**KIT-Kalaignarkarunanidhi Institute of Technology**
(An Autonomous Institution)
**Coimbatore–641402.**
**Department of Electrical and Electronics Engineering**

# Conceptual Frame work

(For Students admitted from the Academic Year 2023-2024 and onwards)

| Semester | Level of Course | Hours / Week | No of Courses | Range of Credits/ Courses | Total Credits |
|---|---|---|---|---|---|
| **PART I** | | | | | |
| **A - Foundation Courses** | | | | | |
| I to II | Humanities and Social Sciences **(HS)** | 1-5 | 6 | 1-4 | 10 |
| I to IV | Basic Sciences **(BS)** | 4-5 | 6 | 4 | 24 |
| I to III | Engineering Sciences **(ES)** | 3-5 | 7 | 2-4 | 27 |
| **B - Professional Core Courses** | | | | | |
| II to VII | Professional Core **(PC)** | 3-4 | 25 | 2-4 | 64 |
| **C - Elective Courses** | | | | | |
| V to VIII | Professional Elective **(PE)** | 3 | 6 | 3 | 18 |
| V to VIII | Open Elective **(OE)** | 3 | 4 | 3 | 12 |
| **D – Project Work** | | | | | |
| VI, VII & VIII | Project Work **(PW)** | 4 -16 | 3 | 2 - 8 | 12 |
| **E - Mandatory Courses Prescribed by AICTE/UGC (Not to be Included for CGPA)** | | | | | |
| V &VI | Mandatory Course **(MC)** | 2-3 | 2 | NC | NC |
| **Total Credit** | | | | | **167** |
| **PART II - Career Enhancement Courses (CEC)** | | | | | |
| II | Soft Skills | 2 | 1 | NC | NC |
| IV | Professional Certificate Course | - | 1 | 1 | 1 |
| V | Summer Internship | - | 1 | 1 | 1 |
| **Total Credit** | | | | | **2** |
| Total Credits to be Earned | | | | | **169** |

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**Scheme of Instructions and Examinations**

(For Students admitted from the Academic Year 2023-2024 and onwards)

| Semester I | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23IPT101 | Induction Programme | HS | - | - | - | - | NC | - | - | - |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23ENI201 | Professional Communication | HS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MAT101 | Matrices and Differential Calculus | BS | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23CHI101 | Engineering Chemistry | BS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MET202 | Fundamentals of Civil and Mechanical Engineering | ES | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23MET101 | Engineering Graphics | ES | 5 | 3 | 0 | 2 | 4 | 40 | 60 | 100 |
| B23HST101 | தமிழர் மரபு / Heritage of Tamils | HS | 1 | 1 | 0 | 0 | 1 | 40 | 60 | 100 |
| **Practical** | | | | | | | | | | |
| B23MEP101 | Engineering Practices Laboratory | ES | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| **Total credits to be earned** | | | | | | | **22** | | | |

| Semester II | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23ENT101 | Professional English | HS | 2 | 2 | 0 | 0 | 2 | 40 | 60 | 100 |
| B23MAT201 | Integral Calculus and Complex Analysis | BS | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23PHI101 | Engineering Physics | BS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23CSI101 | C Programming | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23EET201 | Electric Circuit Analysis | ES | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23HST201 | தமிழரும் தொழில் நுட்பமும் / Tamils and Technology | HS | 1 | 1 | 0 | 0 | 1 | 40 | 60 | 100 |
| B19CET201 | Soft Skills | CEC | 2 | 2 | 0 | 0 | NC | 100 | - | 100 |
| **Practical** | | | | | | | | | | |
| B23EEP201 | Electric Circuits and Simulation Laboratory | ES | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| **Total credits to be earned** | | | | | | | **21** | | | |

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| Semester III | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Course Code** | **Course Name** | **CT** | **Instructional Hours** | | | | | **Assessment** | | |
| | | | **CP** | **L** | **T** | **P** | **C** | **CIA** | **ESE** | **Total** |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23MAT301 | Transforms and Partial Differential Equations | BS | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET301 | Field Theory | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET302 | Electronic Devices and Circuits | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET303 | DC Machines and Transformers | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET304 | Measurements and Instrumentation | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23CSIXXX | Fundamentals of Data Structures using C | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| **Practical** | | | | | | | | | | |
| B23EEP301 | DC Machines and Transformers Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EEP302 | Measurements and Instrumentation Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| **Total credits to be earned** | | | | | | | **26** | | | |

| Semester IV | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Course Code** | **Course Name** | **CT** | **Instructional Hours** | | | | | **Assessment** | | |
| | | | **CP** | **L** | **T** | **P** | **C** | **CIA** | **ESE** | **Total** |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23MAT403 | Numerical Methods | BS | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET401 | Control Engineering | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET402 | Induction and Synchronous Machines | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET403 | Generation, Transmission and Distribution | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET404 | Analog and Digital Circuits | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23CSIXXX | Problem Solving and Python Programming | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| **Practical** | | | | | | | | | | |
| B23EEP401 | AC Machines and Control Systems Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EEP402 | Analog and Digital Circuits Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23CEP401 | Professional Certificate Course | CEC | - | - | - | - | 1 | - | - | 100 |
| **Total credits to be earned** | | | | | | | **26** | | | |
| **Summer Internship – THREE WEEKS (Review will be conducted in first week of Semester V and its credit will be included in Semester V)** | | | | | | | | | | |

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| Semester V | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23EET501 | Power Electronics and Drives | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET502 | Discrete Time Signal Processing | PC | 4 | 3 | 0 | 1 | 4 | 40 | 60 | 100 |
| | Professional Elective- I | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Professional Elective- II | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Open Elective-I | OE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEI501 | Introduction to Microprocessor and Microcontrollers | PC | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MCT501 | Environmental Sciences | MC | 3 | 3 | 0 | 0 | NC | - | - | 100 |
| **Practical** | | | | | | | | | | |
| B23EEP501 | Power Electronics and Drives Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23CEP501 | Summer Internship | CEC | - | - | - | - | 1 | - | - | 100 |
| **Total credits to be earned** | | | | | | | **24** | | | |

| Semester VI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| **Theory / Theory with Practical** | | | | | | | | | | |
| B23EET601 | Embedded and Real Time Systems | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEI601 | Power System Analysis and Stability | PC | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| | Professional Elective – III | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Professional Elective - IV | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Open Elective – II | OE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Open Elective – III | OE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23MCT601 | Indian Constitution | MC | 3 | 3 | 0 | 0 | NC | - | - | 100 |
| **Practical** | | | | | | | | | | |
| B23EEP601 | Mini Project | PW | 4 | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| **Total credits to be earned** | | | | | | | **21** | | | |

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| Semester VII | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| **Theory / Theory with Practical** | | | | | | | | | | | |
| B23EET701 | Renewable Energy Systems | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET702 | Digital Protection for Power System | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Professional Elective-V | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Professional Elective-VI | PE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| | Open Elective-IV | OE | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23MGT701 | Universal Human Values | HS | 2 | 2 | 0 | 0 | 2 | 40 | 60 | 100 |
| **Practical** | | | | | | | | | | | |
| B23EEP701 | Renewable Energy Systems Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EEP702 | Project Work- Phase- I | PW | 4 | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| **Total credits to be earned** | | | | | | | **21** | | | |

| Semester VIII | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23EEP801 | Project Work- Phase- II | PW | 16 | 0 | 0 | 16 | 8 | 40 | 60 | 100 |
| **Total credits to be earned** | | | | | | | **8** | | | |

**TOTAL NO.OF CREDITS: 169**

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| HUMANITIES AND SOCIALSCIENCES (HS) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23IPT101 | Induction Programme | HS | - | - | - | - | NC | - | - | - |
| B23ENT101 | Professional English | HS | 2 | 2 | 0 | 0 | 2 | 40 | 60 | 100 |
| B23HST101 | தமிழர் மரபு / Heritage of Tamils | HS | 1 | 1 | 0 | 0 | 1 | 40 | 60 | 100 |
| B23HST201 | தமிழரும் தொழில் நுட்பமும் / Tamils and Technology | HS | 1 | 1 | 0 | 0 | 1 | 40 | 60 | 100 |
| B23ENI201 | Professional Communication | HS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MGT701 | Universal Human Values | HS | 2 | 2 | 0 | 0 | 2 | 40 | 60 | 100 |

| BASIC SCIENCES (BS) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23MAT101 | Matrices and Differential calculus | BS | 4 | 3 | 0 | 1 | 4 | 40 | 60 | 100 |
| B23PHI101 | Engineering Physics | BS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MAT201 | Integral Calculus and Complex Analysis | BS | 4 | 3 | 0 | 1 | 4 | 40 | 60 | 100 |
| B23CHI101 | Engineering Chemistry | BS | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MAT301 | Transforms and Partial Differential Equations | BS | 4 | 3 | 0 | 1 | 4 | 40 | 60 | 100 |
| B23MAT403 | Numerical Methods | BS | 4 | 3 | 0 | 1 | 4 | 40 | 60 | 100 |

| ENGINEERING SCIENCES (ES) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23MET101 | Engineering Graphics | ES | 5 | 3 | 0 | 2 | 4 | 40 | 60 | 100 |
| B23CSI101 | C Programming | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23MEP101 | Engineering Practices Laboratory | ES | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23MET202 | Fundamentals of Civil and Mechanical Engineering | ES | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23CSIXXX | Fundamentals of Data Structures using C | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23CSIXXX | Problem Solving and Python Programming | ES | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |

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| PROFESSIONAL CORE (PC) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23EET201 | Electric Circuit Analysis | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EEP201 | Electric Circuits and Simulation Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EET301 | Field Theory | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET302 | Electronic Devices and Circuits | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET303 | DC Machines and Transformers | PC | 4 | 3 | 1 | 0 | 4 | 60 | 40 | 100 |
| B23EET 304 | Measurements and Instrumentation | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEP301 | DC Machines and Transformers Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EEP302 | Measurements and Instrumentation Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EET401 | Control Engineering | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET402 | Induction and Synchronous Machines | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET403 | Generation,Transmission and Distribution | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET404 | Analog and Digital Circuits | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEP401 | AC Machines and Control Systems Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EEP402 | Analog and Digital CircuitsLaboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EET501 | Power Electronics and Drives | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EET502 | Discrete Time Signal Processing | PC | 4 | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| B23EEI501 | Introduction to Microprocessor and Microcontrollers | PC | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23EEP501 | Power Electronics and Drives Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| B23EET601 | Embedded and Real Time Systems | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEI601 | Power Systems Analysis and Stability | PC | 5 | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| B23EET701 | Renewable Energy Systems | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EET702 | Digital Protection for Power System | PC | 3 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| B23EEP701 | Renewable Energy Systems Laboratory | PC | 4 | 0 | 0 | 4 | 2 | 60 | 40 | 100 |

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| CAREER ENHANCEMENT COURSE (CEC) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23CET201 | Soft Skills | CEC | 2 | 2 | 0 | 0 | NC | 100 | - | 100 |
| B23CEP401 | Professional Certificate Course | CEC | - | - | - | - | 1 | - | - | 100 |
| B23CEP501 | Summer Internship | CEC | - | - | - | - | 1 | - | - | 100 |

| MANDATORY COURSE (MC) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23MCT501 | Environmental Sciences | MC | 3 | 3 | 0 | 0 | NC | - | - | 100 |
| B23MCT601 | Indian Constitution | MC | 3 | 3 | 0 | 0 | NC | - | - | 100 |

| PROJECT WORK (PW) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | Course Name | CT | Instructional Hours | | | | | Assessment | | |
| | | | CP | L | T | P | C | CIA | ESE | Total |
| B23EEP603 | Mini Project | PW | 4 | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| B23EEP702 | Project Work- Phase-I | PW | 4 | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| B23EEP801 | Project Work- Phase-II | PW | 16 | 0 | 0 | 16 | 8 | 40 | 60 | 100 |

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| B.E/B.TECH | B23MAT101 MATRICES AND DIFFERENTIAL CALCULUS<br>(Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 4 |

| Course Objectives | |
|---|---|
| 1. | To develop the use of matrices that is needed by engineers for practical applications. |
| 2. | To understand the concept of functions of several variables. |
| 3. | To recognize and classify ordinary differential equations. |
| 4. | To apply the concept of ordinary differential equations in engineering disciplines. |
| 5. | To learn the applications of Laplace transforms in engineering. |

| UNIT – I | MATRICES | 12 |
|---|---|---|
| Eigen values and Eigenvectors of a real matrix – Characteristic equation – Properties of Eigen values and Eigenvectors – Cayley Hamilton theorem – Quadratic form: Nature, Reduction to canonical form by orthogonal transformation. | | |

| UNIT – II | FUNCTIONS OF SEVERAL VARIABLES | 12 |
|---|---|---|
| Partial differentiation –Total derivative – Jacobians – Taylor‘s series expansion for functions of two variables – Maxima and minima of functions of two variables – Lagrange‘s method of undetermined multipliers. | | |

| UNIT – III | ORDINARY DIFFERENTIAL EQUATIONS | 12 |
|---|---|---|
| Higher order linear ordinary differential equations with constant coefficients - Method of variation of parameters - Simultaneous differential equations. | | |

| UNIT – IV | APPLICATIONS OF ORDINARY DIFFERENTIAL EQUATIONS | 12 |
|---|---|---|
| Solution of specified differential equations connected with electric circuits - Law of Natural growth and decay - Simple harmonic motion (Differential equations and associated conditions need to be given). | | |

| UNIT – V | LAPLACE TRANSFORM | 12 |
|---|---|---|
| Existence conditions - Properties (excluding proofs) - Transform of standard functions -Transforms of derivatives and integrals - Inverse Laplace transform - Applications to solution of linear second order ordinary differential equations with constant coefficients. | | |
| | | **Total Instructional hours : 60** |

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| Course Outcomes : Students will be able to | |
|---|---|
| CO1 | Make use of Eigen values and Eigen vectors to reduce the quadratic form into canonical form and to find the powers of a square matrix. |
| CO2 | Construct maxima and minima problems. |
| CO3 | Solve differential equations which existing in different engineering disciplines. |
| CO4 | Develop the applications of differential equations in various engineering field. |
| CO5 | Apply Laplace transform and inverse transform to solve differential equations with constant coefficients. |

| Text Books | |
|---|---|
| 1. | Grewal B.S.,"Higher Engineering Mathematics", Khanna Publishers, New Delhi, 43rd Edition, 2015. |
| 2. | Bali N., Goyal M. and Watkins C., "Advanced Engineering Mathematics", Firewall Media -An imprint of Lakshmi Publications Pvt., Ltd., New Delhi, 7th Edition, 2015. |
| 3. | Kreyszig Erwin, "Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2015. |
| 4. | George B. Thomas , Joel Hass , Christopher Heil , Maurice D. Weir, "Thomas' Calculus", Pearson,14th Edition, 2018. |

| Reference Books | |
|---|---|
| 1. | Jain R.K. and Iyengar S.R.K., "Advanced Engineering Mathematics", Narosa Publications, New Delhi, 5th Edition, 2019. |
| 2. | Srimantha Pal and Bhunia, S.C, "Engineering Mathematics" Oxford University Press, 2015. |
| 3. | Ramana B V., "Higher Engineering Mathematics", Tata Mc Graw Hill Publishing Company, New Delhi, 2017. |
| 4. | Veerarajan T., "Engineering Mathematics for Semester I and II", Tata Mc Graw Hill Publishing Company, New Delhi, 2019. |
| 5. | Gean Duffy., "Advanced Engineering Mathematics with MATLAB", A CRC Press Company, Boca Raton London, New York Washington, D.C, 2nd edition 2009. (Free e- book downloaded from www.EasyEngineering.net.pdf). |

**Approved by BoS Chairman**

| B.E. / B.Tech. | B23MET102 - FUNDAMENTALS OF CIVIL AND MECHANICAL ENGINEERING | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Course Objectives:**

1. To impart fundamental knowledge on Civil and Mechanical Engineering.
2. To explain the surveying principle and materials used for the construction of civilized structures.
3. To understand the fundamentals of building components.
4. To explain the component of power plant units and detailed explanation to IC engines their working principles.
5. To explain the Refrigeration and Air-conditioning System.

**UNIT-I SURVEYING AND CIVIL ENGINEERING MATERIALS 9**

Surveying: Objects – types – principles

Civil Engineering Materials: Bricks – stones – sand – cement – concrete – steel sections

**UNIT-II BUILDING COMPONENTS AND STRUCTURES 9**

Foundations: Types, Bearing capacity – Requirement of good foundations

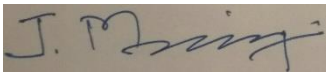
Superstructure: Brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering – Types of Bridges and Dams – Basics of Interior Design and Landscaping–stress – strain

**UNIT-III POWER PLANT ENGINEERING 9**

Introduction, Classification of Power Plants – Working principle of steam, Gas, Diesel, Hydro-electric and Nuclear Power plants –working principle of Single acting Reciprocating pump, Centrifugal Pump and Pelton wheel turbine

**UNIT-IV INTERNAL COMBUSTION ENGINES 9**

Components of internal combustion engine – Working principle of four stroke petrol and diesel engines – Working principle of two stroke petrol and diesel engines – Comparison of four stroke and two stroke engines – Concept of Electrical and Hybrid vehicles



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**UNIT-V REFRIGERATION AND AIR CONDITIONING SYSTEM 9**

Terminology of Refrigeration and Air Conditioning. Layout of typical domestic refrigerator– Working Principle of vapour compression and absorption system (Liquid-Ammonia) – Working Principle of Window and Split type room Air conditioner

**Total Instructional Hours: 45**

**Course Outcomes:**

Students will be able to

**CO1:** Explain the principles of surveying, and proper selection of construction materials

**CO2:** Summarize the building structures

**CO3:** Identify the components using in power plant cycle

**CO4:** Demonstrate the working principles of petrol and diesel engines

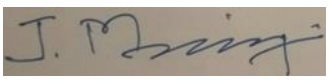
**CO5:** Outline the components of Refrigeration and Air Conditioning cycle

**Text Books:**

1. Shanmugam G and Palanichamy M S, “Basic Civil and Mechanical Engineering”, Tata McGraw Hill Publishing Co., New Delhi, 2016
2. Ramesh Babu V, “Basic Civil and Mechanical Engineering”, VRB Publishers Pvt. Ltd., Chennai, 2015

**Reference Books:**

1. Ramamrutham S., “Basic Civil Engineering”, Dhanpat Rai Publishing Co. (P) Ltd. 2013
2. Seetharaman S., “Basic Civil Engineering”, Anuradha Agencies, 2015.
3. Venugopal K. and Prahu Raja V., “Basic Mechanical Engineering”, Anuradha Publishers, Kumbakonam, 2018.
4. Shantha Kumar S R J., “Basic Mechanical Engineering”, Hi-tech Publications, Mayiladuthurai, 2015.



Approved by BoS Chairman

| B.E / B.Tech | B23MET101 – Engineering Graphics (Common to All) | L | T | P | C |
|---|---|---|---|---|---|
| | | 2 | 2 | 0 | 4 |

**Course Objective:**

1. Understand the conventions and method of engineering drawing.
2. Construct and interpret the basic engineering drawings.
3. Improve their visualization skills so that they can apply these skills in new product development.
4. Enhance their technical communication skill in the form of communicative drawings.
5. Comprehend the theory of projection.

**CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION) 2**

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

**UNIT-I PLANE CURVES AND FREE HANDSKETCHING 14**

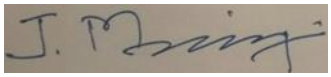
Basic Geometrical constructions, Curves used in engineering practices-Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square and circle – Drawing of tangents and normal to the above curves. Visualization concepts and Free Hand sketching: Visualization principles –Representation of Three-Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of objects.

**UNIT-II PROJECTION OF POINTS, LINES AND PLANE SURFACE 14**

Orthographic projection- principles-Principal planes-First angle projection-Projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes- Determination of true lengths and true inclinations by rotating line method and trapezoidal method and traces Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

**UNIT-III PROJECTION OF SOLIDS 14**

Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to both the principal planes by rotating object method and auxiliary plane method.



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**UNIT- IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES 14**

Sectioning of solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones.

**UNIT-V ISOMETRIC AND PERSPECTIVE PROJECTIONS 14**

Principles of isometric projection – isometric scale –Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions and miscellaneous problems. Perspective projection of simple solids-prisms, pyramids and cylinders by visual ray method.

**COMPUTER AIDED DRAFTING 3**

Introduction to drafting packages and demonstration of their use.

Basic Geometrical constructions using AUTOCAD.

**Total Instructional Hours: 75**

**Course Outcome**

Student will be able to

**CO1**: Construct the basic engineering curves and freehand sketching of basic geometrical constructions and multiple views of objects.

**CO2**: Draw problems related to projections of points, straight lines, planes and solids.

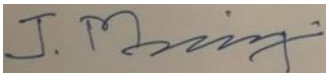
**CO3**: Build the projection of simple solids.

**CO4**: Apply the knowledge acquired on practical applications of sectioning and development of solids.

**CO5**: Construct simple solids and its sections in isometric view and projections and to draw its perspective views.

**Text Books:**

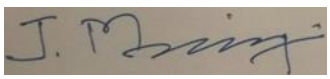
1. K.V.Natarajan, “A text book of Engineering Graphics”, 28th Edition, Dhana Lakshmi Publishers, Chennai, 2015.
2. N.D. Bhatt and V.M. Panchal, “Engineering Drawing”, Charotar Publishing House,53rd Edition, 2014.



Approved by BoS Chairman

**Reference Books:**

1. K. Venugopal and V.Prabhu Raja, “Engineering Graphics”, New Age International Publishers, 2017.
2. K.R.Gopalakrishna., “Engineering Drawing” (Vol. I & II combined) Subhas Publications, Bangalore, 2018.
3. N.S Parthasarathy and Vela Murali, “Engineering Drawing”, Oxford University Press, 2015.



Approved by BoS Chairman

| B.E / B.Tech | B23HST101 - HERITAGE OF TAMILS (Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 0 | 1 |

| UNIT I | LANGUAGE AND LITERATURE | 3 |
|---|---|---|

Language Families in India - Dravidian Languages – Tamil as aClassical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

| UNIT II | HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE | 3 |
|---|---|---|

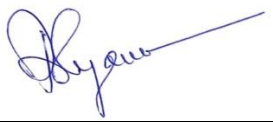
Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

| UNIT III | FOLK AND MARTIAL ARTS | 3 |
|---|---|---|

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

| UNIT IV THINAI CONCEPT OF TAMILS | 3 |
|---|---|

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

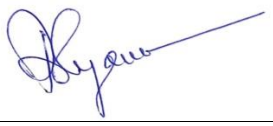


**Approved by BoS Chairman**

| UNIT V | CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE | 3 |
|---|---|---|
| Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books. | | |
| | **Total Instructional hours : 15** | |

**TEXT-CUM-REFERENCE BOOKS**


1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

**Approved by BoS Chairman**

| B.E/B.Tech (Except CSBS) | B23ENI101–PROFESSIONAL COMMUNICATION | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 2 | 4 |

| Course Objectives | |
|---|---|
| 1 | To enhance listening and reading ability of learners to comprehend various forms of speech or conversations. |
| 2 | To develop learners' verbal ability through complex texts and speak effectively in real life and workplace context. |
| 3 | To make use of grammatical knowledge to enhance fluency. |
| 4 | To foster learners' ability to write convincing job applications and effective reports. |
| 5 | To develop learners language proficiency through LSRW skills |

| UNIT-I | 9 |
|---|---|

**Listening:** Listening for general information-specific details- conversation- Audio /video (formal & informal); Telephone conversation

**Speaking:** Self-Introduction; Introducing a friend; - politeness strategies- making polite requests & polite offers.

**Reading:** Introduction to technical texts, scientific texts

**Writing:** Extended definitions, Writing checklists, Recommendation

**Language development:** Gerunds, Infinitives

**Vocabulary development:** Technical vocabulary, abbreviations, British & American spelling

| UNIT-II | 9 |
|---|---|

**Listening:** Listening to podcasts, anecdotes / stories / event narration; documentaries and interviews with celebrities

**Speaking:** Narrating personal experiences / Talking about events and situations

**Reading:** Reading longer technical texts, Summarizing

**Writing:** Interpreting graphical representations, Writing dialogues about formal and informal contexts.

**Language development:** Use of conjunctions and prepositions

**Vocabulary development:** Numerical adjectives, Transitional device

| UNIT-III | 9 |
|---|---|

**Listening:** Listen to a classroom lecture; listening to advertisements about products

**Speaking:** Picture description-describing locations in workplace, Presenting product, describing shape, size and weight- talking about quantities-talking about precautions, discussing advantages and disadvantages-making comparisons

**Reading:** Cause & effect texts, practice in speed reading

**Writing:** Process writing, Use of sequence words, Analytical and issue based essays

**Language development:** Subject verb agreement, Pronoun concord / pronoun antecedent

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| |
|---|
| **Vocabulary development:** Sequence words, Misspelled words, Content v/s Function words. |

| **UNIT-IV** | **9** |
|---|---|
| **Listening:** Listening to TED Talks, Educational videos and completing exercises based on them<br>**Speaking:** Short speech (Just A Minute) -Extempore and persuasive speech, discussing and making plans-talking about tasks-talking about progress.<br>**Reading:** Reading for details in personal and professional emails<br>**Writing:** Drafting personal and professional emails, job application- cover letter, résumé preparation, Internship letter.<br>**Language development:** Clauses, if conditionals<br>**Vocabulary development:** Finding suitable synonyms, Paraphrasing | |

| **UNIT-V** | **9** |
|---|---|
| **Listening:** Listening to debates/ discussions and panel discussions, listening to interviews<br>**Speaking:** Making predictions- talking about a given topic, giving opinions & facts, describing a process, discussing safety issues (making recommendations)<br>**Reading:** Reading and understanding technical articles<br>**Writing:** Writing reports, Minutes of meeting, Writing feasibility, survey and industrial reports<br>**Language development:** Reported speech, Active and Passive voice, Impersonal passive, Idioms.<br>**Vocabulary development:** Verbal analogies, Purpose statements | |
| | **Total Theory Instructional hours:45**<br>**Total Lab Instructional hours:30** |

| **Course Outcomes: Students will be able to** | |
|---|---|
| **CO1** | Develop listening skills to respond appropriately in general and academic purposes |
| **CO2** | Develop strategies and skills to enhance their ability to read and comprehend |
| **CO3** | Apply vocabulary skills to improve their language skills |
| **CO4** | Build the writing skills with specific reference to technical writing |
| **CO5** | Demonstrate language proficiency through LSRW skills |

| **Text Books** | |
|---|---|
| 1. | Board of Editors. Fluency in English A Course book for Engineering and Technology. Orient Blackswan, Hyderabad: 2016 |
| 2. | Sudharshana.N.P and Saveetha. C. English for Technical Communication. Cambridge University Press: New Delhi, 2016. |

| **Reference Books** | |
|---|---|
| 1. | Raman, Meenakshi and Sharma, Sangeetha “Technical Communication Principles and Practice” |

**Approved by BoS Chairman**

| | |
|---|---|
| | Oxford University Press: New Delhi, 2014. |
| 2. | Kumar, Suresh. E. “Engineering English” Orient Blackswan: Hyderabad, 2015 |
| 3. | Booth-L. Diana, Project Work, Oxford University Press, Oxford: 2014. |
| 4 | Davis, Jason and Rhonda LIss. Effective Academic Writing (Level 3) Oxford University Press: Oxford, 2006 |
| 5 | Communicative English for Engineers and Professionals- Nitin Bhatnagar & Mamta Bhatnagar |
| 6 | Skills for Success. Listening and Speaking. Level 4- Margret Brooks |
| 7 | Grammar F. Margot and Colin S. Ward Reading and Writing (Level 3) Oxford University Press: Oxford, 2011 |


**Exercises for Batch of 30 Students**

1. Listening Comprehension
2. Self- introduction
3. Short presentation
4. Group Discussion



**Approved by BoS Chairman**

| B.E / B.Tech | B23CHI101 - ENGINEERING CHEMISTRY<br>(Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 2 | 4 |

| Course Objectives | |
|---|---|
| 1. | To make the students conversant with boiler feed water requirements, related problems, water treatment and inculcate practical skills in the water quality analysis. |
| 2. | To make the students conversant with basics of polymer chemistry. |
| 3. | To make the students conversant with basic of electrochemical reactions, corrosion and induce experimental skills in the electro-analytical techniques. |
| 4. | To make the student acquire sound knowledge of energy devices. |
| 5. | To develop an understanding of the basic concepts of nano materials. |

| UNIT – I | WATER TECHNOLOGY | 17 |
|---|---|---|

**Hardness of water:** Types, expression of hardness and their units, hardness problems, boiler troubles - scale and sludge, caustic embrittlement, boiler corrosion, priming and foaming.

**Treatment of Boiler feed water:** Internal treatment (phosphate, colloidal, sodium aluminate and calgon conditioning).

**External treatment:** Ion exchange process, Zeolite process.

**Desalination of brackish water:** Reverse osmosis - municipal water treatment, break point chlorination.

**Determination of alkalinity in water sample, Determination of total, temporary & permanent hardness of water by EDTA method. Estimation of iron content of the water sample using spectrophotometer.**

| UNIT – II | POLYMERS | 9 |
|---|---|---|

**Polymers:** Definition, polymerization, types - addition and condensation polymerization, free radical mechanism - tacticity – biodegradable polymer (PHBV) and conducting polymer (poly-aniline).

**Plastics:** Classification, preparation, properties and uses of PVC, teflon, nylon-6, 6 and epoxy resin.

**Rubber:** Vulcanization of rubber, synthetic rubbers -n-butyl rubber and SBR.

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**Moulding:** Ingredients - compression and Injection.

| UNIT – III ELECTROCHEMISTRY AND CORROSION | 16 |
|---|---|

**Electrochemistry:** Redox reaction, electrode potential - oxidation potential, reduction potential, Nernst equation (derivation) - measurement and applications - electrochemical series and its significance.

**Corrosion:** causes - types-chemical and electrochemical corrosion (galvanic and differential aeration), corrosion control - electrochemical protection (sacrificial anodic method and impressed current cathodic method).

**Estimation of iron content of the given solution using potentiometer, Conductometric titration of strong acid vs strong base, Estimation of copper in brass.**

| UNIT – IV ENERGY DEVICES | 9 |
|---|---|

**Batteries:** Types of batteries – primary (alkaline battery) and secondary battery (lead acid battery, lithium-ion-battery), Fuel Cells ($H_2$ - $O_2$ fuel cell).

**Super Capacitors:** Principle, construction, working and applications.

**Photo voltaic cell:** Solar cells - principle, construction, working and applications.

| UNIT – V NANOCHEMISTRY | 9 |
|---|---|

**Basics:** Distinction between molecules, nanoparticles and bulk materials- surface area to volume ratio.

**Synthesis:** Top-down process (ball milling) - Bottom-up process (chemical vapour deposition and sol-gel method).

**Properties of nano materials** - Optical, electrical, thermal and mechanical.

**Applications of nano materials** – Medicine, Industries, electronics and biomaterials.

| | |
|---|---|
| | **Total Instructional hours: 60** |

| Course Outcomes: Students will be able to | |
|---|---|
| **CO1** | Determine the characterization of water and quantitative analysis of alkalinity, hardness and Iron. (K5) |

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| | |
|---|---|
| **CO2** | Develop the basics of polymer chemistry. (K3) |
| **CO3** | Interpret the principles of electrochemical reactions, corrosion and estimation of copper in Alloy. (K5) |
| **CO4** | Apply the concepts of energy devices and its engineering applications. (K3) |
| **CO5** | Organize the basics of Nano chemistry and its applications. (K3) |

| **Text Books** | |
|---|---|
| 1. | Dara, S S and Umare, S S, “A Textbook of Engineering Chemistry”, Chand S & Company Ltd., New Delhi, 2015. |
| 2. | Jain, P C and Monika Jain, “Engineering Chemistry” Dhanpat Rai Publishing Company Pvt. Ltd., New Delhi, 2015 |
| 3. | Vogel’s Textbook of Quantitative Chemical Analysis, 8$^{th}$ edition, 2014. |

| **Reference Books** | |
|---|---|
| 1. | Friedrich Emich, “Engineering Chemistry”, Scientific International Pvt. Ltd., New Delhi, 2014. |
| 2. | Prasanta Rath, “Engineering Chemistry”, Cengage Learning India Pvt. Ltd., Delhi, 2015. |
| 3. | Shikha Agarwal, “Engineering Chemistry - Fundamentals and Applications”, Cambridge University Press, Delhi, 2015. |
| 4. | Charles P. Poole and Frank J. Owens, "Introduction to nanotechnology", John Wiley Sons, New Jersey, 2003. |

**Equipment Needed for 30 Students**

1. Conductivity Meter-10
2. Potentiometer-10
3. Spectrophotometer-02
4. Electronic Balance-01

**Approved by BoS Chairman**

| B.E / B.Tech | B23MEP101- ENGINEERING PRACTICES LABORATORY (GROUP - B)<br>(Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 4 | 2 |

| Course Objectives | |
|---|---|
| 1. | To provide exposure to the students with hands on experience on various basic engineering practices in Electrical Engineering. |
| 2. | To provide exposure to the students with hands on experience on various basic engineering practices in Electronics Engineering. |

| GROUP – B (ELECTRICAL & ELECTRONICS) | 30 |
|---|---|

| Expt. No. | Description of the Experiments |
|---|---|
| 1. | Residential house wiring using switches, fuse, indicator, lamp and energy meter. |
| 2. | Fluorescent lamp and Stair case wiring. |
| 3. | Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit. |
| 4. | Measurement of energy using single phase energy meter. |
| 5. | Measurement of resistance to earth of an electrical equipment. |
| 6. | Study of Electronic components and equipment's – Resistor color coding |
| 7. | Measurement of AC signal parameter (peak-peak, rms period, frequency) using CRO. |
| 8. | Study of logic gates AND, OR, EX-OR and NOT. |
| 9. | Soldering & desoldering practices. |
| 10. | Study of Fan, Emergency Lamp, Telephone and FM Radio. |
| | **Total Instructional hours : 30** |

| Course Outcomes :<br>Students will be able to | |
|---|---|
| **CO4** | Construct Residential house wiring, Fluorescent lamp wiring and Stair case wiring. |
| **CO5** | Measure electrical quantities such as voltage, current, power & power factor in RLC Circuit, resistance to earth, AC signal parameter (peak-peak, RMS period, frequency) and ripple factor. |
| **CO6** | Examine logic gates (AND, OR, EOR and NOT), Electronic components and equipment's. |

| GROUP – B (ELECTRICAL & ELECTRONICS) | | |
|---|---|---|
| **Sl. No.** | **Description of Equipment** | **Quantity required** |
| 1. | Assorted Electrical Components for House Wiring | 15 sets |
| 2. | Electrical Measuring Instruments | 10 sets |
| 3. | Iron Box | 1 |
| 4. | Fan and Regulator | 1 |
| 5. | Emergency Lamp | 1 |
| 6. | Megger | 1 |
| 7. | Digital Live Wire Detector | 2 |
| 8. | Soldering Guns | 10 |
| 9. | Assorted Electronic Components for Making Circuits | 50 |
| 10. | Multipurpose PCBs | 10 |
| 11. | Multi Meters | 10 |
| 12. | Telephone | 2 |
| 13. | FM radio | 2 |
| 14. | Regulated Power Supply | 2 |
| 15. | CRO (30MHz) | 2 |
| 16. | Bread board | 10 |
| 17. | Digital IC types (IC 7432, IC 7408, IC 7400, IC 7404, IC 7402, IC 7486) | Each 10 |

| B.E/B.Tech (Except CSBS) | B23ENT101–PROFESSIONAL ENGLISH | L | T | P | C |
|---|---|---|---|---|---|
| | | 2 | 0 | 0 | 2 |

| Course Objectives | |
|---|---|
| 1. | To develop the listening and reading skills of first year engineering and technology students. |
| 2. | To help learners' develop vocabulary through reading skills. |
| 3. | To enhance learners' grammatical knowledge. |
| 4. | To enhance the learners' ability of writing different complex texts. |
| 5. | To develop the competency of learners through LSRW skills. |

| UNIT-I | 6 |
|---|---|
| **Listening:** Listening to voicemail & messages; Listening and contextualizing.<br>**Speaking:** Replying to polite requests and offers, understanding basic instructions.<br>**Reading:** Short comprehension passages, practice in skimming & scanning<br>**Writing:** Writing Instructions<br>**Language development:** Parts of Speech, Wh - Questions, yes or no questions, Question tags<br>**Vocabulary development:** Prefixes-suffixes | |

| UNIT-II | 6 |
|---|---|
| **Listening:** Listening commentaries and announcements<br>**Speaking:** Role Play exercises based on workplace contexts.<br>**Reading:** Comprehension questions including dialogues and conversations<br>**Writing:** Writing different types of Paragraph<br>**Language development:** Regular & Irregular Verbs, Tenses<br>**Vocabulary development:** Understanding contextual meaning, Synonyms | |

| UNIT-III | 6 |
|---|---|
| **Listening :** Listening to a product launch-sensitizing leaners to the nuances of persuasive communication<br>**Speaking :** Debate-discussion on current issues<br>**Reading :** Short texts and longer passages-note making<br>**Writing :** Understanding text structure, use of reference words and discourse markers, jumbled sentences<br>**Language development:** Idioms and Phrases, Degrees of comparison<br>**Vocabulary development:** One word substitutes | |

**Approved by BoS Chairman**

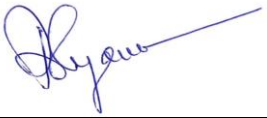
| UNIT-IV | 6 |
|---|---|
| **Listening :** Listening to short academic videos<br>**Speaking :** Making short presentation through short films<br>**Reading :** Intensive and Extensive reading-reading different types of magazines<br>**Writing :** Letter writing- formal and informal<br>**Language development:** Direct/indirect questions<br>**Vocabulary development:** Phrasal verbs | |

| UNIT-V | 6 |
|---|---|
| **Listening :** Listening to talks/lectures by specialists on specific topics<br>**Speaking :** Discussion on general and current topics<br>**Reading :** Longer texts-cloze reading<br>**Writing :** Writing short essays, developing outline, identifying main and subordinate ideas, Dialogue writing<br>**Language development:** Spelling and Punctuations, Modal verbs<br>**Vocabulary development:** Collocations | |
| | **Total Instructional hours:30** |

| Course Outcomes: Students will be able to | |
|---|---|
| **CO1** | Develop listening and reading skills for effective communication |
| **CO2** | Develop vocabulary skills |
| **CO3** | Build grammatical understanding |
| **CO4** | Explain opinions efficiently in writing formal and informal contexts |
| **CO5** | Develop knowledge through LSRW skills |

| Text Books | |
|---|---|
| 1. | Board of Editors Using English, “A Course book for Undergraduate Engineers and Technologists”, Orient Black Swan Limited,Hyderabad:2015 |
| 2. | Richards,C.Jack,“ Interchange StudentsBook-2”, New Delhi,CUP,2015. |

| Reference Books | |
|---|---|
| 1. | Bailey, Stephen, “A practical guide for students”, New York Rutledge, 2011. |
| 2. | Raman, Meenakshi and Sharma, Sangeetha “Technical Communication Principles and Practice” Oxford University Press: New Delhi, 2014. |
| 3. | Dutt P.Kiranmai and Rajeevan Geeta, “Basic Communication Skills”, Foundation Books, 2013. |



**Approved by BoS Chairman**

| B.E/B.TECH | B23MAT201 INTEGRAL CALCULUS AND COMPLEX ANALYSIS (Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 4 |

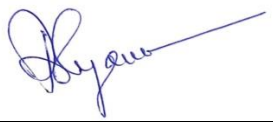
| Course Objectives | |
|---|---|
| 1. | To recognize various techniques of integration. |
| 2. | To apply integration techniques in evaluating area and volume of solids. |
| 3. | To develop the use of Vector calculus in two and three dimensional spaces. |
| 4. | To demonstrate understanding of the basic concepts of complex differentiation. |
| 5. | To understand Cauchy theorem and Cauchy integral formulae and apply these to evaluate complex contour integrals. |

| UNIT – I | INTEGRAL CALCULUS | 12 |
|---|---|---|
| Riemann sum – Definite and Indefinite integrals - Substitution rule (Exponential, logarithmic, Trigonometric functions) – Integration by parts – Integration of Rational functions by Partial fraction. | | |

| UNIT – II | MULTIPLE INTEGRALS | 12 |
|---|---|---|
| Double integrals: – Double integrals in Cartesian coordinates - Double integrals in Polar coordinates – Area enclosed by plane curves – Triple integrals: Evaluation of triple integrals - Volume as triple integral (Simple problems). | | |

| UNIT – III | VECTOR CALCULUS | 12 |
|---|---|---|
| Gradient and directional derivative - Divergence and curl - Solenoidal and Irrotational vector fields - Green's theorem in a plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Verification of theorem and applications (for cubes and rectangular parallellopipeds). | | |

| UNIT – IV | COMPLEX DIFFERENTIATION | 12 |
|---|---|---|
| Analytic functions - Cauchy-Riemann equations (excluding proof) – Properties of analytic function – Harmonic conjugate- Construction of analytic function by Milne Thomson method – Bilinear transformation. | | |



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| UNIT – V | COMPLEX INTEGRATION | 12 |
|---|---|---|
| Cauchy‘s integral theorem – Cauchy‘s integral formula – residues - Cauchy‘s Residue theorem – Evaluation of real integrals – Stereographic projection – Use of circular contour and semicircular contour (excluding poles on real axis). | | |
| | | **Total Instructional hours : 60** |

| **Course Outcomes : Students will be able to** | |
|---|---|
| **CO1** | Develop Fundamental Theorem of Calculus, techniques of Integration such as substitution, partial fractions and integration by parts. |
| **CO2** | Make use of integration to compute area and volume. |
| **CO3** | Apply the line, surface and volume integrals for verification of Green‘s, Gauss and Stokes theorems. |
| **CO4** | Develop an understanding of the standard techniques of complex variable theory in particular analytic function |
| **CO5** | Identify contour integrations with the help of residue theorem. |

| **Text Books** | |
|---|---|
| 1. | Grewal B.S.,”Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014. |
| 2. | Kreyszig Erwin, "Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2015. |
| 3. | George B. Thomas , Joel Hass , Christopher Heil , Maurice D. Weir, “Thomas' Calculus”, Pearson, 14th Edition, 2018. |

| **Reference Books** | |
|---|---|
| 1. | Bali N., Goyal M. and Watkins C., “Advanced Engineering Mathematics”, Firewall Media - An imprint of Lakshmi Publications Pvt., Ltd., New Delhi, 7th Edition, 2015. |
| 2. | Jain R.K. and Iyengar S.R.K., “Advanced Engineering Mathematics”, Narosa Publications, |

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| | |
|---|---|
| | New Delhi, 5th Edition 2019. |
| 3. | O'Neil, P.V.,"Advanced Engineering Mathematics", Cengage Learning India Pvt. Ltd, New Delhi, 7th Edition 2017. |
| 4. | Sastry, S.S, "Engineering Mathematics", Vol. I & II, PHI Learning Pvt. Ltd, 4th Edition, New Delhi, 2014. |
| 5. | Wylie, R.C. and Barrett, L.C., "Advanced Engineering Mathematics", (Tata McGraw Hill Education Pvt. Ltd), 6th Edition, New Delhi, 2012. |
| 6. | Gean Duffy., "Advanced Engineering Mathematics with MATLAB", A CRC Press Company, Boca Raton London, New York Washington, D.C, 2nd edition 2009. (Free e- book downloaded from www.EasyEngineering.net.pdf) |




**Approved by BoS Chairman**

| B.E | B23EET201 – ELECTRIC CIRCUIT ANALYSIS | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 4 |

| Course Objectives | |
|---|---|
| 1. | To learn circuit laws, theorems and circuit analysis techniques. |
| 2. | To understand the concepts of network reduction techniques. |
| 3. | To educate on obtaining the transient response of circuits. |
| 4. | To be able to analyze resonant circuits & coupled circuits. |
| 5. | To analyze three phase circuits and understand the safety practices. |

| UNIT-I | BASIC CIRCUIT ANALYSIS | 12 |
|---|---|---|

Circuit elements: R, L and C- Series parallel combination of R, L and C Components, DC Series-Parallel Circuits - sources: Independent and dependent voltage and current sources, Circuit laws – Voltage and current division – Use of source transformations – Mesh and Nodal analysis – Network reduction by delta- star transformations. Sinusoidal voltages and currents: Average and RMS Values, peak and form factors - impedance and admittance - Real, reactive and apparent power – Power factor and its practical importance.

| UNIT-II | NETWORK THEOREMS | 12 |
|---|---|---|

Network Theorems: Superposition theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity theorem and Maximum power transfer theorem, Application to DC and AC Networks.

| UNIT-III | TRANSIENT RESPONSE ANALYSIS | 12 |
|---|---|---|

L and C elements -Transient response of RL, RC and RLC Circuits using Laplace transform for DC input and A.C. sinusoidal input.

| UNIT-IV | RESONANCE AND COUPLED CIRCUITS | 12 |
|---|---|---|

Series and parallel resonance – Frequency response- Quality factor and Bandwidth. Magnetically coupled circuits: self and mutual inductances - Dot rule – Analysis of coupled circuits.

| UNIT-V | THREE PHASE CIRCUITS AND SAFETY PRACTICES | 12 |
|---|---|---|
| Three phase circuits: generation of 3 - phase voltages - star and delta connection - relation between phase and line quantities - balanced and unbalanced 3 - phase loads - power measurement by two wattmeter method - Electrical Safety Practices.. | | |
| **Total Instructional hours:60** | | |

| Course Outcomes: Students will be able to | |
|---|---|
| **CO1** | Apply Circuit laws & Network reduction techniques to solve the given electric circuits. |
| **CO2** | Apply network theorems to solve DC and AC circuits. |
| **CO3** | Solve the Transient response of RLC circuits using Laplace Transform. |
| **CO4** | Analyze series and parallel resonant circuits and coupled circuits. |
| **CO5** | Analyze three phase circuits and Safety practices. |

| Text Books | |
|---|---|
| 1. | William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", McGraw Hill publishers, edition, New Delhi, 2013. |
| 2. | Charles K. Alexander, Mathew N.O. Sadiku, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, 2013. |
| 3. | Peter E. Sutherland, 'Principles of Electrical Safety', John Wiley & Sons, 2014. |

| Reference Books | |
|---|---|
| 1. | Richard C. Dorf and James A. Svoboda, "Introduction to Electric Circuits", 7th Edition,John Wiley & Sons, Inc. 2015. |
| 2. | Jegatheesan, R., "Analysis of Electric Circuits," McGraw Hill, 2015. |
| 3. | Bhattacharya S.K. Basic Electrical and Electronics Engineering, Pearson India, 2011. |

**BoS Chairman**

| B.E / B.Tech | B23HST201- TAMILS AND TECHNOLOGY (Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 1 | 0 | 0 | 1 |

| UNIT –I | WEAVING AND CERAMIC TECHNOLOGY | 3 |
|---|---|---|

**Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.**

| UNIT -II | DESIGN AND CONSTRUCTION TECHNOLOGY | 3 |
|---|---|---|

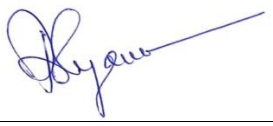
**Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.**

| UNIT III | MANUFACTURING TECHNOLOGY | 3 |
|---|---|---|

**Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting,steel -Copper and goldCoins as source of history - Minting of Coins – Beads making-industries Stone beads - Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.**

| UNIT IV | AGRICULTURE AND IRRIGATION TECHNOLOGY | 3 |
|---|---|---|

**Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.**



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| UNIT V | SCIENTIFIC TAMIL & TAMIL COMPUTING | 3 |
|---|---|---|
| **Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.** | | |
| | | **Total Instructional hours : 15** |

**TEXT-CUM-REFERENCE BOOKS**


1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.


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| B.E / B.Tech | B23PHI101 - ENGINEERING PHYSICS (Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 2 | 4 |

| Course Objectives | |
|---|---|
| 1. | To gain knowledge on the basics of properties of matter, its applications and inculcate practical skills in the determination of elastic property of the materials. |
| 2. | To acquire knowledge & experimental skills on the concepts of Photonics and their applications in fiberoptics. |
| 3. | To have adequate knowledge on the concepts of electrical, magnetic properties of materials and enhance the practical skills in determination of electrical properties of the materials. |
| 4. | To get knowledge on advanced physics concepts of quantum theory and its applications in SEM, TEM and induce practical skills in microscope. |
| 5. | To enhance the fundamental knowledge of students in Crystal Physics and its Applications relevant to various streams of Engineering and Technology. |

| UNIT – I | PROPERTIES OF MATTER | 14 |
|---|---|---|

**Elasticity**-Modulus, types of modulii of elasticity, Stress-strain diagram and its uses-factors affecting elastic modulus and Twisting couple, torsion pendulum; theory and experiment.

**Bending of beams**- Bending moment - uniform and non- uniform bending; theory and experiment- I-shaped girders and its applications.

**Determination of rigidity modulus – Torsion pendulum- Determination of Young's modulus by non-uniform bending method- Determination of Young's modulus by uniform bending method.**

| UNIT – II | PHOTONICS AND FIBER OPTICS | 12 |
|---|---|---|

**Lasers**; properties of laser-spontaneous and stimulated emission-amplification of light by population inversion- Einstein's A and B coefficients - derivation – Types of laser; Nd.-YAG Laser, Semiconductor lasers; homojunction and heterojunction, Industrial and Medical Applications.

**Fiber Optics**; Principle, Numerical Aperture and Acceptance Angle - Types of optical fibres–-Fiber optic communication System-Block diagram–Medical Applications-Endoscopy.

**Determination of wavelength of the Laser using grating- Determination of particle size using**

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| | | |
|---|---|---|
| **Laser- Determination of Numerical aperture and acceptance angle of an optical fiber.** | | |
| **UNIT – III** | **ELECTRICAL AND MAGNETIC PROPERTIES OF MATERIALS** | **12** |
| **Classical free electron theory** – Relaxation time and collision time - Expression for electrical conductivity – Thermal conductivity – Wiedemann-Franz law –Lorentz number-Drawbacks of classical theory-Quantum theory- Fermi-Dirac statistics – variation of Fermi level with temperature.<br>**Introduction to magnetic materials** –Comparision of Dia, Para and Ferro magnetic materials – Domain theory of ferromagnetism- Hysteresis -Soft and Hard magnetic materials **-**Ferrites and its applications.<br>**Determination of specific resistance of the wire using Carey Foster's Bridge.** | | |

| | | |
|---|---|---|
| **UNIT – IV** | **QUANTUM PHYSICS** | **12** |
| **Black body radiation**; Planck's theory (derivation) - wave particle duality- debroglie's wavelength - concept of wave function and its physical significance.<br>**Wave equation**; Schroedinger's time independent and time dependent equations, particle in a one-dimensional rigid box. **Applications;** Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM).<br>**Determination of thickness of a thin wire by using travelling microscope.** | | |
| | | |
| **UNIT – V** | **CRYSTAL PHYSICS** | **10** |
| **Crystal Structures;** Single crystalline, polycrystalline and amorphous materials - unit cell- space lattice-crystal systems- Bravais lattices- Miller indices- inter-planar distances – coordination number and packing factor for SC, BCC, FCC and HCP structures.<br>**Crystal imperfections**; Point and Line defects-Burger vector. | | |
| | **Total Theory Instructional hours : 60** | |

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| Course Outcomes : Students will be able to | |
|---|---|
| **CO1** | Categorize the basics of properties of matter and its applications, classify the elastic properties of materials by using uniform, non-uniform bending method and torsional pendulum apparatus. |
| **CO2** | Explain the basics of Laser, Fiber Optics and their applications, determination of Particle size, Wavelength of laser and acceptance angle, numerical aperture of optical fiber. |
| **CO3** | Justify the concepts of electrical, magnetic properties of materials, determination of Specific resistance of the material. |
| **CO4** | Interpret the basic knowledge of quantum theory that could be helpful in understanding the wave functions of the particle and determination of thickness of thin sheet by using travelling microscope. |
| **CO5** | Classify and compare the different types of Crystals, their structures and its defects. |

| Text Books | |
|---|---|
| 1. | Bhattacharya, D.K. & Poonam, T, “Engineering Physics”, Oxford University Press,2015. |
| 2. | Gaur, R.K. & Gupta, S.L. “Engineering Physics”, Dhanpat Rai Publishers, 2012. |
| 3. | Pandey, B.K. & Chaturvedi, S. “Engineering Physics”, Cengage Learning India, 2012. |
| 4. | Rajendran V, “Engineering Physics”, Tata McGraw Hill, Publishing Company, NewDelhi, 2011. |
| 5. | Wahab, M.A. —Solid State Physics: Structure and Properties of Materials, Narosa Publishing House, 2009. |

| Reference Books | |
|---|---|
| 1. | Halliday, D., Resnick, R. & Walker, J. “Principles of Physics"", Wiley, 2015. |
| 2. | Serway, R.A. & Jewett, J.W. “Physics for Scientists and Engineers”, CengageLearning, 2010. |
| 3. | Tipler, P.A. &Mosca, G. “Physics for Scientists and Engineers with Modern Physics”, W.H.Freeman, 2007. |
| 4. | Avadhanulu M.N**, “**Engineering Physics - Volume 1”, S.Chand & Company Ltd.,NewDelhi, 2010. |
| 5. | Garcia, N. & Damask, A. —Physics for Computer Science Students. Springer-Verlag, 2012. |
| 6. | Senthil Kumar, G. Physics Laboratory I & II, VRB publishers Pvt. Ltd., Chennai (2016). |

**Equipment Needed for 30 Students**

1. Diode Laser (2 mS power) , He –Ne Laser source(2mW), Optical Fibre Kit - 06
2. Travelling Microscope ,Knife edge, Slotted weights - 19
3. Carey Foster Bridge - 06
4. Air Wedge Apparatus with Travelling Microscope - 06
5. Torsional Pendulum - 06

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| B.E | B23CSI101- C PROGRAMMING (Common to CSE, AI&DS,(CSE)AI&ML, BME, ECE and EEE) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 2 | 4 |

**Course Objectives:**

1. To know the basics of problem-solving techniques.
2. To provide exposure to problem-solving through programming.
3. To develop C programming language with conditional statements and loops.
4. To develop modular applications in C using functions pointers and structures.
5. To do input/output and file handling in C.

**UNIT – I INTRODUCTION TO PROBLEM SOLVING & COMPUTER 8**

Problem Solving: Problem Solving Techniques - Logical Thinking – Step for Solving the Problems – Compare Problem Solving and Logical Thinking – Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion).

**UNIT – II BASICS OF C PROGRAMMING 10**

Introduction to programming paradigms - Structure of C program - Phases of developing a running computer program in C – Applications of C Language - C programming: Data Types – Storage Class - Constants – Enumeration Constants - Keywords – Operators: Operators – Types of Operators - Expressions - Precedence and Associativity - Input/Output statements – Decision making statements - Looping statements with example of Pattern – Preprocessor directives.

**UNIT – III ARRAYS AND POINTERS 9**

Introduction to Arrays: Declaration, Initialization – One dimensional array – Two dimensional arrays with example of Matrices Operations – Pointers: Pointer Declaration – Initialization - Pointer operators – Pointer Arithmetic – Dynamic Memory Allocation – Selection sort, Insertion sort, Bubble sort - Searching.

**UNIT – IV FUNCTION AND STRINGS 9**

Function: definition of function, Declaration of function – Function Call - Prototype Declaration - Pass by value, Pass by reference – Recursion - Linear recursion, Binary Search using recursive functions - C standard functions and libraries - String operations: length, compare, concatenate, copy - String Arrays.

**UNIT – V STRUCTURES AND FILE HANDLING 9**

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Introduction: need for structure data type, structure definition, Structure declaration, Structure within a structure – Array Structure - Union – File Handling: File Operations – File Types: Sequential and Random access – Case Study: AI Processing System using C.

**List of Experiments:**

| Expt. No. | Description of the Experiments |
|---|---|
| 1. | Experiment with I/O statements, operators, expressions. |
| 2. | Develop a C programs for Decision Making Construct.<br>a) if-else<br>b) switch-case<br>c) goto, break-continue |
| 3. | Develop a C programs for Loop Control statements.<br>a) for<br>b) Nested for<br>c) while and do-while |
| 4. | Develop a C programs for Array<br>a) One Dimensional – Sorting and Searching<br>b) Two Dimensional – Matrix Operations<br>c) Traversal |
| 5. | Develop a C program to perform the pointers.<br>a) Linear Search<br>b) Binary Search<br>c) Pointer Operation |
| 6. | Build a C programs for the recursive function |
| 7. | Implement a C programs for string operations<br>a) String operations using build in methods |
| 8. | Develop a C program to experiment with Pass by value and Pass by reference. |
| 9. | Develop a c program for structure and union<br>a) Payroll using structure and union.<br>b) Student records using structure and union. |
| 10. | Develop a C program to perform file operations. |

**Total Instructional hours: (45+30) = 60**

**Course Outcomes:**

Students will be able to

**CO1:** Demonstrate knowledge on C programming constructs.

**CO2:** Construct C programs using decision making and control statements.

**CO3:** Experiment with programs in C using an array.

**CO4:** Build programs in C using strings, pointers, functions.

**CO5:** Model the applications in C using Structures, Union and File Operations.

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**CO Mapping with PO & PSO**

| CO/PO & PSO | | PO1 (K3) | PO2 (K4) | PO3 (K5) | PO4 (K5) | PO5 (K6) | PO6 (K3) (A3) | PO7 (K2) (A3) | PO8 (K3) (A3) | PO9 (A3) | PO10 (A3) | PO11 (K3) (A3) | PO12 (A3) | PSO1 (K4) (A3) | PSO2 (K3) (A3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | K2 | 3 | 2 | 1 | - | 1 | - | - | 1 | 1 | - | - | 1 | 2 | 1 |
| CO2 | K3 | 3 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | 2 | 1 |
| CO3 | K3 | 3 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | 2 | 1 |
| CO4 | K3 | 3 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | 2 | 1 |
| CO5 | K3 | 3 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | 2 | 1 |
| Weighted Average | | 3 | 2 | 1 | - | 1 | - | - | 1 | 2 | - | - | 2 | 2 | 1 |

**3 – Strong** **2- Moderate** **1- Weak**

**List of Equipment Required:**

**Requirements for a Batch of 30 Students**

| Sl. No. | Description of the Equipment | Quantity required (Nos.) |
|---|---|---|
| 1. | HP Make, Core i5, 11th Generation, 16GB RAM PCs, Operating systems: Windows* 10 or later, macOS, and Linux. Turbo C/C++ 4.5 | 30 |

**Text Books:**

1. Yashavant P. Kanetkar. "Let Us C", 19th Edition, BPB Publications, 2022.
2. H. M. Deitel, P. J. Deitel, C: How to program, 9th edition, Pearson Education, 2020.

**Reference Books:**

1. Reema Thareja, "Programming in C", Oxford University Press, Second Edition, 2016.
2. Kernighan, B.W and Ritchie, D.M, "The C Programming language", Second Edition, Pearson Education, 2015.
3. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", 1st Edition, Pearson Education, 2013.
4. Pradip Dey, Manas Ghosh, "Computer Fundamentals and Programming in C", Second Edition, Oxford University Press, 2013.

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| B.E / B.Tech | B23CEP201 – SOFT SKILLS<br>(Common to all Branches) | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 2 | NC |

| Course Objectives | |
|---|---|
| 1. | To identify personality using evaluation method. |
| 2. | To encourage creative thinking by practice. |
| 3. | To enrich interpersonal skills through integrated activities. |
| 4. | To develop social and professional etiquette. |
| 5. | To identify and apply employability skills for professional success. |

| UNIT – I | SELF EVALUATION | 6 |
|---|---|---|
| Introduction to soft skills, Familiarize oneself, Self-understanding, SWOT analysis, Goal Setting. | | |

| UNIT – II | INNOVATIVE THINKING | 6 |
|---|---|---|
| Divergent thinking, Encourage curiosity, Writing a story, Poster making. | | |

| UNIT – III | INTERPERSONAL SKILLS | 6 |
|---|---|---|
| Interpersonal skills - Need & Components – Understanding Intercultural Competence - Team Work- Problem Solving Skills - Conflict Management & Resolutions in Workplace, Leadership skills, Managerial skills. | | |

| UNIT – IV | BUSINESS ETIQUETTE | 6 |
|---|---|---|
| Define Etiquette -Types and Importance of Workplace Etiquette - Basic Corporate Etiquette - Telephone Etiquette - Meeting & E- mail Etiquette - Customer Service Etiquette. | | |

| UNIT – V | CORPORATE SKILLS | 6 |
|---|---|---|
| Work Ethics- Adaptability-Analytical Reasoning- Lateral Thinking-Stress & Time Management. | | |
| | | Total Instructional hours : 30 |

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| Course Outcomes : Students will be able to | |
|---|---|
| **CO1** | Identify different personalities. |
| **CO2** | Show creative skill in different aspects. |
| **CO3** | Utilize leadership skills with ability to work in a team. |
| **CO4** | Analyze work place etiquette. |
| **CO5** | Develop adequate soft skills required for the workplace. |

| Reference Books | |
|---|---|
| 1. | Butterfield, Jeff “Soft Skills for Everyone” Cengage Learning, New Delhi, 2015. |
| 2. | S.Hariharanetal ”Soft Skills” MJP Publishers: Chennai, 2010. |
| 3. | Peter, Francis “Soft Skills and Professional Communication” New Delhi: Tata McGraw Hill. 2012. Print. |
| 4. | Meenakshi Raman, Shalini Upadhyay, ’Soft Skills’, Cengage Learning India Pvt. Ltd, Delhi, 2018. |
| 5. | M.S.Rao, ‘Soft Skills Enhancing Employability’, I. K. International Publishing House Pvt. Ltd, New Delhi, 2010 |
| 6 | Sabina Pillai, Agna Fernandez, ‘Soft Skills and Employability Skills’, Cambridge University Press, 2018. |
| 7 | John Peter.A, ‘Self – Development and Professional Excellence’, Cengage Learning India Pvt. Ltd, Delhi, 2019. |

**Approved by BoS Chairman**

| B.E | B23EEP201-ELECTRIC CIRCUITS AND SIMULATION LABORATORY | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 4 | 2 |

| Course Objectives | |
|---|---|
| 1. | To impart hands on experience in verification of Electric Circuit laws and Theorems. |
| 2. | To verify Electric Circuit laws and theorems using simulation software. |
| 3. | To implement power measurement methods for three phase circuits. |

| Expt. No. | Description of the Experiments |
|---|---|
| 1 | Verification of Kirchhoff's Voltage and Current Laws using simulation software. |
| 2 | Verification of Kirchhoff's Voltage and Current Laws. |
| 3 | To obtain Thevenin's and Norton's equivalent circuits using simulation software. |
| 4 | Verification of Thevinin's and Norton's Theorem. |
| 5 | To verify Maximum power Transfer theorem and Superposition theorem using a simulation software. |
| 6 | Verification of Superposition and Maximum Power Transfer Theorem. |
| 7 | Study of the effect of Q on frequency response of series and parallel resonant circuits. |
| 8 | Measurement of active power, reactive power, power factor and impedance of RL, RC and RLC circuits using 3 voltmeters and 3 ammeters. |
| 9 | Simulation of three phase power measurement by two wattmeter method using simulation software. |
| 10 | Power measurement in a three phase circuit using two wattmeter method. |
| | **Total Instructional hours : 45** |

| **Course Outcomes :** **Students will be able to** | |
|---|---|
| **CO1** | Analyze basic laboratory experiments involving electrical circuits using laboratory test equipments such as power supplies, signal generators, oscilloscopes and multimeters. |
| **CO2** | Examine and verify network theorems. |
| **CO3** | Examine the three phase power measurement method using two wattmeter method. |
| **CO4** | Relate physical observations and measurements involving electrical circuits to theoretical principles. |
| **CO5** | Experiment with various electric circuits for the performance evaluation using simulation software. |

| LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS | | |
|---|---|---|
| **Sl. No.** | **Description of Equipment** | **Quantity required** |
| 1 | Regulated Power Supply (0-30V ) | 15 Nos |
| 2 | Function Generator (MHz Range) | 10 Nos |
| 3 | Oscilloscope (20 MHz) | 10 Nos |
| 4 | Digital Storage Oscilloscope (20 MHz) | 2 Nos |
| 5 | AC/DC – Voltmeters of required rating | 10 Nos |
| 6 | AC/DC -Ammeters of required rating | 10 Nos |
| 7 | Multimeters | 10 Nos |
| 8 | Decade Resistance Box | 6 Nos |
| 9 | Decade Inductance Box | 6 Nos |
| 10 | Decade Capacitance Box | 6 Nos |
| 11 | Single Phase Wattmeter of suitable rating | 5 Nos |
| 12 | Circuit Connection Boards | 20 Nos |
| 13 | Three phase star& delta connected load / Single phase load bank of suitable rating | 3 Nos |
| 14 | Resistors, Inductors, Capacitors of various capacities (Quarter Watt to 10 Watt) | 50 Nos |
| 15 | 10 Nos of PC loaded with Pspice/ Matlab/e-Sim / Scilab/ Equivalent Software Package | Minimum 10 Users |
| 16 | Printer | 1 No |

**BoS Chairman**