



NEW PRINCE SHRI BHAVANI COLLEGE OF ENGINEERING AND TECHNOLOGY

Affiliated to Anna University | Approved by AICTE | Accredited by NAAC
Tambaram - Velachery Main Road, Santhosapuram, Chennai-600 073.



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

REGULATION - 2023

COURSE OUTCOMES

U23EN101

TECHNICAL ENGLISH - I

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Write essays and emails.
- C02** Describe any process, interpretation of charts and graphs both general and technically.
- C03** Write letters and responses to complaints.
- C04** Write Recommendations, minutes and reports of events.
- C05** Write Job application with Resume.

U23MA101

ENGINEERING MATHEMATICS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply Cayley-Hamilton theorem and orthogonal transformation for different process of matrices.
- C02** Analyze the differentiation rules to find the extreme values of functions.
- C03** Apply the concepts of partial derivatives and total derivatives in Taylor's series, Jacobians and maxima and minima of functions.
- C04** Evaluate definite and improper integrals using techniques of integration
- C05** Evaluate area and volume using double and triple integrals.

U23PH101

ENGINEERING PHYSICS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Comprehend the basics of mechanics and elastic properties of materials.



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- CO2** Explain the thermal physics concepts, production and applications of ultrasonic waves.
- CO3** Apply the basic concepts of lasers and optical fibre in various fields.
- CO4** Describe the basics of quantum mechanical phenomenon and electronmicroscopes.
- CO5** Explain the fundamentals of crystal structures and imperfections.

U23CY101

ENGINEERING CHEMISTRY

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- CO1** Describe the type of factors present in boilers and the method used to treat hard water.
- CO2** Apply the principles of electrochemistry to corrosion process and the applications of protective coatings to overcome the corrosion.
- CO3** Summarize the various solid, liquid and gaseous fuels manufacturing methods and basic reactions involved in combustion reaction.
- CO4** Describe the types of batteries their reactions and the significance of storage renewable energy resource.
- CO5** Apply the basic concepts of nanomaterials and its application in various sectors.

U23CP101

PROGRAMMING IN C

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- CO1** Describe knowledge on C Programming constructs.
- CO2** Apply the simple applications in C using decision making and looping.
- CO3** Design the various applications using arrays and strings.
- CO4** Write and implement modular applications in C using functions and Pointers.
- CO5** Apply the User defined concept in C using Structures and Unions.

U23BE101 BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to



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- C01 Apply basic laws and theorems in DC electrical circuits
- C02 Solve AC electrical circuits using basic laws
- C03 Explain the construction, working and applications of DC Machines and Transformers
- C04 Describe the construction, working and applications of AC Machines
- C05 Summarize the operating principles of measuring instruments

U23TA101

தமிழர் மரபு

COURSEOUTCOMES:

Upon the completion of the course, the students will be able to

- C01 மொழிகள், இலக்கியங்கள் மற்றும் காப்பியங்கள் பற்றி தொகுக்க இயலும்.
Summarize about languages, literatures and scripts.
- C02 நடுகற்கள், நவீன சிற்பங்கள், ஐம்பொன் சிலைகள், மற்றும் இசைக் கருவிகள் பற்றி விளக்க இயலும்.
Explain middle stone, modern sculptures, panchaloga idols and musical instruments.
- C03 நாட்டுப்புறத் தெய்வங்கள், கலைகள் மற்றும் வீர விளையாட்டுகள் பற்றி விளக்க இயலும்.
Explain about the folk gods, arts and heroic sports.
- C04 தமிழர்களின் திணைக்கோட்பாடுகள் பற்றி தொகுக்க இயலும்.
Summarize the political theories of tamils.
- C05 இந்திய தேசிய இயக்கம், மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி தொகுக்க இயலும்.
Summarize Indian national movement contribution of Tamils to Indian culture.

U23PC101

PHYSICS AND CHEMISTRY LABORATORY

COURSEOUTCOMES:

Upon the completion of the course, the students will be able to

- C01 Calculate the Young's modulus by non-uniform bending, simple harmonic oscillations by Torsion Pendulum.
- C02 Calculate the thickness of a thin wire by air wedge and velocity of sound, compressibility of liquid using ultra sonic interferometer.
- C03 Calculate the wavelength, acceptance angle and numerical aperture using laser.
- C04 Estimate the amount of Hardness, chloride, alkalinity in water samples.
- C05 Estimate the amount of acid, iron content present in a given solution by using pH, conductivity and potentiometric titration.



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U23EN102

PROFESSIONAL COMMUNICATION LABORATORY

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply communication proficiency by mastering empathetic listening and speaking skills.
- C02** Apply soft skills fostering comprehensive competence.
- C03** Apply effective techniques to deliver presentations in all aspects.
- C04** Apply effective strategies for active participation in Group Discussion.
- C05** Apply interview etiquette to navigate various interview formats for Job Interviews.

U23EN201

TECHNICAL ENGLISH - II

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply the concepts of writing in an effective way.
- C02** Write concise reports in a professional context.
- C03** Write different kinds of Paragraphs and Essays.
- C04** Write Email and formal / informal letters without grammatical errors.
- C05** Analyze collaborative work through writing process.

U23MA201

VECTOR CALCULUS AND COMPLEX FUNCTIONS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Solve higher order differential equations of different types for engineering applications.
- C02** Explain the concepts of vector calculus.
- C03** Evaluate line, surface and volume integrals in various vector fields using Greens, Stokes and Gauss theorems.
- C04** Analyze the properties and mappings for constructing analytic functions.
- C05** Evaluate the complex and contour integral using Cauchy's theorem.



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U23PH201 PHYSICS FOR ELECTRICAL AND ELECTRONICS ENGINEERS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Explain the electrical properties of materials based on classical, quantum free electron theories.
- C02** Describe the fundamentals of semiconductor Physics.
- C03** Summarize various types of magnetic and superconducting materials and its applications.
- C04** Apply the optical properties of materials in functioning of optoelectronic devices.
- C05** Explain the various new engineering materials, nano electronic devices and its applications.

U23EG101 ENGINEERING GRAPHICS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Draw the various curves used in engineering practices.
- C02** Draw the projections of straight lines which are inclined to both the planes.
- C03** Draw the projections of solids inclined to one plane and parallel to other plane.
- C04** Draw the projections of sectioned solids and draw the development of lateral surfaces of a solid.
- C05** Draw the isometric projections and perspective projections of simple solids.

U23PY201 PROBLEM SOLVING AND PYTHON PROGRAMMING

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Solve simple computational problems using notations.
- C02** Write python programs using statements and Expressions.
- C03** Apply control flow and functional concepts in a user define problems.
- C04** Apply python data structures - list, tuples and dictionaries for compound data.
- C05** Describe file handling and exceptional handling in python for solving problems.



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U23EC201

ELECTRONIC DEVICES

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Comprehend the operation and characteristics of the PN junction and Zener Diode.
- C02** Explain the operation and characteristics of Bipolar junction transistor.
- C03** Explain the operation and characteristics of JFET and MOSFET.
- C04** Summarize the operations and applications of special semiconductor devices.
- C05** Comprehend the basic concepts of Power devices and Display devices.

U23TA201

தமிழரும் தொழில்நுட்பமும்

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** தமிழின் தொன்மையான வரலாறு மற்றும் தொழில் நுட்பத்தை தொகுக்க இயலும்.
Summarize the ancient history and technology of Tamil.
- C02** சங்க கால வாழ்க்கை முறை மற்றும் கட்டிடக்கலை நுட்பங்களைப் பற்றி விளக்க இயலும்.
Explain the lifestyle and architectural techniques of the sangam period.
பண்டைய தமிழ் மக்களின் வணிக நடை முறைகள் மற்றும் நாணய பரிமாற்றம் பற்றி விளக்க இயலும்.
- C03** Explain the business practices and currency exchange of ancient Tamil people.
சங்க காலத்தில் வேளாண்மை மற்றும் நீர்பாசனத் தொழில்நுட்ப முறைகளைப் பற்றி தொகுக்க இயலும்.
- C04** Summarize the Agriculture and Irrigation Technology in sangam period.
கணினி பயன்பாடுகளில், தமிழின் தொழில்நுட்ப வளர்ச்சியினைப் பற்றி விளக்க இயலும்.
- C05** Explain the computer applications in Tamil technological development.

U23EP101

ENGINEERING PRACTICES LABORATORY

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply the basic concept of Plumbing and carpentry in various Residential buildings.
- C02** Apply the concept of arc welding in welding of steel plate.
- C03** Analyze the basics of machining operations and sheet metal works.
- C04** Apply the various electrical joints in common household electrical wire work.



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- C05** Apply the basic concept of assemble and testing of simple electronic components on PCB.

U23EC202

CIRCUITS AND DEVICES LABORATORY

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Analyze the characteristics of PN Diode, Zener Diode, BJT, JFET and SCR.
- C02** Design series and parallel RLC circuit and obtain its frequency response.
- C03** Analyze the transient behaviour of the given RL, RC, RLC circuits.
- C04** Analyze the characteristics of Half Wave & Full Wave Rectifier.
- C05** Analyze and Verify Thevenin, Superposition, Maximum power, and Reciprocity theorems.

U23MA303

TRANSFORMS AND RANDOM PROCESSES

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Analyze periodic functions, expressing them as infinite sums of sinusoids.
- C02** Solve the mathematical principles of Fourier transforms.
- C03** Apply the concept of probability and standard distributions in real life problems.
- C04** Analyze the concepts of two-dimensional random variables.
- C05** Apply the concept of random processes in engineering disciplines.

U23CS306 OBJECT ORIENTED PROGRAMMING WITH DATA STRUCTURES

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Comprehend the basic concepts of Java programming
- C02** Summarize interfaces, packages, multithreading and exception
- C03** Apply features of exception handling and multithreading in Java program.
- C04** Apply basic data structures concepts and their algorithms.



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C05 Explain data structure concepts trees for modelling given problem.

U23EC301 DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply Boolean Algebra and Simplification procedures relevant to digital logic.
- C02** Design various combinational digital circuits using logic gates.
- C03** Design synchronous and asynchronous sequential digital circuits using logic gates.
- C04** Summarize the basic structure and operation of a digital computer.
- C05** Analyze the data path unit of processor and concept of various memories.

U23EC302 SIGNALS AND SYSTEMS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Analyze the properties of signals and systems
- C02** Analyze continuous time signals.
- C03** Analyze linear time invariant continuous time systems.
- C04** Analyze discrete time signals.
- C05** Analyze Linear Time Invariant discrete time systems.

U23EC303 ELECTRONIC CIRCUITS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Analyze Gain and frequency response of BJT and MOSFET Amplifiers.
- C02** Analyze Differential Amplifier and Tuned Amplifiers.
- C03** Analyze the characteristics of Feedback Amplifiers.
- C04** Analyze the different types of oscillators.



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C05 Analyze Power Amplifiers and DC/DC Converters.

U23MX01

PERSONAL VALUES

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Become an individual in knowing the self.
- C02** Acquire and express Personal Values, Spiritual values and fitness.
- C03** Practice simple physical exercise and breathing techniques.
- C04** Practice Yoga asana which will enhance the quality of life.
- C05** Practice Meditation and get benefitted.

U23EC304

CIRCUIT DESIGN AND SIMULATION LABORATORY

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Design various types of feedback amplifiers.
- C02** Design and analyse various types of oscillators
- C03** Design CB,CS,CE amplifiers with frequency response
- C04** Design and simulate various oscillators using spice tool.
- C05** Design and simulate various amplifiers using spice tool.

U23EC401

INTEGRATED CIRCUITS AND ITS APPLICATIONS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Explain the configurations and performance characteristics of IC741, IC LF155 and TL082.
- C02** Design the applications of operational amplifiers.
- C03** Design the applications of PLL and VCO.



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- C04 Analyse the characteristics of ADC and DAC using IC 741.
- C05 Design waveform generators and voltage regulators.

U23EC402

CONTROL SYSTEMS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01 Apply the transfer function in modelling of linear time invariant system.
- C02 Analyze the time response and stability analysis.
- C03 Analyze the open loop and closed loop frequency response of system by using Bode and polar plot.
- C04 Analyze the controllability and observability for state space model time invariant and time varying systems.
- C05 Design a lead, lag and lag-lead compensators using root locus and bode plot techniques and reaction curve, Ziegler-Nichols technique.

U23EC403

ELECTROMAGNETIC FIELD AND WAVES

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01 Apply the fundamentals of vector mathematical concepts related to electromagnetic electro static fields.
- C02 Apply the concepts of electrostatics for boundary conditions and electric energy density.
- C03 Apply the concepts of magneto statics for boundary conditions and magnetic energy density.
- C04 Describe the concepts of Faraday's law, Induced EMF and Maxwell's equation.
- C05 Explain the concept of EM waves and its propagation in lossy and loseless medium

U23EC404

MICROCONTROLLER AND ITS APPLICATIONS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to



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- C01** Describe the hardware architecture of 8051 microcontroller.
- C02** Summarize the on-chip peripherals inbuilt in 8051 microcontroller.
- C03** Write Assembly language programs to interface 8051 microcontroller with IO devices.
- C04** Describe the hardware architecture and modules of PIC16F877 microcontroller.
- C05** Explain development tools used to design and build functional prototype for real world applications.

U23EC405

PRINCIPLES OF DISCRETE TIME SIGNAL PROCESSING

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Apply DFT for the analysis of digital signals and systems.
- C02** Design FIR Filters
- C03** Design IIR Filters
- C04** Analyze the effects of finite precision representation in digital filters.
- C05** Design adaptive filters and implement multirate signal processing concepts and various filters in digital signal processors.

U23EC406

COMMUNICATION SYSTEMS

COURSE OUTCOMES:

Upon the completion of the course, the students will be able to

- C01** Analyze amplitude modulation techniques.
- C02** Analyze analog modulation techniques.
- C03** Analyze the concepts in baseband pulse transmission techniques.
- C04** Analyze the concept of passband digital transmission techniques.
- C05** Apply the concepts of information theory and coding techniques.