

E.G.S. PILLAY ENGINEERING COLLEGE

(Autonomous)

NAGAPATTINAM – 611 002.

(Affiliated to Anna University, Chennai | Accredited by NAAC with 'A++' Grade
Accredited by NBA | Approved by AICTE, New Delhi)



REGULATIONS - R2023

B.E – ELECTRICAL & ELECTRONICS ENGINEERING FIRST SEMESTER CURRICULUM

EEE

| COURSE CODE | COURSE NAME | CATEGORY | L | T | P | C | MAX. MARKS | | |
|-------------|---|----------|---|---|---|---|------------|----|-------|
| | | | | | | | CA | ES | TOTAL |
| 2301IP101 | Induction Program | - | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2301MA105 | Engineering Mathematics – I | BSC | 3 | 2 | 0 | 4 | 40 | 60 | 100 |
| 2301PH103 | Semiconductor Physics and Optoelectronics | BSC | 3 | 0 | 2 | 4 | 50 | 50 | 100 |
| 2301GEX02 | Engineering Graphics and Design | ESC | 2 | 0 | 2 | 3 | 50 | 50 | 100 |
| 2301ENX01 | Professional English | HSMC | 2 | 0 | 2 | 3 | 50 | 50 | 100 |
| 2301TA101 | Tamil and Technology | HSMC | 1 | 0 | 0 | 1 | 100 | 0 | 100 |
| 2301GEX52 | Engineering Practices Laboratory | ESC | 0 | 0 | 4 | 2 | 60 | 40 | 100 |
| 2301LS101 | Life Skill Activity – I | - | 0 | 0 | 0 | 0 | 100 | 0 | 100 |

| 2301MA105 | ENGINEERING MATHEMATICS – I (For EEE) (MATRICES AND CALCULUS) | | L | T | P | C | | | | | | | |
|---|--|------------|-------------|-------------|-------------|----------------|------------|------------|------------|------------|-------------|-------------|-------------|
| | | | 3 | 2 | 0 | 4 | | | | | | | |
| PREREQUISITE: | | | | | | | | | | | | | |
| | 1. Matrices | | | | | | | | | | | | |
| | 2. Differentiation | | | | | | | | | | | | |
| | 3. Integration. | | | | | | | | | | | | |
| COURSE OBJECTIVES: | | | | | | | | | | | | | |
| | 1. To develop the use of matrix algebra techniques that is needed by engineers for practical applications.. | | | | | | | | | | | | |
| | 2. To find the solution of ordinary differential equations as most of the engineering problems are characterized in this form. | | | | | | | | | | | | |
| | 3. To familiarize the student with functions of several variables. This is needed in many branches of engineering. | | | | | | | | | | | | |
| | 4. To acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications. | | | | | | | | | | | | |
| COURSE OUTCOMES: | | | | | | | | | | | | | |
| On the successful completion of the course, students will be able to | | | | | | | | | | | | | |
| CO1: | Use the matrix algebra methods for solving practical problems. | | | | | | | | | | | | |
| CO2: | Make use of differential calculus ideas on several variable functions. | | | | | | | | | | | | |
| CO3: | Apply the concepts of ordinary differential equations and Transform. | | | | | | | | | | | | |
| CO4: | Compute the multiple integral ideas in solving area, volume and other practical problems. | | | | | | | | | | | | |
| CO5: | Apply Laplace Transform in solving Boundary value problems of second order ODE | | | | | | | | | | | | |
| COs Vs POs MAPPING: | | | | | | | | | | | | | |
| | COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| | CO1 | 3 | 2 | 1 | | | | | | | | | |
| | CO2 | 3 | 2 | 1 | | | | | | | | | |
| | CO3 | 3 | 2 | 1 | | | | | | | | | |
| | CO4 | 3 | 2 | 1 | | | | | | | | | |
| | CO5 | 3 | 2 | 1 | | | | | | | | | |
| COs Vs PSOs MAPPING | | | | | | | | | | | | | |
| | | COs | PSO1 | PSO2 | PSO3 | | | | | | | | |
| | | CO1 | 1 | | | | | | | | | | |
| | | CO2 | 1 | | | | | | | | | | |
| | | CO3 | 1 | | | | | | | | | | |
| | | CO4 | 1 | | | | | | | | | | |
| | | CO5 | 1 | | | | | | | | | | |
| COURSE CONTENTS: | | | | | | | | | | | | | |
| MODULE I | MATRICES | | | | | 9 Hours | | | | | | | |
| Matrices- Rank of a matrix – Consistency of a system of linear equations -Solution of a system of linear equations - Linearly dependent and independent vectors – Cramer’s Rule – Eigen values and Eigenvectors of a real matrix – Properties of Eigen values and Eigenvectors - Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation | | | | | | | | | | | | | |

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| MODULE II | DIFFERENTIAL CALCULUS | 9 Hours |
| Concepts of limits and continuity –Functions of several variables – Total derivatives – Differentiation of implicit functions – Jacobians – Taylor series expansion – Maxima and Minima – Method of Lagrangian multipliers . | | |
| MODULE III | HIGHER ORDER ORDINARY DIFFERENTIAL EQUATIONS | 9 Hours |
| Second and Higher order Linear differential equations with constant coefficients - Euler Cauchy's equation - Legendre's Linear equation - Method of Variation of Parameters - Applications of ODE: Solving electrical circuits. | | |
| MODULE IV | INTEGRAL CALCULUS | 9 Hours |
| Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids – Change of variables in double and triple integrals – Applications : Moments and centre's of mass, moment of inertia. | | |
| MODULE V | LAPLACE TRANSFORM | 9 Hours |
| Laplace Transform, Properties of Laplace Transform, Laplace transform of periodic functions. Finding inverse Laplace transform by different methods, convolution theorem. Evaluation of integrals by Laplace transform, solving ODEs by Laplace Transform method | | |
| TOTAL:45 + 15 = 60 HOURS | | |
| REFERENCES: | | |
| 1. Grewal B.S., , 41st Edition, 2011, “Higher Engineering Mathematics”, Khanna Publishers, New Delhi. | | |
| 2. Ramana B.V., 11th Reprint, 2010, “Higher Engineering Mathematics”, Tata McGraw Hill Co. Ltd., NewDelhi | | |
| 3. David C. Lay, “Linear Algebra and its Applications”, Pearson Education Asia, New Delhi, 5 th Edition, 2016 | | |
| 4. Kreyzig E., “Advanced Engineering Mathematics”, 10th Edition, John Wiley and sons, 2011 | | |
| 5. Venkataraman M.K., “Engineering Mathematics”, The National Publishing Co., Chennai, 2003 | | |
| 6. Thomas G.B. and Finney R.L., “Calculus and Analytic Geometry”, 11th Edition, Pearson Education, 2006 | | |

| 2301TA101 | TAMIL AND TECHNOLOGY | L | T | P | C | | | | | | | | |
|--|---|-------------|-------------|-------------|----------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| | | 1 | 0 | 0 | 1 | | | | | | | | |
| PREREQUISITE: | | | | | | | | | | | | | |
| | The Tamils living in different parts of the World need to keep in touch with the motherland and the mother tongue and be knowledgeable about their heritage in order to preserve their cultural identity and observe their traditional and cultural activities. | | | | | | | | | | | | |
| | Recognizing this fact and for meeting the felt and emerging needs of the Tamil Communities and others interested in Tamil studies. | | | | | | | | | | | | |
| COURSEOBJECTIVES: | | | | | | | | | | | | | |
| | Tamil Literature is way of a life. It focuses on the historical significance of ethics, moral culture in the Tamil context. | | | | | | | | | | | | |
| | Tamil Modern literature emphasizes on the modern development of the behavioral, moral and ethical | | | | | | | | | | | | |
| | Technology is the important key for a language and a new sector for the students to voice out for a social cause | | | | | | | | | | | | |
| COURSEOUTCOMES: | | | | | | | | | | | | | |
| On the successful completion of the course, students will be able to | | | | | | | | | | | | | |
| CO1: | Develop a spirit of patriotism. | | | | | | | | | | | | |
| CO2: | Understand the plight of the people living in the society and Biological Struggles. | | | | | | | | | | | | |
| CO3: | Remember the life style of the Sangam people and To recognize the heroic spirit of the ancient Tamil kings | | | | | | | | | | | | |
| CO4: | Evaluate the quality and morals of local life through Tamil literature | | | | | | | | | | | | |
| CO5: | Introducing the various Literary Genres and dramas and enable them to produce innovative ideas in modern literary theories | | | | | | | | | | | | |
| Cos Vs Pos MAPPING: | | | | | | | | | | | | | |
| | COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| | CO1 | | | | | | | | | | 3 | | |
| | CO2 | | | | | | | | | | 3 | | |
| | CO3 | | | | | | | | | | 3 | | |
| | CO4 | | | | | | | | | | 3 | | |
| | CO5 | | | | | | | | | | 3 | | |
| COs Vs PSOs MAPPING | | | | | | | | | | | | | |
| | COs | PSO1 | PSO2 | PSO3 | | | | | | | | | |
| | CO1 | | | | | | | | | | | | |
| | CO2 | | | | | | | | | | | | |
| | CO3 | | | | | | | | | | | | |
| | CO4 | | | | | | | | | | | | |
| | CO5 | | | | | | | | | | | | |
| COURSECONTENTS: | | | | | | | | | | | | | |
| MODULEI | WEAVING AND CERAMIC TECHNOLOGY | | | | 3 Hours | | | | | | | | |
| Weaving Industry during Sangam Age–Ceramic technology–Black and Red Ware Potteries(BRW) Graffition Potteries. | | | | | | | | | | | | | |

| MODULEII | DESIGN AND CONSTRUCTION TECHNOLOGY | 3 Hours | | | | | | | | | | | | |
|--|---|----------------------|---|---|---|---|--|--|---|---|--|--|---|--|
| Designing and Structural construction House & Designs in house hold 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 otherworship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal – ChettiNadu Houses, Indo-Saracenic architecture at Madras during British Period | | | | | | | | | | | | | | |
| MODULEIII | MANUFACTURING TECHNOLOGY | 3 Hours | | | | | | | | | | | | |
| Art of Ship Building-Metallurgical studies-Iron industry-Iron smelting, steel-Copper and gold- Coins source of history-Minting of Coins–Bead making-industries Stone beads-Glass beads- Terracotta beads- Shell beads/bone beads-Archeological evidences-Gemstone types described in Silappathikaram. | | | | | | | | | | | | | | |
| MODULEIV | AGRICULTURE AND IRRIGATION TECHNOLOGY | 3 Hours | | | | | | | | | | | | |
| 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-Conch diving- Ancient Knowledge of Ocean-Knowledge Specific Society | | | | | | | | | | | | | | |
| MODULEV | SCIENTIFIC TAMIL & TAMIL COMPUTING | 3 Hours | | | | | | | | | | | | |
| 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:15HOURS | | | | | | | | | | | | |
| REFERENCES: | | | | | | | | | | | | | | |
| <table border="1"> <tbody> <tr> <td>1. தமிழகவரலாறு– மக்களும்பண்பொடும்– மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடுபொடநூல்மற்றும் கல்வியியல்பணிகள்கழகம்).</td> </tr> <tr> <td>2. கணினித்தமிழ்– முமனவரில. சுந்தரம். (விகடன் பிரசுரம்).</td> </tr> <tr> <td>3. கீழடி– மவமகநதிக்கமரயில்஁ங்ககொலநகரநொகரிகம் (ததொல்லியல்துமற தவளியீடு)</td> </tr> <tr> <td>4. தபொருமந– ஆற்றங்கமரநொகரிகம். (ததொல்லியல்துமறதவளியீடு)</td> </tr> <tr> <td>5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)</td> </tr> <tr> <td>6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.</td> </tr> <tr> <td>7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).</td> </tr> <tr> <td>8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)</td> </tr> <tr> <td>9. Keeladi - ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)</td> </tr> <tr> <td>10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)</td> </tr> <tr> <td>11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)</td> </tr> <tr> <td>12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.</td> </tr> </tbody> </table> | | | 1. தமிழகவரலாறு– மக்களும்பண்பொடும்– மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடுபொடநூல்மற்றும் கல்வியியல்பணிகள்கழகம்). | 2. கணினித்தமிழ்– முமனவரில. சுந்தரம். (விகடன் பிரசுரம்). | 3. கீழடி– மவமகநதிக்கமரயில்஁ங்ககொலநகரநொகரிகம் (ததொல்லியல்துமற தவளியீடு) | 4. தபொருமந– ஆற்றங்கமரநொகரிகம். (ததொல்லியல்துமறதவளியீடு) | 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 Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & 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) (Published by: The Author) | 11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu) | 12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book. |
| 1. தமிழகவரலாறு– மக்களும்பண்பொடும்– மக.மக. பிள்மள (தவளியீடு: தமிழ்நொடுபொடநூல்மற்றும் கல்வியியல்பணிகள்கழகம்). | | | | | | | | | | | | | | |
| 2. கணினித்தமிழ்– முமனவரில. சுந்தரம். (விகடன் பிரசுரம்). | | | | | | | | | | | | | | |
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| 2301PH103 | SEMICONDUCTOR PHYSICS AND OPTOELECTRONICS | | | | | | L | T | P | C | | | |
| | | | | | | | 3 | 0 | 2 | 4 | | | |
| PREREQUISITE: | | | | | | | | | | | | | |
| 1. Basic knowledge in physics | | | | | | | | | | | | | |
| COURSE OBJECTIVES: | | | | | | | | | | | | | |
| 1.To instill knowledge on physics of semiconductors, determination of charge carriers and device applications | | | | | | | | | | | | | |
| 2.To make the students to understand the basics of dielectric materials, electrical properties of materials including free electron theory, applications of quantummechanics | | | | | | | | | | | | | |
| 3.To establish a sound grasp of knowledge on different magnetic & optical properties of materials | | | | | | | | | | | | | |
| 4.To make the students to understand the basics of optoelectronic devices, optical displays and applications | | | | | | | | | | | | | |
| 5.To inculcate an idea of significance of nano structures, quantum confinement and ensuing nano device applications. | | | | | | | | | | | | | |
| COURSE OUTCOMES: | | | | | | | | | | | | | |
| On the successful completion of the course, students will be able to | | | | | | | | | | | | | |
| CO1: | Understand clearly of semiconductor physics and functioning of semiconductor devices | | | | | | | | | | | | |
| CO2: | Apply basics of dielectric materials, gain knowledge on the electrical properties of materials and their applications | | | | | | | | | | | | |
| CO3: | Understand the magnetic, optical properties of materials | | | | | | | | | | | | |
| CO4: | Demonstrate a strong knowledge in optoelectronic devices and working principles of various optical devices | | | | | | | | | | | | |
| CO5: | Appreciate the importance of nanotechnology and nano devices | | | | | | | | | | | | |
| COs Vs POs MAPPING: | | | | | | | | | | | | | |
| | COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| | CO1 | 3 | 2 | 1 | | | 1 | | | | | | |
| | CO2 | 3 | 2 | 1 | | | 1 | | | | | | |
| | CO3 | 3 | 2 | 1 | | | 1 | | | | | | |
| | CO4 | 3 | 2 | 1 | | | 1 | | | | | | |
| | CO5 | 3 | 2 | 1 | | | 1 | | | | | | |
| COs Vs PSO MAPPING | | | | | | | | | | | | | |
| | COs | PSO1 | PSO2 | PSO3 | | | | | | | | | |
| | CO1 | | | | | | | | | | | | |
| | CO2 | | | | | | | | | | | | |
| | CO3 | | | | | | | | | | | | |
| | CO4 | | | | | | | | | | | | |
| | CO5 | | | | | | | | | | | | |

| COURSE CONTENTS: | | |
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| MODULE I | SEMICONDUCTORS AND TRANSPORT PHYSICS | 9 Hours |
| Intrinsic Semiconductors – Energy band diagram – direct and indirect band gap semiconductors – Carrier concentration in intrinsic semiconductors – extrinsic semiconductors - Carrier concentration in N-type & P-type semiconductors – Variation of carrier concentration with temperature – Carrier transport in Semiconductors: Drift, mobility and diffusion – Hall effect and devices – Ohmic contacts – Schottky diode. | | |
| MODULE II | DIELECTRIC MATERIALS AND ELECTRICAL PROPERTIES | 9 Hours |
| Polarization mechanisms: electronic, ionic, orientational, interfacial and total polarization – frequency dependence – local field and Clausius-Mossetti equation – dielectric constant and dielectric loss. Classical free electron theory - Expression for electrical conductivity – Thermal conductivity, expression - Quantum free electron theory - Electron in periodic potential – Energy bands in solids | | |
| MODULE III | MAGNETIC & OPTICAL PROPERTIES OF MATERIALS | 9 Hours |
| Magnetic materials: Dia, para and ferromagnetic effects – paramagnetism in the conduction electrons in metals – exchange interaction and ferromagnetism – quantum interference devices – GMR devices. Classification of optical materials – Optical processes in semiconductors: optical absorption and emission, charge injection and recombination, optical absorption, loss and gain. Optical processes in quantum wells | | |
| MODULE IV | OPTOELECTRONIC DEVICES | 9 Hours |
| Optoelectronic devices: light detectors and solar cells – light emitting diode – laser diode – optical processes in organic semiconductor devices – excitonic state – Electro-optics and nonlinear optics: Modulators and switching devices – plasmonics | | |
| MODULE V | NANO DEVICES | 9 Hours |
| Density of states for solids - Significance between Fermi energy and volume of the material – Quantum confinement – Quantum structures – Density of states for quantum wells, wires and dots – Band gap of nanomaterials – Tunneling – Single electron phenomena – Single electron Transistor- Carbon nanotubes: Properties and applications - Spintronic devices and applications – Optics in quantum structures – quantum well laser. | | |
| TOTAL: 45 HOURS | | |
| REFERENCES: | | |
| 1.S.O. Kasap. Principles of Electronic Materials and Devices, McGraw Hill Education (Indian Edition), 2020. | | |
| 2. R.F.Pierret. Semiconductor Device Fundamentals. Pearson (Indian Edition), 2006. | | |
| 3. G.W.Hanson. Fundamentals of Nanoelectronics. Pearson Education (Indian Edition), 2009. | | |
| 4. Jasprit Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw- Hill Education (Indian Edition), 2019. | | |
| 5. Charles Kittel, Introduction to Solid State Physics, Wiley India Edition, 2019 | | |
| 6. https://archive.nptel.ac.in/courses/108/108/108108122/ | | |
| 7. https://onlinecourses.nptel.ac.in/noc20_ph24/preview | | |

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| LIST OF EXPERIMENTS |
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| 1. Torsional pendulum - Determination of rigidity modulus of wire and moment of inertia of regular and irregular objects. |
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| 2. Simple harmonic oscillations of cantilever. |
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| 3. Non-uniform bending - Determination of Young's modulus |
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| 4. Uniform bending – Determination of Young's modulus |
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| 5. Laser- Determination of the wavelength of the laser using grating |
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| 6. Air wedge - Determination of thickness of a thin sheet/wire |
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| 7. a) Optical fibre -Determination of Numerical Aperture and acceptance angle b) Compact disc- Determination of width of the groove using laser. |
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| 8. Acoustic grating- Determination of velocity of ultrasonic waves in liquids. |
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| 9. Ultrasonic interferometer – determination of the velocity of sound and compressibility of liquids |
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| 10. Determination of Band gap of a semiconductor. |
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| 11. Poiseuille's method for finding viscosity of a liquid |
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| 12. Lee's Disc-Thermal conductivity of bad conductor |
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| 13. Spectrometer-determination of wavelength using grating |
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| REFERENCES |
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| 1. Practical Physics', R.K. Shukla, AnchalSrivastava, New age international (2011 |
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| 2. B.Sc. Practical Physics', C.L Arora, S. Chand &Co. (2012) |
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| 2301GEX02 | ENGINEERING GRAPHICS AND DESIGN | | | | | | | | | | | | L | T | P | C |
|--|---------------------------------|---|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|----------------|-------------|
| | | | | | | | | | | | | | 2 | 2 | 0 | 3 |
| Prerequisite: | | | | | | | | | | | | | | | | |
| 1. Basic knowledge about geometry | | | | | | | | | | | | | | | | |
| 2. Lettering and Dimensioning | | | | | | | | | | | | | | | | |
| COURSE OBJECTIVES: | | | | | | | | | | | | | | | | |
| 1. To develop in students, graphic skills for communication of concepts, ideas and design of Engineering products | | | | | | | | | | | | | | | | |
| 2. To expose them to existing national standards related to technical drawings | | | | | | | | | | | | | | | | |
| COURSE OUTCOMES: | | | | | | | | | | | | | | | | |
| On the successful completion of the course, students will be able to | | | | | | | | | | | | | | | | |
| CO1: Construct conic curves, involutes and cycloids | | | | | | | | | | | | | | | | |
| CO2: Solve problems involving projection of points, lines and plane surfaces | | | | | | | | | | | | | | | | |
| CO3: Draw the projection and development of a sectioned simple solids | | | | | | | | | | | | | | | | |
| CO4: Draw the orthographic, isometric and projection of simple solids | | | | | | | | | | | | | | | | |
| CO5: Use BIS convention and training of engineering graphics by CAD software | | | | | | | | | | | | | | | | |
| COs Vs POs / PSOs MAPPING: | | | | | | | | | | | | | | | | |
| | COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| | CO1 | 3 | 1 | 2 | | 2 | | | | | 3 | | 2 | 2 | 2 | |
| | CO2 | 3 | 1 | 2 | | 2 | | | | | 3 | | 2 | 2 | 2 | |
| | CO3 | 3 | 1 | 2 | | 2 | | | | | 3 | | 2 | 2 | 2 | |
| | CO4 | 3 | 1 | 2 | | 2 | | | | | 3 | | 2 | 2 | 2 | |
| | CO5 | 3 | 1 | 2 | | 2 | | | | | 3 | | 2 | 2 | 2 | |
| COURSE CONTENTS: | | | | | | | | | | | | | | | | |
| MODULE I | | BASIC CONCEPTS OF TECHNICAL DRAWING AND PLANE CURVES | | | | | | | | | | | | | 9 Hours | |
| Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, Scale, layout and folding of drawing sheets – Lettering and dimensioning. | | | | | | | | | | | | | | | | |
| 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. Practicing plane curves by CAD software. | | | | | | | | | | | | | | | | |
| MODULE II | | PROJECTION OF POINTS, LINES AND PLANE SURFACES | | | | | | | | | | | | | 9 Hours | |
| 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 traces. Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method. Practicing projection of lines and surfaces by CAD software. | | | | | | | | | | | | | | | | |
| MODULE III | | PROJECTION OF SOLIDS | | | | | | | | | | | | | 9 Hours | |
| Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one of the principal planes by rotating object method. Practicing the projections of simple objects by CAD software. | | | | | | | | | | | | | | | | |

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| MODULE IV | PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES | 9 Hours |
| <p>Sectioning of above 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. Practicing projection of sectioned solids and development of solid surfaces by CAD software.</p> | | |
| MODULE V | ORTHOGRAPHIC AND ISOMETRIC PROJECTION | 9 Hours |
| <p>Visualization concepts–Representation of Three-Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of Objects.</p> <p>Isometric view - Prisms, pyramids, cylinders, cones. 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. Practicing isometric projections of simple objects by CAD software.</p> | | |
| TOTAL: 45 HOURS | | |
| REFERENCES: | | |
| 1. Bhatt N.D. and Panchal V.M., Charotar Publishing House, 53rd Edition, 2019. | | |
| 2. Natrajan K.V., A Text Book of Engineering Graphics, Dhanalakshmi Publishers, Chennai, 2018. | | |
| 3. Parthasarathy, N. S. and Vela Murali, “Engineering Drawing”, Oxford University Press, 2015. | | |
| 4. Basant Agarwal and Agarwal C.M., “Engineering Drawing”, McGraw Hill, 2nd Edition, 2019. | | |
| 5. Gopalakrishna K.R., “Engineering Drawing” (Vol. I&II combined), Subhas Publications, Bangalore, 27th Edition, 2017 | | |
| 6. Shah M.B., and Rana B.C., “Engineering Drawing”, Pearson Education India, 2 nd Edition, 2009. | | |
| 7. Venugopal K. and Prabhu Raja V., “Engineering Graphics”, New Age International (P) Limited, 2008. | | |

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| 2301ENX01 | PROFESSIONAL ENGLISH Common to B.E /B.Tech Programme (CIVIL,BME,CSE,ECE,EEE,IT,MECH,AIDS) | L | T | P | C |
| | | 2 | 0 | 2 | 3 |

PREREQUISITE:

1. Basic English Knowledge

COURSE OBJECTIVES:

| | |
|----|--|
| 1. | To improve the communicative competence of learners. |
| 2. | To learn to use basic grammatical structures in suitable contexts. |
| 3. | To acquire lexical competence and use them appropriately in a sentence and understand their meaning in a text. |
| 4. | To help learners use language effectively in professional contexts. |
| 5. | To develop learners’ ability to read and write complex texts, summaries, articles, blogs, definitions, essays and user manuals. |
| 6. | To use language efficiently in expressing their opinions |
| 7. | To develop various listening strategies to comprehend various types of audio materials like lectures, discussions, videos etc. |
| 8. | To develop talent, facilitate employability enabling the incumbent to excel and sustain in a highly competitive world of business. |

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

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|-------------|---|
| CO1: | Use appropriate words in a professional context. |
| CO2: | Understand the basic grammatical structures and use them in right context. |
| CO3: | Read and infer the denotative and connotative meanings of technical texts. |
| CO4: | Read and interpret information presented in tables, charts and other graphic forms. |
| CO5: | Write definitions, descriptions, narrations and essays on various topics |
| CO6: | Listen to and comprehend general as well as complex academic and non academic information’s |
| CO7: | Speak fluently and accurately in formal and informal communicative contexts. |
| CO8: | Understand, analyse develop and exhibit accurate sense of self. |

COs Vs POs MAPPING:

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | | | | | | | | | | 3 | | |
| CO2 | | | | | | | | | | 3 | | |
| CO3 | | | | | | | | | | 3 | | |
| CO4 | | | | | | | | | | 3 | | |
| CO5 | | | | | | | | | | 3 | | |

COs Vs PSOs MAPPING

| COs | PSO1 | PSO2 | PSO3 |
|-----|------|------|------|
| CO1 | - | - | - |
| CO2 | - | - | - |
| CO3 | - | - | - |
| CO4 | - | - | - |
| CO5 | - | - | - |

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|---|---|----------------|
| MODULE I | FUNDAMENTALS OF COMMUNICATION | 6 Hours |
| <p>Reading - Reading brochures (technical context)/ user manuals/, telephone messages / social media messages relevant to technical contexts and emails. Writing - Professional emails etiquette, emails / letters (seeking permission for Industrial visit& Complain letter) Grammar - Present Tense (simple and progressive); Question types: Why/ Yes or No/ and Tags. Vocabulary - Word forms (prefixes& suffixes); Synonyms and Antonyms, Punctuation.</p> | | |
| MODULE II | NARRATION AND SUMMATION | 6 Hours |
| <p>Reading - Reading longer technical texts (Reading biographies/travelogues/newspaper reports/ travel & technical blogs). Writing - Paragraph writing Short Report on an event (field trip etc.), emails / letters (Writing responses to complaints). Grammar –Past tense (simple); Subject-Verb Agreement. Vocabulary –Preposition, Prepositional Phrases Phrasal verbs.</p> | | |
| MODULE III | DESCRIPTION OF A PROCESS / PRODUCT | 6 Hours |
| <p>Reading – Reading advertisements, gadget reviews. Writing – instructions, Checklists, Report Writing (Accident Report & Survey Report (IV)). Grammar –Present & Past Perfect Tenses, Voices (Active, Passive & Impersonal Passive Voice); Vocabulary –Collocations, Homonyms; and Homophones.</p> | | |
| MODULE IV | CLASSIFICATION AND RECOMMENDATIONS | 6 Hours |
| <p>Reading – Newspaper articles; Journal reports –and Non Verbal Communication (tables, pie charts etc.); Writing- Job / Internship application – Cover letter & Resume ,recommendations. Grammar – Articles, Adjectives of Comparison, If conditional sentences-Vocabulary –Conjunctions, discourse markers (connectives & sequence words)</p> | | |
| MODULE V | EXPRESSION | 6 Hours |
| <p>Reading – Company profiles, standard operating procedure (SOP)/ an excerpt of interview with professionals. Writing – Essay Writing (Descriptive or narrative), Grammar – Future Tenses, Numerical adjectives, Relative Clauses. Vocabulary - Cause & Effect Expressions – Content vs Function words.</p> | | |
| TOTAL: 30 HOURS | | |
| Lab Exercises | | |
| Listening : | | |
| <p>Listening for general information-specific details Audio / video (formal & informal). Listening IELTS/TOFEL/ TED Talks and educational videos. Listening to podcasts, anecdotes / stories / event narration; documentaries and interviews with celebrities. Listening - Listen to product and process descriptions; and advertisements about products. Listening – Listening to debates/ discussions; different viewpoints on an issue; and panel discussions.</p> | | |
| Speaking: | | |
| <p>Self - Introduction - Role Play Exercises Based on Workplace Contexts- Group Discussion (Discussing advantages and disadvantages/ purposes and reasons)-discussing progress toward goals- discussing past events in life-discussing news stories- describing clothing Discussion (making plans, talking about tasks,, about progress analyze and present concepts and problems from various perspectives)-making telephone calls (politeness strategies- making polite requests, making polite offers, replying to polite requests and offers) Interpreting (Picture, locations in workplaces)-Presenting a product- describing shapes and sizes and weights- talking about quantities(large & small).</p> | | |

Personality Development:

Introduction to life skills -Multiple Intelligences Embracing diversity- emotional intelligence (visualizing and experiencing purpose)-Self-awareness - Time management-Stress management - body awareness- Leadership- teamwork & dealing with ambiguity--interview planning- Mock Interviews--paralinguistic features- spiritual quotient (ethics)- Self-Concept.

REFERENCES:

1. Technical Communication – Principles And Practices By Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2016, New Delhi.
2. A Course Book On Technical English By Lakshminarayanan, Scitech Publications (India) Pvt. Ltd.
3. English For Technical Communication (With CD) By AyshaViswamohan, Mcgraw Hill Education, ISBN : 0070264244.
4. Effective Communication Skill, Kulbhusan Kumar, RS Salaria, Khanna Publishing House.
5. Learning to Communicate – Dr. V. Chellammal, Allied Publishing House, New Delhi, 2003.
6. Raman. Meenakshi, Sharma. Sangeeta (2019). Professional English. Oxford university press. New Delhi
7. New Delhi. 2. Improve Your Writing ed. V.N. Arora and Laxmi Chandra, Oxford Univ. Press, 2001, New Delhi.
8. Developing Communication Skills by Krishna Mohan, MeeraBannerji- Macmillan India Ltd. 1990, Delhi.
9. Business Correspondence and Report Writing by Prof. R.C. Sharma & Krishna Mohan, Tata McGraw Hill & Co. Ltd., 2001, New Delhi.
10. <https://swayam.gov.in/explorer?searchText=english> (Link for NPTEL/SWAYAM/MOOC Courses)
11. <https://ieltonlinetests.com> (Link for modern tool usage)

| 2301GEX52 | ENGINEERING PRACTICES LABORATORY (Common to all B.E. / B.Tech Degree Programmes) | | | | | | | | | | | L | T | P | C | |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-------------------------|-------|-------|
| | | | | | | | | | | | | 0 | 0 | 4 | 2 | |
| PREREQUISITE: NIL | | | | | | | | | | | | | | | | |
| COURSE OBJECTIVES: | | | | | | | | | | | | | | | | |
| 1. To provide hands on training for fabrication of components using sheet metal and welding equipment / tools. | | | | | | | | | | | | | | | | |
| 2. To develop skill for using carpentry and fitting tools to make simple components and metal joints. | | | | | | | | | | | | | | | | |
| 3. To provide training for making simple house hold pipe line connections using suitable tools. | | | | | | | | | | | | | | | | |
| 4. To develop the skill to make / operate/utilize the simple engineering components. | | | | | | | | | | | | | | | | |
| COURSE OUTCOMES: | | | | | | | | | | | | | | | | |
| On the successful completion of the course, students will be able to | | | | | | | | | | | | | | | | |
| CO1: Fabricate simple components using sheet metal using suitable tools. | | | | | | | | | | | | | | | | |
| CO2: Prepare simple components using suitable fitting tools. | | | | | | | | | | | | | | | | |
| CO3: Fabricate simple components using welding equipments. | | | | | | | | | | | | | | | | |
| CO4: Make simple components / joints using carpentry power tools. | | | | | | | | | | | | | | | | |
| CO5: Make simple house hold pipe line connections using suitable tools. | | | | | | | | | | | | | | | | |
| COs Vs POs& PSOs MAPPING: | | | | | | | | | | | | | | | | |
| | COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PS O1 | PS O2 | PS O3 |
| | CO1 | 2 | | | | | | | | 2 | | | 1 | - | 2 | - |
| | CO2 | 2 | 1 | | | | | | | 2 | | | 1 | - | 2 | - |
| | CO3 | 2 | 1 | | | 1 | | | | 2 | | | 1 | - | 2 | - |
| | CO4 | 2 | 1 | | | 1 | | | | 2 | | | 1 | - | 2 | - |
| | CO5 | 2 | | | | | | | | 2 | | | 1 | - | 1 | - |
| LIST OF EXPERIMENTS | | | | | | | | | | | | | | | | |
| 1. Forming of simple object in sheet metal using suitable tools.(Example: Dust Pan, Rectangular tray and Cone making) | | | | | | | | | | | | | | 6 Hours | | |
| 2. Prepare V (or) Half round (or) Square (or) Dovetail joint from the given mild Steel flat. | | | | | | | | | | | | | | 5 Hours | | |
| 3. Fabrication of a simple component using thin and thick plates using arc welding. (Example: Butt , Lap and T - Joints) | | | | | | | | | | | | | | 6 Hours | | |
| 4. Making a simple component using carpentry power tools.(Example: Cross Lap, T-Lap,Dove tail joints and Electrical switch box / Tool box / Letter box) | | | | | | | | | | | | | | 6 Hours | | |
| 5. Construct a household pipe line connections using pipes, Tee joint, four way joint, elbow, union, bend, Gate valve and Taps. | | | | | | | | | | | | | | 5 Hours | | |
| 6. Study of gas welding equipment and its demonstration. | | | | | | | | | | | | | | 2 Hours | | |
| | | | | | | | | | | | | | | Total : 30 Hours | | |

REFERENCES:

1. S. Gowri&T.Jeyapoovan, “Engineering Practices Lab Manual”5th Edition,Vikas Publishing.
2. Dr. V. Ramesh Babu,”Engineering Practices Laboratory Manual” Revised Edition 2019-20, VRB Publishers Pvt. Ltd.