relevant skills and interests

Engineering Graduates currently in seventh and eighth semesters can also apply.

Benefits

The incumbents would gain rich work experience on live State Level, National Level and International Level initiatives.

Stipend - Rs 10,000 per month



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Calling all aspiring scientists & innovators! CDACINDIA Hyderabad has announced applications for the Ministry of Electronics and

www.linkedin.com

Internship Title:
Work-Based Learning Programme in Emerging Technology at C-DAC Hyderabad

Location:
Hyderabad, Telangana

Start Date:
Immediately

Duration:
6 Months

Stipend:
₹10,000 per month

Application Deadline:
09-June-2025

Domains Offered:

Embedded Systems

Internet of Things (IoT)

Artificial Intelligence (AI)

Cyber Security

Blockchain

Web Technologies

Eligibility:

Recent graduates (last 3 years) or final-year students of:

B.E./B.Tech. (CS, IT, Electronics, or allied branches)

M.Sc. (IT, CS)

MCA

Only SC, ST, EWS, and Women candidates are eligible.

Perks:

Hands-on experience on live state and national level projects.

Mentorship from C-DAC scientists and experts.

Number of Openings:
15 (SC: 4, ST: 4, EWS: 4, Women: 3)

For more information: https://www.linkedin.com/posts/cscvisakhapatnam_aicte-national-portal-national-internship-activity-7322655251864465409-UlYC?utm_source=share&utm_medium=member_desktop&rcm=ACoAAA6vhqUB3CFQq1JilXGQvCAXnlLw34qZDl8

