



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 Mechatronics Engineering

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Minutes of the Advisory Committee Meeting held on 12th August 2022

An advisory committee meeting was held on 12th August 2022 for discussing the following points mentioned in the agenda. It was held in the board room at 02:00 P. M.

Agenda:

1. Assessment of the previous semester.
2. Departmental achievements/activities
3. Discussion on Programme Outcome (PO) attainment
4. Any other relevant matters

Members present:

1. Dr. Vivek Lukose, HOD, Dept. of Mechatronics *Vivek*
2. Dr. Jarin T, Associate Professor & HOD, Dept. of EEE *Jarin*
3. Mr. Jinesh K J, Assistant Professor, Dept. of Mechatronics *Jinesh*
4. Er. Girish K P, Asst.Engineer, KSEB (Industrialist) *Girish*
5. Dr. Giby Jose, Associate Professor, SJ CET (External Academician) *Giby*
6. Mr. Prakash J. Chittilappilly (F/o Thomas Allen 2021-25) (Parent representative) *Prakash*
7. Ms. Nyni K A., Assistant Professor, Dept. of Mechatronics *Nyni*
8. Mr. Leen David P.B. (Alumni Representative 2017-21 batch) *Leen*

Discussions:

Dr. Vivek Lukose welcomed the members of the advisory committee to the meeting. Passing the minutes of the assessment committee held on 17th September 2021.

1. HOD briefed about the university examination results of the 2018-2022 batch. The university examination result of 2018-22 batch in their eighth semester was 92.31% which was an outstanding achievement. The committee members congratulated the faculty members and students of the department for achieving these outstanding results in the university. The university result analysis of the 2019-2023 batch was discussed in the meeting. The overall results show improvement and were satisfactory in fourth semester. It is noted that 9 students failed only in one subject in their fourth semester. The committee expressed their concern about the pass percentage.



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2. HOD presented the various achievements of the students and faculty members.

Mr. Alphin Francis of the 2017-2021 batch secured the top two percent of all candidates in Mechatronics Engineering under APJ Abdul Kalam Technological University.

13 students of 2017-2021 batch got placed in various reputed companies/institutions.

Mr. Jinto K T, Mr. Arun Vinod, Mr. Sandeep Das and Mr. Sreehari C of the 2018-22 batch received first prize in Christ Innovation Challenge conducted by Christ College Irinjalakuda for the work "DAHI- Driving Assistance for Hearing Impaired"

Mr. Jinesh K J and Dr. M Rajalakshmi of the Mechatronics department were selected as Judging panel members for the Innovation & Entrepreneurship Challenge 2022.

Dr. C Karthik and Mr. N Jeyakannan have published a paper on "Dynamic Wireless Charging for Inductive Power Transfer Systems in Electric Vehicles" in ECS Transactions, 2022.

Ms. Nyni K A presented the paper titled "Nodule Detection & Prediction of Lung Carcinoma in CT images: A Relative Study of Enhancement & Segmentation Methods" at the International Conference on Data Science and Applications (ICDSA 2022) organized by Jadavpur University, Kolkata.

Dr. Anooa Jose Chittilappilly and Dr. C Karthik have been selected as academic auditors for KTU University.

The committee congratulated the students and faculty members for their achievements.

Mr. Jinesh K J briefed about the department activities conducted after the previous advisory committee meeting.

A talk on "Computer Vision using Azure Services" was organized in association with the NDLI club on 30th May 2022. The session was handled by Mr. Ajin K J, Student (S6 Mechatronics), Jyothi Engineering College.

Four days of hands-on training on embedded system design was conducted in association with IIC in June 2022. The session was handled by Mr. Jinesh K J, Assistant Professor, Dept. of Mechatronics, Jyothi Engineering College.

The committee congratulated Mr. Ajin K J, Mr. Jinesh K J, and the organizers for conducting these events successfully.




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Assessment Committee Meeting Minutes Department of Electronics and Communication Engineering

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Minutes of the Assessment Committee Meeting held on 04th August 2023

An assessment committee meeting was held on 04th August 2023 to discuss the points mentioned in the agenda. The meeting was held in the HOD cabin at 12:45 p.m.

Agenda:

1. National Board of Accreditation(NBA) process
2. Result Analysis discussion
3. Department activities

Members present:

1. Dr. Anoop Jose Chittilappilly, HOD, Dept. of Mechatronics *anj*
2. Dr. C Karthik, Associate Professor, Dept. of Mechatronics *AK*
3. Dr. Vivek Lukose, Associate Professor, Dept. of Mechatronics *VL*
4. Ms. Nyni K A, Assistant Professor, Dept. of Mechatronics *NK*
5. Mr. Jinesh K J, Assistant Professor, Dept. of Mechatronics *JKJ*

Discussions:

Dr. Anoop Jose Chittilappilly welcomed the members of the Assessment committee to the meeting. Passing the minutes of the assessment committee held on 03rd February 2023.

1. HOD appreciated all the faculty members for the timely submission of the Self Assessment Report (SAR) on 31st March 2023. HOD requested wholehearted cooperation from the faculty members for the preparation of the NBA peer team visit.
2. The university result analysis of the 2019-2023 batch was discussed in the meeting. Ms. Bindhu K Rajan and Mr. Ashik M S (Faculty advisors of the 2019-23 batch) presented the sixth, seventh, and eighth-semester university examination results. The overall result for the eighth semester was 95.35% which was an outstanding achievement. HOD congratulated the faculty members for achieving these outstanding results in the university. Ms. Shamin E. Varkey and Ms. Neethu Rose Thomas (Faculty advisors of the 2020-24 batch) presented the fourth and fifth-semester university examination results. The committee expressed their concern about the pass percentage. The overall results were



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not satisfactory due to poor results in Probability, Statistics and Numerical Methods, Thermodynamics, Soft Computing Techniques. Special care must be taken in handling these subjects.

3. HOD briefed about the department activities conducted after the previous assessment committee meeting.

A talk on "From Pixels to Predictions: Creating Image Recognition Models" was organized by the Mechatronics Engineering Students' Association (MESA) in association with the NDLI club on 16th March 2023. The session was handled by Mr. Ajin K J, Student (S8 Mechatronics), Jyothi Engineering College.

MESA in association with IIC & ISTE organized a workshop on "Industrial Robotics" on 18th March 2023.

MESA organized a workshop on "Maker's Mart IoT Workshop" as part of College Technical Fest *Tharang '23* on 18th March 2023.

HOD congratulated Mr. Ajin K J, Mr. Jinesh K J, and the organizers for conducting these events successfully.

The meeting was concluded with a vote of thanks by Dr. Vivek Lukose at 01:30 PM.


HOD




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Geo Tag Photos for display of POs and PSOs

Electronics and Communication Engineering Department

Jyothi Engineering College
CHERUTHURUTHY, THRISSUR - 679531

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

VISION

CREATE EMINENT AND ETHICAL LEADERS IN THE FIELD OF ELECTRONICS AND COMMUNICATION THROUGH QUALITY PROFESSIONAL EDUCATION TO EXCEL IN ACADEMIA AND INDUSTRY.

MISSION

- PROVIDE THEORETICAL AND PRACTICAL KNOWLEDGE THROUGH QUALITY EDUCATION AND LIFE SKILLS TRAINING TO MAKE COMPETENT GRADUATES WITH LEADERSHIP AND SOCIAL COMMITMENT.
- TO IMPART ENTREPRENEURIAL ORIENTATION AND MOTIVATION FOR RESEARCH AMONG THE STUDENTS THROUGH KNOWLEDGE TRANSFER BETWEEN INDUSTRIAL, ACADEMIC & RESEARCH INSTITUTIONS.

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- I. GRADUATES SHALL HAVE FUNDAMENTAL AND ADVANCED KNOWLEDGE IN ELECTRONICS AND COMMUNICATION ENGINEERING ALONG WITH KNOWLEDGE IN MATHEMATICS, SCIENCE AND COMPUTING AND GET EMPLOYED IN NATIONAL OR INTERNATIONAL ORGANIZATIONS OR GOVERNMENT AGENCIES.
- II. GRADUATES SHALL HAVE ABILITY IN ANALYZING, DESIGNING AND CREATING INNOVATIVE SOLUTIONS WHICH LEAD TO A LIFELONG LEARNING PROCESS OR HIGHER QUALIFICATION, MAKING THEM EXPERTS IN THEIR PROFESSION THUS HELPING TO SOLVE ELECTRONICS & COMMUNICATION ENGINEERING AND SOCIAL PROBLEMS.
- III. GRADUATES SHALL HAVE GOOD ORGANIZING CAPABILITY, PRESENTATION SKILLS, COMMUNICATING ABILITY, LEADERSHIP, TEAM WORK AND ETHICAL PRACTICES.

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Department Of ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAMME OUTCOMES

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 analyse 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.

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: 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.

GPS Map Camera

Cheruthuruthi, Kerala, India
P7GR+X4P, Engineering College Road, Cheruthuruthi, Kerala 679531, India
Lat 10.727465°
Long 76.290287°
06/11/23 09:12 AM GMT +05:30



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Computer Science and Engineering Department

Jyothi Engineering College
CHERUTHURUTHY, THRISSUR - 679531

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

VISION

CREATING EMINENT AND ETHICAL LEADERS IN THE DOMAIN OF COMPUTATIONAL SCIENCES THROUGH QUALITY PROFESSIONAL EDUCATION WITH A FOCUS ON HOLISTIC LEARNING AND EXCELLENCE.

MISSION

- 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.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- 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.
- THE GRADUATES SHALL BE ABLE TO ESTABLISH THEMSELVES AS PRACTISING PROFESSIONALS, RESEARCHERS OR ENTREPRENEURS IN COMPUTER SCIENCE OR ALLIED AREAS AND SHALL ALSO BE ABLE TO PURSUE HIGHER EDUCATION IN REPUTED INSTITUTES.
- THE GRADUATES SHALL BE ABLE TO COMMUNICATE EFFECTIVELY AND WORK IN MULTIDISCIPLINARY TEAMS WITH TEAM SPIRIT DEMONSTRATING VALUE DRIVEN AND ETHICAL LEADERSHIP.

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Department Of COMPUTER SCIENCE & ENGINEERING

PROGRAMME SPECIFIC OUTCOMES (PSO)

On the Completion of Computer Science & Engineering Programme, the Students will Possess:

- PSO 1:** An ability to apply knowledge of data structures and algorithms appropriate to computational problems.
- PSO 2:** An ability to apply knowledge of operating systems, programming languages, data management or networking principles to computational assignments.
- PSO 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.
- PSO 4:** An ability to understand concepts involved in modelling and design of computer science applications in a way that demonstrates comprehension of the fundamentals and trade-offs involved in design choices.

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Mechanical Engineering Department



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COs, POs, PSO In Course Information Sheet

CET204 - GEOTECHNICAL ENGINEERING - I

JYOTHI ENGINEERING COLLEGE

JYOTHI HILLS, PANJAL ROAD, VETTIKATTIRI PO, CHERUTHURUTHY THRISSUR, KERALA 679531

PH: 04884259000



COURSE DIARY

Subject	CET204 - GEOTECHNICAL ENGINEERING - I
Batch	CE 2K21
Academic Year	2022-2023
Total hours taken	74
Name of Teacher	ANJU M. J
Designation	Assistant Professor
Department	Civil Engineering





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CET204 - GEOTECHNICAL ENGINEERING - I

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CET204 - GEOTECHNICAL ENGINEERING - I

VISION OF THE COLLEGE

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

MISSION OF THE COLLEGE

"

- 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.

"





CET204 - GEOTECHNICAL ENGINEERING - I

PROGRAM OUTCOME

Heading	Content
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	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.
PO3	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.
PO4	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.
PO5	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.
PO6	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.
PO7	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.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	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.
PO12	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.



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CET204 - GEOTECHNICAL ENGINEERING - I

VISION OF CIVIL ENGINEERING DEPARTMENT

"To emerge as a Centre of Excellence in Civil Engineering through quality professional education and to create eminent leaders with values committed to the profession and society."

MISSION OF CIVIL ENGINEERING DEPARTMENT

"To impart state of the art education and to provide industry exposure to students To create civil engineers who successfully adapt and innovate solutions for the built environment To inspire and transform the students to hard core professionals and academicians with ethical"





CET204 - GEOTECHNICAL ENGINEERING - I

PROGRAM EDUCATIONAL OBJECTIVES

Heading	Content
1	PEO Graduates will have concrete knowledge in the application of necessary mathematical tools, scientific theories and modern developments in civil engineering.
2	PEO Graduates will understand the societal needs and will be committed in developing optimal solutions.
3	PEO Graduates will pursue higher education, research or entrepreneurship apart from being employable.
4	PEO Graduates will be competent to face challenges in civil engineering through lifelong learning process and will have high ethical values, honesty and a sense of responsibility.

PROGRAM SPECIFIC OUTCOMES

Heading	Content
1	PSO Acquire the ability to plan, furnish and/or analyse designs and implement infrastructure related systems, produce related documents, drawings and reports, and quantity estimates, related to civil engineering domain.
2	PSO Apply theoretical concepts and technical skills in developing appropriate sustainable solutions through self-learning, research and teamwork for technical problems requiring civil engineering interventions towards a better quality of life.
3	PSO Utilise the acquired knowledge in Environmental Engineering and Transportation Engineering to conceptualise, analyse, evaluate specific problems in Water Quality Management, Sanitation, Pavement Design, Traffic Engineering and Transportation Planning and develop appropriate solutions.



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CET204 - GEOTECHNICAL ENGINEERING - I

COURSE OUTCOME

SINo.	Topic
1	Explain the fundamental concepts of basic and engineering properties of soil
2	Describe the laboratory testing methods for determining soil parameters
3	Solve the basic properties of soil by applying functional relationships
4	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
5	Analyze the soil properties to identify and classify the soil



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PROJECT DIARY WITH POs

SEWAGE CLOG SPOTTING AND WATER TREATMENT SERVICE SYSTEM USING IOT

Main Project Report

Submitted by

AGNA ABRAHAM	JEC19EC002
ANN MARIE RAJAN	JEC19EC008
JOSHWIN BABU	JEC19EC020
NAVEEN RAJESH	JEC19EC022

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

ELECTRONICS & COMMUNICATION ENGINEERING

Under the guidance of

Dr. SHINY M I



CREATING TECHNOLOGY
LEADERS OF TOMORROW
ESTD 2002

DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING

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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

NBA accredited & Tech Programmes in Computer Science & Engineering, Electronics & Communication Engineering, Electrical & Electronics Engineering and Mechanical Engineering valid for the academic year 2014-2022. NBA accredited & Tech Programmes in Civil Engineering valid for the academic year 2014-2022.

June 2023




Dr. JOSE P THERATTIL
Principal
Jyothi Engineering College
Cheruthuruthy - 679531



Jyothi Engineering College

Reaccredited with NAAC (Grade A) and NBA Programmes*

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Jyothi Engineering College

NAAC Accredited college with NBA Accredited programmes

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING



CREATING TECHNOLOGY
LEADERS OF TOMORROW
ESTD 2002

CERTIFICATE

This is to certify that the report entitled “ **SEWAGE CLOG SPOTTING AND WATER TREATMENT SERVICE SYSTEM USING IOT** ” submitted by AGNA ABRAHAM (JEC19EC002), ANN MARIE RAJAN (JEC19EC008), JOSHWIN BABU (JEC19EC020), NAVEEN RAJESH (JEC19EC022) to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree in Bachelor of Technology in **Electronics & Communication Engineering** is a bonafide record of the main 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.

Dr. Shiny M I
Assistant Professor
Internal Supervisor



Dr. Sindhu S
Associate professor
Head of the Department



Dr. JOSE P THERATTIL
Principal
Jyothi Engineering College
Cheruthuruthy - 679531



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. Jose P Therattil** for providing all the facilities to carry out this project work. We are grateful to the Head of the Department **Dr. Sindhu S** for her valuable suggestions and encouragement to carry out this project work.

We would like to express our whole hearted gratitude to the project guide **Dr. Shiny M I** for her encouragement, support and guidance in the right direction during the entire project work.

We thank our Main Project Coordinators **Fr. David Nettikadan, & Ms. Saritha P** 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 in the field of Electronics and Communication through quality professional education to excel in academia and industry.

MISSION OF THE DEPARTMENT

- Provide theoretical and practical knowledge through quality education and life skills training to make competent graduates with leadership and social commitment.
- To impart entrepreneurial orientation and motivation for research among the students through knowledge transfer between industrial, academic research institutions.

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PROGRAMME EDUCATIONAL OBJECTIVES

- PEO 1:** Graduates shall have fundamental and advanced knowledge in design, development and implementation of communication and signal processing technology and extends into applications in the different thrust areas.
- PEO 2:** Graduates shall have knowledge for analyzing, modelling, and evaluating the research problems in major thrust areas of Electronics and Communication sectors.
- PEO 3:** Graduates shall have good interpersonal skills, team work capabilities, communication skills, leadership and awareness of the social, ethical and legal responsibilities leading to lifelong learning and career development.




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PROGRAMME SPECIFIC OUTCOMES

Graduate possess -

- PSO 1: Professional skills:** Associate the concepts related to Electronics, Communication, Embedded Systems, Signal Processing and VLSI to solve real life problems.
- PSO 2: Problem solving ability:** Comprehend technology advancement to analyze and design systems using modern design tools for the benefit of the society.
- PSO 3: Lifelong learning and ethical Values:** Have good communication skills, work as a team, develop leadership qualities, become professionals or entrepreneurs with ethical values.



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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.





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COURSE OUTCOMES DISPLAY IN LAB NOTICE BOARD ELECTRONICS CIRCUITS AB

COURSE INFORMATION SHEET

PROGRAMME: Robotics and Automation
 DEGREE: B.TECH
 COURSE: ELECTRONIC CIRCUITS AND DIGITAL ELECTRONICS LABORATORY
 SEMESTER: S3
 CREDITS: 2
 IRSE CODE: RAL203
 REGULATION: KTU 2019
 COURSE TYPE: Lab
 RSE AREA/DOMAIN: Engineering
 CONTACT HOURS: 3
 RESPONDING LAB COURSE CODE (IF ANY):
 LAB COURSE NAME: -

DETAILS

Activity	HOURS
Clipping and clamping circuits using diodes	6
Design and testing of zener voltage regulators	3
Astable and monostable circuit using IC 555	3
RC coupled amplifier using BJT in CE configuration- Measurement of gain, input and output impedance and frequency response	3
OPAMP circuits - Design and set up of inverting and non-inverting amplifier, scale changer, adder, integrator, differentiator	3
Realization of SOP & POS functions after K map reduction	3
Half adder and Full adder realization using NAND gates	3
Realization of multiplexer IC and realization of combinational circuits using multiplexers	3
Design of counter ICs (7490, 7493)	3
Half adder/subtractor using IC 7483	3
Introduction to PCB layout software	3
Logic implementation of full adder, 4 bit magnitude comparator	3

COURSE OUTCOMES:

SLNo	DESCRIPTION	PO & PSO MAPPING
C208.1	Design and develop various wave shaping circuits, amplifiers and oscillators using discrete components	PO1,PO2,PO3,PO4,PO6,PO9,PO10,PO12,PS04
C208.2	Design and test various circuits using op-amps	PO1,PO2,PO3,PO4,PO6,PO9,PO10,PO12,PS04
C208.3	Design and test various combinational and sequential logic circuits	PO1,PO2,PO3,PO4,PO6,PO9,PO10,PO12,PS04
C208.4	Design PCBs	PO1,PO2,PO3,PO4,PO6,PO9,PO10,PO12,PS04
C208.5	Program basic combinational circuits using Verilog	PO1,PO2,PO3,PO4,PO5,PO6,PO9,PO10,PO12,PS02

COURSE OUTCOMES VS PO MAPPING:

SLNo	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C208.1	3	2	2	2	-	2	-	-	2	2	-	3
C208.2	3	2	2	2	-	2	-	-	2	2	-	3
C208.3	3	2	2	2	-	2	-	-	2	2	-	3
C208.4	3	2	2	2	-	2	-	-	2	2	-	3
C208.5	3	2	2	2	2	2	-	-	2	2	-	3
Avg	3	2	2	2	2	2	-	-	2	2	-	3

COURSE OUTCOMES VS PSO MAPPING:

SLNo	PSO1	PSO2	PSO3	PSO4
C208.1				2
C208.2				2
C208.3				2
C208.4				2
C208.5	2			
Avg	2			2

Handwritten notes: "Show m-1" and "Show m-2" with arrows pointing to mapping tables.

JYOTHI ENGINEERING COLLEGE, CHERUTHURUTHY
 DEPARTMENT OF ELECTRONICS & COMMUNICATION
 ACADEMIC YEAR: 2022 - 2023

TIME TABLE FOR ELECTRONIC CIRCUITS

DAY / TIME	1 9:00-09:50	2 9:50-10:40	3 10:50-11:40	4 11:40-12:30
MON				
TUE				
WED			ECE LAB 83 RA	
THU			AIC LAB 85 ECE	
FRI	9:00-09:50	9:50-10:40	10:50-11:40	11:40-12:30

TIME TABLE COORDINATORS
 Ms. NEETHU ROSE THOMAS

GPS Map Camera

Cheruthuruthy, Kerala, India
 Ground Floor, Sreehari Arcade, Cheruthuruthy, Kerala 679531, India
 Lat 10.727636°
 Long 76.290494°
 06/11/23 09:14 AM GMT +05:30



Handwritten signature: Jose P Therattil
Dr. JOSE P THERATTIL
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COURSE OUTCOMES IN INTERNAL ASSESMENT QUESTION PAPER

Reg No. : _____

Name : _____



Jyothi Engineering College
 DEPARTMENT OF COMPUTER SCIENCE &
 ENGINEERING
 VIth Semester - B.Tech
 Series Exam 1

Course : CST302 - COMPILER DESIGN

Total Mark: 50	Total Time: 90 Min
CO1 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	Applying(P)
CO2 Model language syntax using Context Free Grammar and develop parse tree representation using leftmost and rightmost derivations	Applying(P)
CO3 Compare different types of parsers(Bottom-up and Top-down) and construct parser for a given grammar	Applying(P)

CO BL MARK

PART A

Answer All Questions

- What are the tokens, lexemes and patterns of the following code

```
int main()
{
int a,b,c;
c=a+b;
printf("%d",c);
}
```

CO1 3 (3)
- Scanning of source code in compilers can be speed up using Input Buffering. Explain.

CO1 3 (3)
- Is the grammar $S \rightarrow S | (S) S | \epsilon$ ambiguous? Justify your answer.

CO2 3 (3)
- Show that the following grammar is ambiguous.
 $bexpr \rightarrow bexpr \text{ OR } bterm | bterm$
 $bterm \rightarrow bterm \text{ AND } bfactor | bfactor$
 $bfactor \rightarrow \text{NOT } bfactor | (bexpr) | \text{TRUE} | \text{FALSE}$

CO2 3 (3)
- What is handle pruning? Indicate the handles in the reduction of the right sentential form
 $'S S + a *'$ to the start symbol using the grammar below:
 $S \rightarrow S S + | S S * | a$

CO3 3 (3)

PART B

Answer All Questions

- a) Write regular expressions for the following languages:

CO1 3 (7)

 - All strings over the English alphabet that contain the five vowels in order.
 - All strings of a's and b's that do not contain the subsequence abb.
- b) Explain the role of transition diagrams in recognition of tokens with suitable examples.

CO1 1 (7)



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OR

7. a) a) What is a regular definition? Give the regular definition of an unsigned integer. CO1 2 (7)
b) Trace the output after each phase of the compiler for the assignment statement:
 $a = b + c * 10$, if variables given are of float type.
- b) a) Apply bootstrapping to develop a compiler for a new high level language P on machine N. CO1 3 (7)
b) Now I have a compiler for P on machine N. Apply bootstrapping to obtain a compiler for P on machine M.
8. a) Prove that the following grammar is not LL(1) CO2 3 (7)
 $S \rightarrow iEtSS^* | a$
 $S \rightarrow eS | \epsilon$
 $E \rightarrow b$
- b) Construct LR(0) collection of items for the grammar below. CO2 3 (7)
 $S \rightarrow L = R | R$
 $L \rightarrow * R | id$
 $R \rightarrow L$
Prove that this grammar is in SLR(1) or not?
- OR
9. a) Consider the following grammar CO2 3 (7)
 $E \rightarrow E \text{ or } T | T$
 $T \rightarrow T \text{ and } F | F$
 $F \rightarrow \text{true} | \text{false}$
Justify the statement “ The grammar is LL (1)”.
- b) Given a grammar : CO2 3 (7)
 $S \rightarrow (L)a$
 $L \rightarrow L, S | S$
(i) Is the grammar ambiguous? Justify
(ii) Give the parse tree for the string $(a, ((a, a), (a, a)))$
10. Derive SLR (1) parsing table for following grammar $S \rightarrow Aa | bAc | Bc | bBa$ $A \rightarrow d$ $B \rightarrow d$. Write all moves by the LR parser for parsing the input ‘bdc’. CO3 3 (7)
- OR
11. Write algorithm for SLR parsing table construction. Construct the SLR table for the grammar: CO3 3 (7)
 $S \rightarrow aSbS | a$. Give the annotated parse tree for the expression: $1*2*3*(4+5) n$





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.
4. 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 mechanics



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		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
C104.2	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.



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		C107.5	Students will be able to write the results of calculations in a clear and concise manner.
		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



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			differential equations
		C110.5	Students can form Wave equation and physically interpret the solutions.
		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



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			problems associated with friction forces
		C112.6	Students will be able to find out centre of mass and Moment 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
		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,



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			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.
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.



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		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
		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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