



INDEX

2.6.1 Teachers and students are aware of the stated Program and course outcomes of the Programmes offered by the institution. (15)

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Circulars and Minutes of Meetings for COs and PSOs Preparation

Advisory Meeting Minutes Department of Computer Science and Engineering

The Advisory Committee Meeting for CSE Department was conducted on 29TH Oct 2021 in the Online Platform due to Covid-19 .

Google Meet joining info : <https://meet.google.com/qzi-uobr-gbi>

AGENDA:

1. Welcoming the Advisory Committee members.
2. Discussions on Departmental activities carried out during the Covid-19
3. Review the Dept. Vision, Mission statements
4. Analysis of PSO Statements.
5. Discussion on the GAP in the syllabus
6. Discussion on PO attainment Recommendation Forwarded by Assessment Committee
7. Discussion needed the online classes and results after the online class examinations.
8. Analysis of B.Tech honours and B.Tech Minor Programs
9. Discussion on start-ups. How to convert students projects into Start ups.
10. Promotion steps for industry related projects and industry interaction
11. Suggestions on On line certified MOOC courses and certification courses.
12. Any other matters.

MEMBERS PRESENT:

1. Dr.Saju P John (HOD,CSE)
2. Dr.Sunny Joseph, Principal, JECC
3. Fr.Roy Joseph Vadakkan ,Asst,Manager(Academics), JECC
4. Prof.Dr.VineethPaleri, Department of Computer Science and Engineering, NIT, Calicut.
5. Mr. Primal Vincent, System Manager, CTS, Kochin
6. Dr.VineethR ,Asso. Professor , CSE Dept , JECC
7. Dr.Swapana B Sasi, Asso. Professor , CSE Dept , JECC
8. Dr. VivekLukose Asst.Professor ECE Dept,JECC





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9. Mr. Thomas George K , Asst. Professor CSE Dept , JECC

PROCEEDINGS:

1. Discussion were done about PSO statements and the attainment in the course mapping
2. Discussed about Online classes in the COVID-19 .
3. Discussion were done about B.Tech Honours and minor Program.
4. Consolidated list of GAP in the syllabus recommended by the assessment committee is reviewed and the Corrective measures in the form of delivery methods they specified is approved.
5. PO attainment target level for the 2018 batch has been revised as per the suggestion put forward by the assessment committee.
6. HOD Pointed out that more important has to be given to the semester results
7. Mr.Primal Vincent pointed out that lots of Online courses available in the various software in the industry, so train the students according to the industry needs.
8. HOD suggested to motivate the students to do the social relevant projects and encourage them to participate in the national and international events..
9. Principal pointed out that to advice students to do real time projects in the industry.

The meeting came to an end at 11.00 am.

ACTION TAKEN:

1. Informed the faculty about to do well in the online classes and improve the results.
2. Informed the faculty members to do the delivery methods to fill the gaps identified the subjects.
3. The department decided to interact with the industries by encouraging the students to undergo real time projects




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- | Name | Signature |
|---|-----------|
| 1. Dr.Saju P John (HOD,CSE) | |
| 2. Dr.Sunny Joseph, Principal, JECC | |
| 3. Fr.Roy Joseph Vadakkan ,Asst,Manager(Academics), JECC | |
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| 9. Mr. Thomas George K , Asst. Professor CSE Dept , JECC | |



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Assessment Committee Meeting Minutes Department of Electronics and Communication Engineering

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JYOTHI ENGINEERING COLLEGE, CHERUTHURUTHY DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NOTICE

A meeting of the members of assessment committee will be held as per the following schedule.

Date: 03/08/2021

Time: 3pm

Venue: HOD CABIN

All members are requested to attend the meeting without fail.

AGENDA

- DEPARTMENT ACTIVITIES / STAFF ACHIEVEMENTS
- GAP IN SYLLABUS-CONTENT BEYOND SYLLABUS
- CO-PO ANALYSIS
- INTERNSHIPS
- PROJECTS

Jorab
HOD, ECE



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Date: 08/02/21

Venue: HOD Cabin

Time: 3 pm

Agenda

1. Department activities / staff achievements
2. Gaps in Syllabus / Content beyond Syllabus - New scheme (2019)
3. Co-PO Analysis
4. Internships
5. Projects.

Members Present

1. Dr. Jose. P. Therattil, HOD, ECE
2. Dr. Sindhu. S, Associate Professor, ECE
3. Dr. Prajoon. P, Associate Professor, ECE
4. Mr. Ponmani Raja. M., Assistant Professor, ECE

Discussion of the meeting

1. HOD welcomed the members for the meeting.
2. In spite of Covid, department has organized various online technical programs such as webinar for students by our association KSA.
3. The webinar conducted by KSA on the topic 'Communications basics and Introduction to 5G' was a emerging topic to the blooming engineers.

JBW



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4. Students gave a remarkable feedback for the event. HOD congratulated the coordinators for conducting such events.
5. The new scheme (KTU-2019) for SS-S6 has been published by the university. Staff members should identify the gaps in syllabus and content beyond syllabus. Necessary actions should be taken to overcome the same. Stakeholders feedback should also be analysed to ensure Po- attainment.
6. All the Co-Po Analysis related with the present batches should be completed at the earliest.
7. 36 Students of 2018 admission batch has successfully completed 7 days internship training in Cyber Security and ethical hacking at TERC infotech pvt. Ltd. Tutors are entrusted to ensure that students are undergoing such trainings during semester breaks with proper permissions from college authorities. These could be mapped with the PO's of the department.
8. Many students are actively participating in various online quiz events. These should be encouraged.



Jose P Therattil

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9. Project titled 'BANKOMAT' done by the final year students of 2017-2021 batch under the guidance of Dr. Sindhu S won the best project award in the 5th National level IEEE project competition - 2021 organized by IEEE student branch GISS Institute of Engineering and technology for women with IEEE bangalore section and IEEE mysore section, Mysore. HOD congratulated the group team and Dr. Sindhu S.

10. Special Congratulation to Dr. Anoop V for being selected as Board of studies members of affiliated university.

11. Faculty feedback analysis of AY 20-21 was assessed. Corrective measures had to be taken for the next academic year.



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Geo Tag Photos for display of POs and PSOs

Mechatronics Engineering Department

Jyothi Engineering College
 Department Of
MECHATRONICS
VISION
 Create eminent and ethical leaders committed to profession and society in the field of Mechatronics through quality professional education to excel in industrial automation and innovation.

MISSION
 To impart orientation to meet the challenges of the modern industry and provide motivation for research.
 To provide quality education to create graduates with professional and social commitment.

Jyothi Engineering College
 Department Of
MECHATRONICS
PROGRAMME SPECIFIC OBJECTIVES (PSOs)

PSO 1. Professional skills: Associate the concepts related to electrical, electronics, Mechanical, Robotics, Control and Instrumentation to solve the challenges of modern industries.

PSO 2. Problem solving ability: Analyze and design systems with modern tools for the benefit of the society.

Jyothi Engineering College
 Department Of
MECHATRONICS
PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates shall possess fundamental and advanced knowledge in electronics, electrical and mechanical along with fundamental knowledge in mathematics, basic sciences and computer programming to analyze and solve the challenges related to automation.

Graduates shall have ability to design and create novel solutions with modern tool usage which lead to a lifelong learning or higher qualification, making them experts in their profession.

Graduates shall have the ability to work in a multidisciplinary environment with good professional and ethical commitment.

Jyothi Engineering College
PROGRAMME OUTCOMES (PO)

PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science, and engineering sciences.

PO 3: Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processors that meet the specified needs with appropriate consideration for the public health and safety, and ethical, cultural, societal, and environmental considerations.

PO 4: Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern Tool Usage: Create, set up, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments.

PO 12: Lifelong Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technology.

GPS Map Camera

Cheruthuruthi, Kerala, India
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Electrical and Electronics Engineering Department

Jyothi Engineering College
CHERUTHURUTHY, THRISSUR - 679531

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

VISION

TO BECOME A CENTRE OF EXCELLENCE IN ELECTRICAL AND ELECTRONICS ENGINEERING THROUGH HIGH QUALITY TECHNICAL EDUCATION WITH EMPHASIS ON HOLISTIC EXCELLENCE.

MISSION

TO INCULCATE ETHICAL PROFESSIONALISM THROUGH VALUE BASED QUALITY EDUCATION SO AS TO EQUIP THE STUDENTS WITH APPROPRIATE SKILLS FOR A MEANINGFUL CAREER AND HOLISTIC EXCELLENCE AND PROMOTE CREATIVE ENGINEERING IDEAS FOR THE BENEFIT OF THE SOCIETY.

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- GRADUATES SHALL HAVE A GOOD FOUNDATION IN THE FUNDAMENTAL AND PRACTICAL ASPECTS OF MATHEMATICS AND ENGINEERING SCIENCES SO AS TO BUILD SUCCESSFUL AND ENRICHING CAREERS IN THE FIELD OF ELECTRICAL ENGINEERING AND ALLIED AREAS.
- GRADUATES SHALL LEARN AND ADAPT THEMSELVES TO THE LATEST TECHNOLOGICAL DEVELOPMENTS IN THE FIELD OF ELECTRICAL & ELECTRONICS ENGINEERING WHICH WILL IN TURN MOTIVATE THEM TO EXCEL IN THEIR DOMAINS AND SHALL PURSUE HIGHER EDUCATION AND RESEARCH.
- GRADUATES SHALL HAVE PROFESSIONAL ETHICS AND GOOD COMMUNICATION ABILITY ALONG WITH ENTREPRENEURIAL SKILLS AND LEADERSHIP SKILLS, SO THAT THEY CAN SUCCEED IN MULTIDISCIPLINARY AND DIVERSE FIELDS.

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Department Of ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAMME SPECIFIC OUTCOMES (PSO)

On the Completion of Electrical & Electronics Engineering Programme, the Students will Possess:

PSO 1: Ability to have good foundation in theoretical and practical aspects of Electrical and Electronics Engineering.

PSO 2: Ability to model, analyze, design and realize physical systems, components or processes thereby adapt themselves to the latest research and developments in the field of electrical and electronics engineering.

PSO 3: Ability to communicate and work professionally as well as take up entrepreneurial endeavours in the field of Electrical Engineering and allied areas for the benefit of the society.

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PROGRAMME OUTCOMES (PO)

- Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- Environment and Sustainability:** Understand the impact of the Professional engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- Life-long Learning:** Recognize the need for, and have the motivation and ability to engage in independent and lifelong learning in the broadest context of technology.

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Mechanical Engineering Department

Jyothi Engineering College
CHERUTHURUTHY, THRISSUR - 679531
DEPARTMENT OF MECHANICAL ENGINEERING

VISION

TO PROVIDE QUALITY EDUCATION OF INTERNATIONAL STANDARDS IN MECHANICAL ENGINEERING AND PROMOTE PROFESSIONALISM WITH ETHICAL VALUES, TO WORK IN A TEAM AND TO FACE GLOBAL CHALLENGES.

MISSION

- TO PROVIDE AN EDUCATION THAT BUILDS A SOLID FOUNDATION IN MECHANICAL ENGINEERING.
- TO PREPARE GRADUATES FOR EMPLOYMENT, HIGHER EDUCATION AND ENABLE A LIFELONG GROWTH IN THEIR PROFESSION.
- TO DEVELOP GOOD COMMUNICATION, LEADERSHIP AND ENTREPRENEURSHIP SKILLS TO ENABLE GOOD KNOWLEDGE TRANSFER.
- TO INCULCATE WORLD CLASS RESEARCH PROGRAM IN MECHANICAL ENGINEERING.

Jyothi Engineering College
CHERUTHURUTHY, THRISSUR - 679531
DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- I. GRADUATE ENGINEERS SHALL HAVE STRONG PRACTICAL AND THEORETICAL EXPOSURE IN THE FIELD OF MECHANICAL ENGINEERING AND WILL CONTRIBUTE TO THE SOCIETY THROUGH INNOVATION AND ENTERPRISE.
- II. GRADUATE ENGINEERS SHALL HAVE GLOBAL OUTLOOK AND TECHNOLOGICAL LEADERSHIP, GOOD EMPLOYMENTS OR OPT FOR HIGHER STUDIES/RESEARCH AND HAVE CREATIVE THINKING TO INITIATE AND DEVELOP INNOVATIVE IDEAS.
- III. GRADUATE ENGINEERS SHALL HAVE EXCELLENT TEAMWORK, COMMUNICATION AND INTERPERSONAL SKILLS, HAVING HIGH MORALS AND ETHICAL VALUES.

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Department Of MECHANICAL ENGINEERING

PROGRAMME SPECIFIC OUTCOMES (PSO)

On the completion of Mechanical Engineering Programme, the Students will Possess:

PSO 1: Graduates would be able to apply their knowledge in the domains of manufacturing, fluid and thermal sciences to solve engineering problems.

PSO 2: Graduates would be able to apply the principles of design and analysis on product design with the help of modern cad/cam tools.

PSO 3: Graduates would be able to apply the basic principles of engineering and management practices in various practical fields to engage themselves in research/industry/society.

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PROGRAMME OUTCOMES (PO)

- PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3: Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4: Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO 5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- PO 6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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- PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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- PO 11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12: Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of continual technological and professional development.

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COURSE INFORMATION SHEET

PROGRAMME: Computer Science and Engineering(B)	DEGREE: B.TECH
COURSE: Compiler Design	SEMESTER: S6 CREDITS: 5
COURSE CODE: CST302 REGULATION: KTU 2019	COURSE TYPE: Theory
COURSE AREA/DOMAIN: COMPILER DESIGN	CONTACT HOURS: 45
CORRESPONDING LAB COURSE CODE (IF ANY): -	LAB COURSE NAME: -

SYLLABUS:

UNIT	DETAILS	HOURS
1	Analysis of the source program . Analysis and synthesis phases, Phases of a compiler. Compiler writing tools. Bootstrapping. Lexical Analysis . Role of Lexical Analyser, Input Buffering, Specification of Tokens, Recognition of Tokens.	8
2	Role of the Syntax Analyser Syntax error handling. Review of Context Free Grammars . Derivation and Parse Trees, Eliminating Ambiguity. Basic parsing approaches . Eliminating left recursion, left factoring. Top.Down Parsing . Recursive Descent parsing, Predictive Parsing, LL(1) Grammars.	10
3	Handle Pruning. Shift Reduce parsing. Operator precedence parsing (Concept only). LR parsing . Constructing SLR, LALR and canonical LR parsing tables.	9
4	Syntax directed translation . Syntax directed definitions, S.attributed definitions, L.attributed definitions, Bottom.up evaluation of S.attributed definitions. Run.Time Environments . Source Language issues, Storage organization, Storage.allocation strategies. Intermediate Code Generation . Intermediate languages, Graphical representations, Three.Address code, Quadruples, Triples.	9
5	Code Optimization . Principal sources of optimization, Machine dependent and machine independent optimizations, Local and global optimizations. Code generation . Issues in the design of a code generator, Target Language, A simple code generator.	9

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TEXT / REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
1	Aho A.V., Ravi Sethi and D. Ullman. Compilers Principles Techniques and Tools, Addison Wesley, 2006.
1	D.M.Dhamdhere, System Programming and Operating Systems, Tata McGraw Hill & Company, 1996.
2	Kenneth C. Loudon, Compiler Construction Principles and Practice, Cengage Learning Indian Edition, 2006.
3	Tremblay and Sorenson, The Theory and Practice of Compiler Writing, Tata McGraw Hill & Company, 1984.

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	SEM
1	Sound knowledge in Data Structures, Formal Languages & Automata Theory.	S3 AND S5

COURSE OBJECTIVES:

SLNo	DESCRIPTION
1	Introduce the concept Phases of compilation, Lexical analysis, Token Recognition, Syntax analysis, Bottom Up and Top Down Parsers, Syntax directed translation schemes etc.
2	To study about Intermediate Code Generation, Triples and Quadruples
3	To study about Code Optimization, Code Generation.

COURSE OUTCOMES:

SLNo	DESCRIPTION	PO & PSO MAPPING
C311.1	Explain the phases in compilation process(lexical analysis, syntax analysis, semantic analysis, intermediate code generation, code optimization and code generation) and model a lexical analyzer (Cognitive Knowledge Level: Apply)	PO1,PO2,PO3,PO4,PO5, PO12,PSO1,PSO2,PSO3,PSO4
C311.2	Model language syntax using Context Free Grammar and develop parse tree	PO1,PO2,PO3,PO4,PO5,



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	representation using leftmost and rightmost derivations (Cognitive Knowledge Level: Apply)	PO12,PSO1,PSO2,PSO3,PSO4
C311.3	Compare different types of parsers(Bottom-up and Top-down) and construct parser for a given grammar (Cognitive Knowledge Level: Apply)	PO1,PO2,PO3,PO4,PO5,PO12,PSO1,PSO2,PSO3,PSO4
C311.4	Build Syntax Directed Translation for a context free grammar, compare various storage allocation strategies and classify intermediate representations (Cognitive Knowledge Level: Apply)	PO1,PO2,PO3,PO4,PO12,PSO1,PSO2,PSO3,PSO4
C311.5	Illustrate code optimization and code generation techniques in compilation (Cognitive Knowledge Level: Apply)	PO1,PO2,PO3,PO4,PO12,PSO1,PSO2,PSO3,PSO4

COURSE OUTCOMES VS PO MAPPING:

SLNo	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	3	3	3	3	2	-	-	-	-	-	-	2
C311.2	2	2	2	2	2	-	-	-	-	-	-	2
C311.3	2	3	3	2	3	-	-	-	-	-	-	2
C311.4	3	2	3	2	-	-	-	-	-	-	-	3
C311.5	3	3	3	1	-	-	-	-	-	-	-	3
Avg	2.6	2.6	2.8	2	2.33	-	-	-	-	-	-	3
												2.6

COURSE OUTCOMES VS PSO MAPPING:

SLNo	PSO1	PSO2	PSO3	PSO4
C311.1	2	2	1	3
C311.2	3	3	2	3
C311.3	2	3	2	3
C311.4	2	3	2	3
C311.5	3	2	2	3
Avg	2.4	2.6	1.8	3



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A CENTRE OF EXCELLENCE IN SCIENCE & TECHNOLOGY BY THE CATHOLIC ARCHDIOCESE OF TRICHUR

JYOTHI HILLS, VETTIKATTIRI P.O, CHERUTHURUTHY, THRISSUR. PIN-679531 PH : +91- 4884-259000, 274423 FAX : 04884-274777



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JUSTIFICATION FOR MAPPING:

SLNo	PO & PSO MAPPED	JUSTIFICATION
C311.1	PO1, PO2, PO3, PO4, PO5, PO12, , PSO1, PSO2, PSO3, PSO4,	Explain the concepts and different phases of compilation with compile time error handling.
C311.2	PO1, PO2, PO3, PO4, PO5, PO12, , PSO1, PSO2, PSO3, PSO4,	Represent language tokens using regular expressions, context free grammar and finite automata and design lexical analyzer for a language.
C311.3	PO1, PO2, PO3, PO4, PO5, PO12, , PSO1, PSO2, PSO3, PSO4,	Compare top down with bottom up parsers, and develop appropriate parser to produce parse tree representation of the input.
C311.4	PO1, PO2, PO3, PO4, PO12, , PSO1, PSO2, PSO3, PSO4,	Generate intermediate code for statements in high level language.
C311.5	PO1, PO2, PO3, PO4, PO12, , PSO1, PSO2, PSO3, PSO4,	Design syntax directed translation schemes for a given context free grammar.

GAPS IN THE SYLLABUS - TO MEET INDUSTRY / PROFESSION REQUIREMENTS:

SLNo	DESCRIPTION	PROPOSED ACTIONS
1	Single Pass Compiler, and Two Pass Compiler or Multi Pass Compiler	LECTURING

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

SLNo	DESCRIPTION
	NIL

WEB SOURCE REFERENCES:

SLNo	DESCRIPTION
	Principles of Compiler Design, IISc Bangalore : https://nptel.ac.in/courses/106108113
	Compiler Design, IIT Kanpur: https://nptel.ac.in/courses/106104072



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DELIVERY / INSTRUCTIONAL METHODOLOGIES:

<input checked="" type="checkbox"/> CHALK & TALK	<input checked="" type="checkbox"/> STUD. ASSIGNMENT	<input checked="" type="checkbox"/> WEB RESOURCES	<input checked="" type="checkbox"/> NPTEL/OTHERS
<input checked="" type="checkbox"/> LCD/SMART BOARDS	<input checked="" type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> WEBINIARS

ASSESSMENT METHODOLOGIES-DIRECT:

<input checked="" type="checkbox"/> ASSIGNMENTS	<input checked="" type="checkbox"/> STUD. SEMINARS	<input checked="" type="checkbox"/> TESTS/MODEL EXAMS	<input checked="" type="checkbox"/> UNIV. EXAMINATION
<input type="checkbox"/> STUD. LAB PRACTICES	<input type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> Others		

ASSESSMENT METHODOLOGIES-INDIRECT:

<input checked="" type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK, ONCE)	<input checked="" type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input checked="" type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	<input checked="" type="checkbox"/> Others

INNOVATIONS IN TEACHING/LEARNING/EVALUATION PROCESSES:

Sl.No	DESCRIPTION
1	https://silencio.github.io/

Proposed by:

SOBHA XAVIER P

Assistant Professor

Computer Science and Engineering

Approved by:

Prof. Dr. Saju P John

Head of the Department

Computer Science and Engineering




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PROJECT DIARY WITH POs

VARIABLE INTAKE RUNNER

A Project Report


Submitted by

ABHISHEK SIMON MATHEW	JEC18MC002
AKHIL JOESPH	JEC18MC004
ASHIQUE P S	JEC18MC010
NEVINDAS. P	JEC18MC029

to

APJ Abdul Kalam Technological University
in partial fulfillment of the requirements for the award of the Degree of
Bachelor of Technology (B.Tech)
in
MECHATRONICS ENGINEERING

Under the guidance of
MS. SOUMYA C AND DR. CIJIL B JOHN



CREATING TECHNOLOGY
LEADERS OF TOMORROW
ESTD 2002

DEPARTMENT OF MECHATRONICS ENGINEERING

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June 2022



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DEPARTMENT OF MECHATRONICS ENGINEERING



CREATING TECHNOLOGY
LEADERS OF TOMORROW
ESTD 2002

CERTIFICATE

This is to certify that the report entitled " VARIABLE INTAKE RUNNER " submitted by ABHISHEK SIMON MATHEW(JEC18MC002) , AKHIL JOESPH(JEC18MC004) , ASHIQUE P S(JEC18MC010) , NEVINDAS. P(JEC18MC029) to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree in Bachelor of Technology in **MECHATRONICS ENGINEERING** is a bonafide record of the project work carried out by them under my/our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Soumya C
Dr. Cijil B John
Ms. Soumya C and Dr. Cijil B John

Assistant Professor
Internal Supervisor



Vivek
Dr. Vivek Lukose

Professor
Head of the Department

Dr. Suraj Damparath
Dr. SURAJ DAMPARATH
Internal Examiner



Dr. Jose P Therattil
Dr. JOSE P THERATTIL
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ACKNOWLEDGEMENT

We take this opportunity to thank everyone who helped us profusely, for the successful completion of our project work. With prayers, we thank **God Almighty** for his grace and blessings, for without his unseen guidance, this project would have remained only in our dreams.

We thank the **Management** of Jyothi Engineering College and our Principal, **Dr. Sunny Joseph Kalayathankal** for providing all the facilities to carry out this project work. We are grateful to the Head of the Department **Dr. Vivek Lukose** for his valuable suggestions and encouragement to carry out this project work.

We would like to express our whole hearted gratitude to the project guide **Ms. Soumya C** and **Dr. Cijil B John** for his encouragement, support and guidance in the right direction during the entire project work.

We thank our Project Coordinators **Dr. Suraj D** & **Ms. NYNI K A** for their constant encouragement during the entire project work. We extend our gratefulness to all teaching and non teaching staff members who directly or indirectly involved in the successful completion of this project work.

Finally, we take this opportunity to express our gratitude to the parents for their love, care and support and also to our friends who have been constant sources of support and inspiration for completing this project work.




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VISION OF THE INSTITUTE

Creating eminent and ethical leaders through quality professional education with emphasis on holistic excellence.

MISSION OF THE INSTITUTE

- To emerge as an institution par excellence of global standards by imparting quality Engineering and other professional programmes with state-of-the-art facilities.
- To equip the students with appropriate skills for a meaningful career in the global scenario.
- To inculcate ethical values among students and ignite their passion for holistic excellence through social initiatives.
- To participate in the development of society through technology incubation, entrepreneurship and industry interaction.

VISION OF THE DEPARTMENT

Create eminent and ethical leaders committed to profession and society in the field of Mechatronics engineering through quality professional education to excel in industrial automation and innovation.

MISSION OF THE DEPARTMENT

To impart orientation to meet the challenges of the modern industry and provide motivation for research.

To provide quality education to create graduates with professional and social commitment.



PROGRAMME EDUCATIONAL OBJECTIVES

- PEO 1:** Graduates shall possess fundamental and advanced knowledge in electronics, electrical and mechanical along with fundamental knowledge in mathematics, basic sciences and computer programming to analyze and solve the challenges related to automation
- PEO 2:** Graduates shall have ability to design and create novel solutions with modern tool usage which lead to a lifelong learning or higher qualification, making them experts in their profession.
- PEO 3:** Graduates shall have the ability to work in multidisciplinary environment with good professional and ethical commitment.



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PROGRAMME SPECIFIC OUTCOMES

Graduate possess -

PSO 1: Professional skills: Associate the concepts related to electrical, electronics, Mechanical, Robotics, Control and Instrumentation to solve the challenges of modern industries.

PSO 2: Problem solving ability: Analyze and design systems with modern tools for the benefit of the society.



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PROGRAMME OUTCOMES

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



COURSE OUTCOMES

COs	Description
C413.1	Students will have the ability to effectively gather and interpret information from literature survey and use this knowledge to identify, formulate, analyze and solve complex problems and to evaluate and interpret various solutions.
C413.2	Students will gain the ability to communicate effectively with written, oral, and visual means in a technical setting.
C413.3	Students will have the ability to use modern design and analysis tools to analyse and evaluate complex problems.
C413.4	Students will be able to carry out calculations involved in design, consider and evaluate alternate assumptions, approaches, and procedures. Ability to fabricate system components related to engineering problems giving consideration to environment and society.
C413.5	Students will have the ability to serve as effective team member to plan and complete the project/task within a specified budget and time.

CO MAPPING TO POs

COs	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C413.1	3	3	3	3	1	-	-	-	-	-	-	3
C413.2	2	-	-	-	-	-	-	2	2	3	-	-
C413.3	-	2	2	2	3	-	-	-	-	2	-	1
C413.4	-	2	3	3	-	3	3	-	-	-	-	-
C413.5	-	-	-	-	-	-	-	-	3	-	3	-
Average	2.5	2.33	2.67	2.67	2	3	3	2	2.5	2.5	3	2



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CO MAPPING TO PSOs

COs	PSOs		
	PSO1	PSO2	PSO3
C413.1	3	3	3
C413.2	3	3	3
C413.3	3	3	3
C413.4	3	3	3
C413.5	3	3	3
Average	3	3	3



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COURSE OUTCOMES IN IA QUESTION PAPER

CEU4X130722F

Roll No:.....

JYOTHI ENGINEERING COLLEGE, CHERUTHURUTHY
 FOURTH SEMESTER B.TECH SECOND SESSIONAL EXAMINATION JULY, 2022

Department of Civil Engineering
CET 204 Geotechnical Engineering I
(KTU 2019 Scheme)

Time: 90 minutes

Max Marks:50

PART A
(Answer All Questions)

Qn. No	Questions	Marks	CO	BTL
1	a)Point out any three differences between the compaction and consolidation 3 processes b)An embankment is constructed at dry density-OMC condition (20kN/m ³ and 9%). Borrow area soil has: G=2.5. Determine degree of saturation and percentage air voids of the compacted soil. Also determine the theoretical maximum dry density to which the sample can be compacted. Assume density of water:10kN/m ³ .	3 7	3	2
2	a) A clay has a liquid limit of 52% and shrinkage limit of 17%.If a specimen of this soil shrinks from a volume of 10000mm ³ at liquid limit to 6010 mm ³ at shrinkage limit determine the specific gravity of soil grains. b) Draw I.S. Plasticity chart and mark the details. What is its practical application	7 3	2	3
3	A soil sample of height 6 cm and area of cross section 100 cm ² was subjected to constant head permeability test with head of 36 cm and 90 cc of water passes through the specimen during a test interval of 5 min. Compute the coefficient of permeability of the soil sample. If the same sample is subjected to falling head permeability test and found that head drops from 60 cm to 20 cm in 4 min. Determine the cross sectional area of the stand pipe	10	2	2

PART B
(Answer Any One)

Qn.	Questions	Marks	CO	BTL



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No				
4	a) Explain the factors affecting permeability of soil b) A stratified soil deposit consists of four layers of equal thickness. The coefficient permeability of second, third, fourth layers are respectively 1/3, 1/2, 2 times the coefficient of permeability of top layer. Compute the average permeability's of the deposit, parallel and perpendicular to the direction of stratification in terms of permeability of top layer.	4 6	2	2
5	a) Define compression index, coefficient of volume change, coefficient of compressibility. b) An undisturbed soil sample of clay brought from the field was noted to have a volume of 18.0 cc and weight of 30.8 g. On oven drying, the weight of the sample was reduced to 20.59. The volume of dried sample as obtained by displacement of mercury was 12.5 cc. Calculate shrinkage limit and the specific gravity of solids. What is the shrinkage ratio?	3 7	2	3

PART C
(Answer Any One)

Qn. No	Questions	Marks	CO	BTL														
6	<p>The following are results of a standards proctor compaction test performed on a sample of soil</p> <table border="1" style="margin-left: 20px;"> <tr> <td>Water content%</td> <td>6</td> <td>8</td> <td>10</td> <td>12</td> <td>14</td> <td>16</td> </tr> <tr> <td>Bulk density(kN/m³)</td> <td>17.7</td> <td>19.8</td> <td>21</td> <td>21.3</td> <td>20.9</td> <td>20.2</td> </tr> </table> <p>Plot the water content – dry density curve and obtain Moisture content and Maximum dry density. Also plot the zero air voids curve. Take G = 2.65</p>	Water content%	6	8	10	12	14	16	Bulk density(kN/m ³)	17.7	19.8	21	21.3	20.9	20.2	10	3	2
Water content%	6	8	10	12	14	16												
Bulk density(kN/m ³)	17.7	19.8	21	21.3	20.9	20.2												
7	<p>At a building site soil consist of dense sand upto a depth of 3m, clay from 3m to 6m depth and stiff impervious rock below 6m depth. The water table is at 1 m below the present ground level. Density of sand is 19.5 kN/m³ above water table and 20 kN/m³ below it. The natural water content of clay was observed as 60%, and specific gravity is 2.65. Its liquid limit was 75%. Estimate the probable settlement if the ground level is raised by a 2 m thick fill of dense sand of density 19 kN/m³</p>	10	3	2														

* All The Best*





PROGRAM OUTCOMES, PROGRAM SPECIFIC OUTCOMES, PROGRAM EDUCATIONAL OBJECTIVES

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Vision of the Department

Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.

Mission of the Department

- To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.
- To prepare students for careers in Industry, Academia and the Government.
- To instill Entrepreneurial Orientation and research motivation among the students of the department.
- To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.

Programme Educational Objectives (PEOs)

1. The graduates shall have sound knowledge of Mathematics, Science, Engineering and Management to be able to offer practical software and hardware solutions for the problems of industry and society at large.
2. The graduates shall be able to establish themselves as practicing professionals, researchers or Entrepreneurs in computer science or allied areas and shall also be able to pursue higher education in reputed institutes.
3. The graduates shall be able to communicate effectively and work in multidisciplinary teams with team spirit demonstrating value driven and ethical leadership.





Programme Outcomes

Engineering Graduates will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.





8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes (PSOs)

On the completion of Computer Science & Engineering program, the students will possess:

1. An ability to apply knowledge of data structures and algorithms appropriate to computational problems.
2. An ability to apply knowledge of operating systems, programming languages, data management, or networking principles to computational assignments.
3. An ability to apply design, development, maintenance or evaluation of software engineering principles in the construction of computer and software systems of varying complexity and quality.





- An ability to understand concepts involved in modeling and design of computer science applications in a way that demonstrates comprehension of the fundamentals and trade-offs involved in design choices.

COs of First year (Common to ALL Branches)

Course Code	Course Name	Course Outcome - On completion of this course the students will be able to	
C101	CALCULUS	C101.1	Acquire the knowledge of analysis compounds using various spectroscopic methods.
		C101.2	To acquire the knowledge about energy efficient batteries
		C101.3	Apply the knowledge in the analysis and separation of complex organic compounds, using modern instrumentation like TGA,DTA,HPLC,GC
		C101.4	To design and synthesis nano materials and polymers which are essential to human life.
		C101.5	Knowledge of methods to determine the calorific value of fuels and detailed knowledge about petroleum products and its application
		C101.6	Develop innovative methods to produce soft water for industrial use and different methods to purify waste water
C102	ENGINEERING PHYSICS	C102.1	Students will be able to familiarise with the basic concepts of oscillations and waves.
		C102.2	Students will be able to know the various phenomena of interference and diffraction of light.
		C102.3	Students will be able to study the wonderful aspects of polarization of light and superconductivity
		C102.4	Students will be able to develop the basic concepts of Quantum Mechanics and statistical



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			mechanics
		C102.5	Students will be able to familiarise with the applications of acoustics and ultrasonics.
		C102.6	Students will be able to understand the concepts of lasers , optical fibres and solid state devices.
C103	ENGINEERING GRAPHICS	C103.1	Ability to know the fundamentals of Engineering Drawing Standards.
		C103.2	Able to prepare the orthographic projections of points and straight lines placed in various quadrants.
		C103.3	Demonstrate the ability to draw orthographic projections of various solids, sectioned views of solids, developments of solids, perspective projection and intersection of solids.
		C103.4	Ability to prepare neat drawings and proper dimensioning.
		C103.5	Able to understand the features of CAD software and preparation of Isometric and free hand sketching.
C104	INTRODUCTION TO COMPUTING & PROBLEM SOLVING	C104.1	Ability to identify different components of a computer
		C104.2	Ability to design algorithmic solution to problems.
		C104.3	Ability to convert algorithms to Python programs.
		C104.4	Ability to solve problems using object-oriented concept.
		C104.5	Ability to design modular Python programs using functions.
		C104.6	Ability to develop recursive solutions
C105	INTRODUCTION TO SUSTAINABLE ENGINEERING	C105.1	Student will be able to understand the different types of environmental pollution problems and their sustainable solutions



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		C105.2	Student will be able to work in the area of sustainability for research and education
		C105.3	Student will have a broader perspective in thinking for sustainable practices by utilizing the engineering knowledge and principles
C106	BASICS OF ELECTRONICS ENGG	C106.1	Acquire the knowledge of analysis compounds using various spectroscopic methods.
		C106.2	To acquire the knowledge about energy efficient batteries
		C106.3	Apply the knowledge in the analysis and separation of complex organic compounds, using modern instrumentation like TGA,DTA,HPLC,GC
		C106.4	To design and synthesis nano materials and polymers which are essential to human life.
		C106.5	Knowledge of methods to determine the calorific value of fuels and detailed knowledge about petroleum products and its application
		C106.6	Develop innovative methods to produce soft water for industrial use and different methods to purify waste water
C107	ENGINEERING PHYSICS LAB	C107.1	Students will be able to develop skills to impart practical knowledge in real time solution about some of the phenomena they have studied in the Engineering Physics course.
		C107.2	Students will be able to conduct, analyze and interpret experiments in Engineering Physics.
		C107.3	Students will be able to understand measurement technology and real time applications in engineering studies.
		C107.4	Students will be able to communicate verbally and graphically.
		C107.5	Students will be able to write the results of calculations in a clear and concise manner.



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		C107.6	Students will be able to understand principle, concept, working and application of new technology.
C108	COMPUTER PROGRAMMING LAB	C108.1	To familiarize the students with basic hardware & Software tools
		C108.2	To implement algorithms studied in the course ICPS
		C108.3	To learn the implementation of control structures , Iterations, and recursive functions , Lists & Tuples & Dictinories
		C108.4	To implement operation on files
		C108.5	To implement a small micro project using python
C109	Basic Engineering Workshop(EC)	C109.1	Students will gain knowledge of standard voltages and their tolerances, safety aspects of electrical systems and importance of protective measures in wiring systems.
		C109.2	Students will be familiarized with the types of wires, cables and other accessories used in wiring.
		C109.3	Students should be able to wire simple lighting circuits for domestic buildings.
		C109.4	Students should be able to distinguish between light and power circuits.
C110	DIFFERENTIAL EQUATIONS	C110.1	Students can form and solve homogenous differential equations
		C110.2	Students can apply solution of homogeneous differential equations to form general solution
		C110.3	Students can analyze periodic functions in terms of their frequency components.
		C110.4	Students can identify and solve various partial differential equations
		C110.5	Students can form Wave equation and physically interpret the solutions.



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		C110.6	Students can conclude quantitative statements about the physical meaning of the solution of heat equations related to engineering process.
C111	ENGINEERING CHEMISTRY	C111.1	Acquire the knowledge of analysis compounds using various spectroscopic methods
		C111.2	To acquire the knowledge about energy efficient batteries.
		C111.3	Apply the knowledge in the analysis and separation of complex organic compounds, using modern instrumentation like TGA,DTA,HPLC,GC
		C111.4	To design and synthesis nano materials and polymers which are essential to human life.
		C111.5	Knowledge of methods to determine the calorific value of fuels and detailed knowledge about petroleum products and its application
		C111.6	Develop innovative methods to produce soft water for industrial use and different methods to purify waste water.
C112	BE100: MECHANICS	C112.1	Students will be able to apply and demonstrate the concepts of mechanics to practical engineering problems.
		C112.2	Students will be able to determine the properties of planes and solids.
		C112.3	Students will be able to apply fundamental concepts of dynamics to practical problems
		C112.2	Students will able to understand different types of Vibration and solve problems
		C112.5	Ability of the students to solve mechanics problems associated with friction forces
		C112.6	Students will be able to find out centre of mass and Momemnt of inertia of different geometry.
C113	BE102: DESIGN ENGINEERING	C113.1	Able to appreciate the different elements involved in good designs and to apply them in practice when called for



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		C113.2	Aware of the product oriented and user oriented aspects that make the design a success.
		C113.3	Will be capable to think of innovative designs incorporating different segments of knowledge gained in the course
		C113.4	Students will have a broader perspective of design covering function, cost, environmental sensitivity, safety and other factors other than engineering analysis.
C114	CS100 : COMPUTER PROGRAMMING	C114.1	Students will be able to identify appropriate C language constructs to solve problems.
		C114.2	Students will be able to analyze problems, identify subtasks and implement them as functions/procedures.
		C114.3	Students will be able to implement algorithms using efficient C-programming techniques
		C114.4	Students will be able to explain the concept of file system for handling data storage and apply it for solving problems
		C114.5	Students will be able to apply sorting & searching techniques to solve application programs.
C115	EC100 : BASICS OF ELECTRONICS ENGINEERING	C115.1	Student can identify the active and passive electronic components, Will be able to know various types of components Understand its specifications.
		C115.2	Student can familiarize the working of diodes, transistors, and integrated circuits.
		C115.3	Student can understand the working of rectifiers, amplifiers and oscillators.
		C115.4	Student can have a basic knowledge about measuring instruments
		C115.5	Student can get a fundamental idea of basic communication systems.
		C115.6	Student can get a basic idea of Entertainment systems.



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C116	CY110:ENGINEERING CHEMISTRY LAB	C116.1	An ability to gain knowledge about different types of qualitative and quantitative estimation
		C116.2	An ability to understand, explain and use instrumental techniques for chemical analysis
		C116.3	Students will be able to apply and demonstrate the theoretical concepts of engineering chemistry and to develop scientific attitude
		C116.4	Students will be able to analyze the quality of water by determining its chemical parameters
		C116.5	Students will be able to measure chemical parameters to solve problems both individually as well as in team by analyzing and interpreting data from arrange of sources.
		C116.6	To acquire the skill for the preparation of engineering materials like polymers.
C117	CS120 : COMPUTER PROGRAMMING LAB	C117.1	Students will be able to analyse a problem, find appropriate programming language construct should be used and implement C program for the problem.
		C117.2	Develop C programs involving functions, recursion, pointers, and structures.
		C117.3	Design applications using sequential and random access file processing.
		C117.4	Develop C programs for simple applications making use of basic constructs, arrays and strings
		C117.5	Write programs that perform operations using derived data types
C118	EC110: BASIC ENGINEERING WORKSHOP - EC	C118.1	Graduates will be able to identify electronics components like Resistors, Capacitors, Diodes, Transistors and UJT
		C118.2	Graduates will be able to use measuring instruments like the multimeter , Function generator, Power supply & DSO.
		C118.3	Graduates will be able to test all Active and Passive Components



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		C118.4	Graduates will be able to assemble circuits on a breadboard.
		C118.5	Graduates will be able to Understand PCB fabrication process, assembling, dismantling systems.
		C118.6	Graduates understand soldering and desoldering skills, useful in electronic circuit interconnections

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C201	MA201 : LINEAR ALGEBRA & COMPLEX ANALYSIS	C201.1	Students will be able to achieve algebraic methods to find the solution for engineering computational problems ,including vector spaces and eigen value problems
		C201.2	Students will be able to apply the properties of matrix in various situations.
		C201.3	Students will be able to analyse the properties of points lying in the n-dimensional plane.
		C201.4	Students will be able to sketch out complex functions and evaluate the definite Integrals
		C201.5	Students will be able to represent the complex functions and its image graphically
		C201.6	Students will be able to solve complex integrals in different ways
C202	CE 201: Mechanics of Solids	C202.1	Able to calculate internal forces in members subject to axial loads, shear, torsion and bending and plot their distributions



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		C202.2	Able to calculate normal, shear, torsion and bending stresses and strains
		C202.3	Able to transform the state of stress at a point and can determine the principal and maximum shear stresses using equations as well as the Mohr's circle
		C202.4	Able to understand the column buckling and the critical load and stress
		C202.5	Able to evaluate beams by finding their deflection by various methods.
		C202.6	Able to assess the mechanical properties of elastic materials
C203	CE 203: Fluid Mechanics – I	C203.1	Able to get a basic knowledge of fluids in static, kinematic and dynamic equilibrium, so as to solve real life problems in fluid mechanics
		C203.2	Able to get a basic knowledge of fluids in kinematic and dynamic equilibrium, so as to solve real life problems in fluid mechanics
		C203.3	State Euler's and Bernoulli's equations and the conservation of mass to determine velocities, pressures, and accelerations for incompressible and inviscid fluids.
		C203.4	Design simple pipe systems to deliver fluids under specified conditions.
		C203.5	Describe the concepts of viscous boundary layers and the momentum integral and use them to determine integral thicknesses.
C204	CE 205: Engineering Geology	C204.1	Able to awareness about earth resources and processes to be considered in various facets of civil engineering
		C204.2	Able to awareness about hydrogeology, problems created in construction and subsurface control methods
		C204.3	Able to awareness about earthquakes, various minerals and their properties
		C204.4	Able to awareness about rocks, formation of rocks, and their



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			physical properties
		C204.5	Able to awareness about altitude of geological structures,natural hazards, geological factors considered in the construction of various structural members
C205	CE 207: Surveying	C205.1	explain the concepts of principles of surveying and methods of ranging
		C205.2	understand fundamental idea about levelling and its application contour maps its relevance etc
		C205.3	understand fundamental concepts to find area and volume of irregular plot and application of theodolite
		C205.4	understand fundamental concepts theory of triangulation satellite station its application etc
		C205.5	understand fundamental concepts of theory of errors and its practical application
		C205.6	understand fundamental concepts and get aware about EDM and Total station
C206	HS 210: Life Skills	C206.1	Communicate effectively.
		C206.2	Make effective presentations
		C206.3	Write different types of reports
		C206.4	Face interview & group discussion
		C206.5	Critically think on a particular problem
		C206.6	Solve problems.
C207	CE 231: Civil Engineering Drafting Lab	C207.1	Students will be able to understand the fundamentals of Civil Engineering drawing
		C207.2	Students will be able to get the knowledge to interpret base level building plans.
		C207.3	Students will be able to understand the principles of planning
		C207.4	Students will be able to learn drafting of buildings
		C207.5	Students will be able to impart knowledge on drafting software such as AutoCAD.
C208	CE 233: Surveying Lab	C208.1	To equip the students to undertake survey using tacheometer
		C208.2	To equip the students to undertake survey using total station



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		C208.3	To impart awareness on distomat and handheld GPS
		C208.4	To provide an awareness of conventional methods in surveying
		C208.5	To improve their ability to work as team
		C208.6	To understand the real life hurdles while conducting a survey
C209	MA 201: Probability Distributions, Transforms and Numerical Methods	C209.1	Students will be able to apply the concept of discrete probability density functions and special probability Distributions in different engineering fields.
		C209.2	Students will be able to apply the concept of continuous discrete probability density functions and special probability Distributions in different engineering fields.
		C209.3	Students will be able to express the non periodic function as fourier integrals.
		C209.4	Students will be able to solve differential equations using Laplace Transform
		C209.5	Students will be able to use numerical methods and their applications in solving engineering problems.
		C209.6	Students will be able to solve the differential equations using numerical techniques
C210	CE202: Structural Analysis- I	C210.1	To utilize comprehensive methods of structural analysis with emphasis on analysis of elementary structures
		C210.2	To apply different methods to find out deflection of a structure
		C210.3	To identify, formulate and solve engineering problems connected to indeterminate structures and their analysis
		C210.4	To apply basic knowledge of moving loads and influence line diagrams
		C210.5	To get the basic concept to analyse the forces in cables and suspension bridges
		C210.6	To apply the concept of three hinged arches in practical engineering problems
C211	CE204: Construction Technology	C211.1	To understand construction materials , their components and manufacturing process
		C211.2	To know the properties of concrete and different mix design methods



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		C211.3	To get the details regarding the construction of building components.
		C211.4	To analyse and apply learning of materials , structure , servicing and construction of masonry domestic buildings
		C211.5	To define and describe the concepts and design criteria of tall framed and load bearing buildings.
C212	CE206: Fluid Mechanics- II	C212.1	Explore the Concept of open channel flow
		C212.2	Understand fundamental meaning of Hydraulic jump
		C212.3	Analyze the fundamentals of Non uniform flow
		C212.4	Understand fundamental concepts of Turbines & Pumps
		C212.5	Importance of Dimensional analysis in real world problems
C213	CE208: Geotechnical Engineering- I	C213.1	The students will be able to create an awareness on the basic principles governing soil behavior
		C213.2	The students will be able to analyse and classify soil based on standard geotechnical engineering practice.
		C213.3	The students will be able to perform and laboratory tests on permeability of soils and analyze the coefficient of permeability of soils
		C213.4	The students will be able to understand the shear strength of soil and laboratory methods to find out the shear strength parameters of soil
		C213.5	The students be able to conduct one-dimensional compression tests and estimate settlement parameters
		C213.6	The students will be able to evaluate the stability of slopes by considering various slope analysis methods
C214	HS 200: Business Economics	C214.1	To familiarize the prospective engineers with elementary Principles of Economics and Business Economics
		C214.2	To acquaint the students with tools and techniques that are useful in their profession in Business Decision Making which will enhance their employability.
		C214.3	To apply business analysis to the “firm” under different market conditions.
		C214.4	To apply economic models to examine current economic scenario and evaluate policy options for addressing economic issues



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		C214.5	To gain understanding of some Macroeconomic concepts to improve their ability to understand the business climate.
		C214.6	To prepare and analyse various business tools like balance sheet, cost benefit analysis and rate of returns at an elementary level
C215	CE232: Materials Testing Lab I	C215.1	Students will understand different mechanical properties and characteristics of materials
		C215.2	Students will be to evaluate the strength of various structural elements internal forces such as compression, tension, shear, bending and torsion
		C215.3	Students will be able to develop skills on drawing inference from their practical experience that help them to design mechanical components
		C215.4	Students will be able to derive knowledge individually and as a team that will help them to learn courses related to material science.
		C215.5	Students will be to evaluate the behavior and strength of structural elements under the action of compound stresses and thus understand failure concepts
C216	CE234: Fluid Mechanics Lab	C216.1	Students will be able to develop the skill on selecting various taps, valves, pipe fittings, gauges, pitot tubes, water meters etc.
		C216.2	Students will be able to apply the fundamental principles of fluid mechanics in calculations involving basic flow measuring devices in both closed and open channel flows
		C216.3	Students will be able to select an appropriate pump/turbine with reference to given application/situation.
		C216.4	Students will be able to analyze the performance characteristics pumps/turbines.
		C216.5	Students will be able to predict the stability of a floating vessel following the principles of metacentric height and radius of gyration
C301	CE301: Design of Concrete Structures I	C301.1	The students will be able to apply the fundamental concepts of limit state method.
		C301.2	The students will be able to design for shear using IS code of practice.



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		C301.3	The students will be able design reinforced concrete elements in bending and torsion.
		C301.4	The students will be able to design slabs subjected to various load conditions
		C301.5	The students will be able to analyze and design for deflection and crack control of reinforced concrete members and also to design two way slabs
		C301.6	The students will be able to design columns and staircases.
C302	CE303: Structural Analysis- II	C302.1	Students will be able to analyze the continuous beams using Clapeyrons Theorem
		C302.2	Students will be able to analyze beams and frames using Slope deflection method
		C302.3	Students will be able to analyze beams and frames using Moment distribution method
		C302.4	Students will be able to analyze beams and frames using Kani's method
		C302.5	Students will be able to analyze curved beams in plan
		C302.6	Students will be able to analyze structures using plastic theory
C303	CE305: Geotechnical Engineering- II	C303.1	To understand the basic concepts, theories and methods of analysis and design in foundation engineering;
		C303.2	To identify the field problems related to geotechnical engineering and to take appropriate engineering decisions.
		C303.3	To select and design the foundations as per field condition
		C303.4	To evaluate the consolidation settlement in the field
		C303.5	To learn the ability to use modern soil mechanics equipment for ground improvement and soil investigation procedures.
C304	CE307: Geomatics	C304.1	The students will possess knowledge on the Concepts of Traverse Surveying.
		C304.2	Understanding of the layout of Horizontal Curves and Vertical curves.
		C304.3	Gain a basic understanding of the principles,operation and surveying of the Global Positioning System.
		C304.4	Understand the concept of Remote Sensing and its Application



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		C304.5	Identifying the concept and uses of the GIS system
C305	CE309: Water Resources Engineering	C305.1	Students will be able to understand the availability of water on hydrosphere, its distribution and quantification.
		C305.2	Students will be able to determine crop water requirements for design of irrigation systems.
		C305.3	Students will be able to compute the yield of aquifers and wells.
		C305.4	Students will be able to understand the various features of river training works.
		C305.5	Students will be able to estimate the storage capacity of reservoirs and their useful life
		C305.6	Students will be able to acquire the knowledge on the scientific methods for computing irrigation water requirements.
		C305.7	Students will be able to acquire fundamental knowledge on reservoir engineering and river engineering
		C306	CE365: Functional Design of Buildings
C306.2	to undestand various auditorium design and lighting and thermal design of building in varous climatic zones that the students may encounter in his/her professional carrer		
C306.3	to select differnt building material and explain the manar in which they can be used in differnt types of buildings with respect to various functional requirements like Accoustics lighting termal comfort etc		
C306.4	To apply the techniques learned to the estimate of solar radiation falling on differnt surfaces of buildings		
C306.5	to design shading device to protect from direct sunlight and also design energy efficient design functionally comforatable low energy green buildings considering various climatic conditions		
C307	CE371: Environment and Pollution	C307.1	Students will be able to learn about environment, various types of pollution, pollutants, related diseases
		C307.2	To study about source and effects of air pollution and different control measures
		C307.3	To understand about water pollution, its causes and



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			treatments
		C307.4	To study about solid wastes and its management
		C307.5	To learn about effects of land pollution and its abatement measures
		C307.6	To understand about noise pollution, its effects and control measures
C308	CE341: Design Project	C308.1	Students can explore the latest developments in engineering
		C308.2	Students can undertake a thorough review on literature
		C308.3	Students can understand the engineering aspects of design
		C308.4	Students can understand the various concepts in design, process and systems
		C308.5	Students can explore the various solutions for engineering problems
		C308.6	Students get an overview on technical presentations and writing
C309	CE331: Materials Testing Lab II	C309.1	Understand the fundamentals of civil constructions
		C309.2	Preparation of concrete mix design
		C309.3	Acquire the knowledge of properties of building materials like cement, aggregates, tiles.
		C309.4	Study the tests on fresh concrete
		C309.5	Improve the ability of team work
C310	CE 333: Geotechnical Engineering Lab	C310.1	Students will be able to gain knowledge about the procedures of laboratory tests used for determination of physical, index and engineering properties of soils
		C310.2	Students should have the capability to classify soils based on test results and interpret engineering behavior based on test results
		C310.3	Students will be able to evaluate the permeability and shear strength of soils
		C310.4	Students will be able to evaluate settlement characteristics of soils
		C310.5	Students will be able to evaluate compaction characteristics required for field application



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C311	CE302: Design of Hydraulic Structures	C311.1	Perform the stability analysis of gravity dams
		C311.2	Graduates shall be able to familiar with the different types of dams, components, design criteria and causes of failure
		C311.3	Design major and minor irrigation structures such as surplus works, regulators, canal fall and cross drainage works
		C311.4	Graduates shall be able to understand basic knowledge about hydraulic structures
		C311.5	Graduates can be able to read working drawings
C314	CE308: Transportation Engineering- I	C314.1	Design various geometric elements of a highway
		C314.2	Determine the characteristics of pavement materials and design flexible pavements
		C314.3	Conduct traffic engineering studies and analyze data for efficient management of roadway facilities
		C314.4	Plan and design basic airport facilities
		C314.5	Enhance the presentation ability and team work
		C314.6	Identification of traffic aids and failures in pavement
C315	HS300 : Principle of Management	C315.1	Students will be able to recall and identify the relevance of management concepts
		C315.2	Students will be able to describe, discuss and relate management techniques adopted within an organization
		C315.3	Students will be able to apply management techniques for meeting current and future management challenges faced by the organization
		C315.4	Students will be able to compare the management theories and models critically and to inspect and question its validity in the real world
		C315.5	Students will be able to assess and modify different theories of management so as to relate it to current management challenges
		C315.6	Students will be able to apply principles of management in order to execute the role as a manager
C317	CE332: Transportation	C317.1	Know about various properties required for different types of pavement constructions



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	Engineering Lab	C317.2	Know about selection of different pavement construction materials based on the properties..
		C317.3	Students will be able to correlate the lab experience with field and can identify the tests to be done for checking the quality.
		C317.4	students will be able to enhance their learning and thinking ability
		C317.5	Students will be able to work independently and in groups
		C317.6	Students will be able to communicate their ideas and concepts
		C401	CE 401: Design of steel Structures
C401.2	Students should be capable to analyze and design tension members using the IS specifications		
C401.3	Students should be aware of various connections in steel columns and able to design columns under axial loads using IS specifications		
C401.4	Students should be able to design beams and plate girders		
C401.5	Students should be able to assess loads on truss and design purlins.		
C401.6	Students should be aware on design of Structural Components Using Timber.		
C402	CE 403: Structural Analysis- III	C402.1	Students will be able to analyse structures using the approximate method
		C402.2	Students will be able to understand the basics of matrix analysis
		C402.3	Students will be able to analyse trusses, continuous beams, and rigid frames using flexibility method
		C402.4	Students will be able to analyse trusses, continuous beams, and rigid frames by stiffness method
		C402.5	Students will be able to conceive Finite element procedures by direct stiffness method
		C402.6	Students will be able to use the basics of structural dynamics and analyse the response of SDOF systems
C403	CE 405: Environmental Engineering I	C403.1	Students will be able to understand the various water quality parameters and its interpretation
		C403.2	Students will be able to design sedimentation tanks for water



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			treatment
		C403.3	students will be able to design slow and rapid sand filters of water treatment plants
		C403.4	Students will be able to study the various disinfection methods of drinking water
		C403.5	Students will be able to design a water distribution system
		C403.6	Students will be able to study the various methods for remediation of domestic water quality problems
C404	CE 407: Transportation Engineering- II	C404.1	Students will be able to learn and improve their contemporary knowledge about other means of transportation such as railways, waterways and tunneling
		C404.2	Graduates will be able to plan, design, construct and operate systems in railway transportation
		C404.3	They will be learning the need and frequency and method of maintenance of railway track and the factors that cause railway accidents
		C404.4	Students will gain knowledge in various aspects of tunnel engineering starting from the selection of site, fixing alignment, constructing and providing proper lighting, ventilation and drainage.
		C404.5	Students will be able to learn about various components in water transportation such as harbours, break waters and docks.
		C404.6	Analytical skill as well as problem solving and optimizing ability is enhanced along with the ability to work individually and in a group, prepare presentations and improve on communication skill
C405	CE 409: Quantity Surveying and Valuation	C405.1	Students will be able to prepare approximate estimation and detailed estimation for buildings.
		C405.2	Students will be able to study draw the specifications for the different items of civil engineering project and also to prepare the schedule of programming of the project
		C405.3	Students will be able to prepare detail estimation for sanitary works, road works etc.
		C405.4	Students will be able to calculate the exact quantities and rates for different materials required for various items of work by



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			using data book and schedule of rate.
		C405.5	Students will be able to prepare valuation report of real and landed property
C406	CE473 : ADVANCED COMPUTATIONAL TECHNIQUES AND OPTIMIZATION	C406.1	Students will be able find different numerical solutions of complicated problems
		C406.2	Students will be able identify different types of optimization problems and to solve various multivariable optimization problems
		C406.3	Students will be able determine solutions of real time problems applying numerical methods in mathematics
		C406.4	Students will be able convert problem solving strategies to procedural algorithms and to write program structures
		C406.5	Students will be able understand fundamental mathematics and to solve problems of algebraic and differential equations, simultaneous equation, partial differential equations
		C406.6	Students will be able understand the importance of optimization and apply optimization techniques in real time problems
C407	CE465 : GEO ENVIRONMENTAL ENGINEERING	C407.1	Students will be able to understand the relevance of geoenvironmental engineering with emphasis on soil-water-contaminant interaction
		C407.2	Students will be able to appreciate the concept of valorization of waste in geotechnical applications
		C407.3	Students will be able to understand the various components in a landfill and its design
		C407.4	The students will be able to understand the characteristics of the various by-products generated from the landfill
		C407.5	The students will be able to understand the techniques available and its applicability for soil remediation
		C407.6	The students will be able to understand the change in engineering properties of soil due to change in environment
C408	CE 451: Seminar & Project Preliminary	C408.1	Student can explore the latest developments in various spheres of civil engineering
		C408.2	Student can undertake a critical review of the literature on the chosen topic
		C408.3	Student can learn technical report writing effectively



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		C408.4	Student can present a technical paper fluently and convincingly
		C408.5	Student will be able to develop right competency and skill to learn new technologies and apply it in professional practices and motivate fellow professionals to imbibe them
C409	CE431: Environmental Engineering Lab	C409.1	Students will be able to analyze the physical water quality parameters like turbidity pH, color, taste and odor and to meaningfully interpret the results
		C409.2	Students will be able Analyze the chemical water quality parameters like iron, manganese, hardness , organic matter etc and to interpret the test result
		C409.3	Students will be able To study the water treatment by conventional plant operation and to find the optimum quantity of coagulant using jar test
		C409.4	Students will be able To analyze the presence of indicator bacteriological organisms like coliform in water and interpret the result to give guidance to the people
		C409.5	Students will be able to deal with domestic water quality issues of the area and to guide the people for its remediation
C410	CE 402: Environmental Engineering II	C410.1	Measure the waste water flow and design of circular sewer
		C410.2	Understand and interpret various characteristics of waste water with special reference to organic matter
		C410.3	Assess the self-purification capacity of rivers
		C410.4	Design conventional waste water systems like activated sludge and trickling filter
		C410.5	Design septic tank , oxidation pond and UASB
		C410.6	Design of various sludge disposal systems
C411	CE 404: Civil Engineering Project Management	C411.1	Plan and schedule a construction project.
		C411.2	Will be able to understand the uses and suitability of various construction equipment and codification of planning system
		C411.3	Study the role arbitrator and the process of arbitration and importance of construction cost
		C411.4	Study the legal and ethical issues related to construction projects and concepts of computerized information system



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		C411.5	Impart knowledge in the principles of safe construction practices and material management
		C411.6	Understand the need of different construction procedure and preparation of tender document and contract document and familiar with TQM and similar concepts related to quality
C412	CE462 : TOWN AND COUNTRY PLANNING	C412.1	Student will be able to identify and develop the various components of planning at neighborhood, city, regional and national levels
		C412.2	Student will be able to learn urban-rural nexus in planning and integrated planning approach
		C412.3	Student will be able to learn theories of urbanization in thier planning, principles and strategies
		C412.4	Student will be able to familiarize with spatial standards of facilities and prepare base maps for urban development
		C412.5	Student will be able to learn the development control rule which gives the required legal support to the city plans and also contain elementary aspects of urban renewal.
		C412.6	Student will be able to identify and develop the various components of Town Development Plan
C413	CE474 : Municipal solid waste management	C413.1	Students will have an awareness of different types of solid wastes in the environment.
		C413.2	Students will be able to understand the various methods available for estimation of generation rate of solid waste and its quantities.
		C413.3	Students will have an awareness about the collection methods of solid waste.
		C413.4	Students will have an awareness about the processing techniques of solid waste.
		C413.5	Students will be able to understand the various methods for the disposal of solid waste.
		C413.6	Students will be able to understand the various composting techniques of solid waste.
C414	BT 362 : SUSTAINABLE ENERGY PROCESS	C414.1	Students should be able to identify global and Indian energy sources.
		C414.2	Students should be able to explain capture, conversion and application of solar energy



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		C414.3	Students should be able to explain capture, conversion and application of wind energy
		C414.4	Students should be able to explain conversion of biomass to energy
		C414.5	Students should be able to explain the capture of energy from oceans
		C414.6	Students should be able to explain fuel cells and energy storage routes
C415	CE 492: Project	C415.1	Knowledge and confidence in approaching a problem in a systematic way.
		C415.2	Knowledge about various data collection techniques and methods.
		C415.3	Knowledge of data preparation and exploration and further drawing of inferences
		C415.4	Learn application of various analysis software, interpret the output and present the results
		C415.5	Improvement in technical report writing and presentation skills.



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