



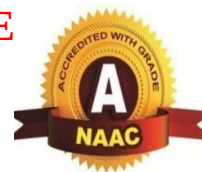
TEEGALA KRISHNA REDDY ENGINEERING COLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC- 'A' Grade

Medbowli, Meerpet, Balapur, Hyderabad, Telangana- 500097

Mob: 9393959597. Email: info@tkrec.ac.in, deanacademics@tkrec.ac.in



Subject Name: MATRICES AND CALCULUS

Course Code: 22MA101BS

Course out comes:

After learning the contents of this paper, the student must be able to

1. Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations
2. Find the Eigen values and Eigen vectors and reduce the quadratic form to canonical form using orthogonal transformations.
3. Apply the mean value theorems and evaluate the improper integrals using Beta and Gamma functions.
4. Find the extreme values of functions of two variables with / without constraints.
5. Evaluate the multiple integrals and apply the concept to find areas, volumes.

Subject Name: APPLIED PHYSICS

Course Code: 22PH102BS

Course Outcomes:

At the end of the course the student will be able to:

1. Gain knowledge on fundamentals of modern physics and quantum mechanics, and utilize the knowledge in various applications.
2. Able to apply various electronic circuits by the fundamentals of semiconductor physics.
3. Study the fundamental concepts related to the dielectric, magnetic materials and superconductors
4. Identify the importance of nanoscale, quantum confinement and various fabrications
5. Able to apply the learned knowledge of LASER and Fibre optics in communication systems.

Subject Name: C Programming for Engineers

Course Code: 22PH102BS

Course Outcomes: Upon completing this course, the students will be able to

1. Draw flowcharts for solving arithmetic and logical problems, understanding programming basics
2. Develop code using control and loops statements.
3. Formulate algorithms and programs using functions, arrays and strings
4. Utilize handle file I/O operations in C using pointers
5. Write a programs using Searching and sorting algorithms and programs using structures



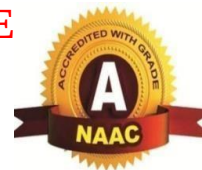
TEEGALA KRISHNA REDDY ENGINEERING COLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC- 'A' Grade

Medbowli, Meerpet, Balapur, Hyderabad, Telangana- 500097

Mob: 9393959597. Email: info@tkrec.ac.in, deanacademics@tkrec.ac.in



Subject Name: ENGINEERING WORKSHOP

Course Code: 22ME104ES

Course Outcomes: At the end of the course, the student will be able to:

1. Demonstrate various machines, tools and their operations.
2. Apply different workshop trades like fitting, carpentry, foundry and welding.
3. Practice workshop trades like Tim smithy, Black smithy.
4. Apply suitable tools for different trades of engineering processes including drilling, material removing, measuring, chiseling.
5. Apply basic electrical engineering knowledge for house wiring practice.

Subject Name: ENGLISH FOR SKILL ENHANCEMENT

Course Code: 22EN105HS

Course Outcomes: Students will be able to:

1. Choose appropriate vocabulary and sentence structures for their oral and written communication.
2. Demonstrate their understanding of the rules of functional grammar.
3. Develop comprehension skills from the known and unknown passages.
4. Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
5. Acquire basic proficiency in reading and writing modules of English.

Subject Name: Elements of Electronics and Communication Engineering

Course Code: 22EN105HS

Course outcomes: Students will be able to:

1. Identify the different components used for electronics applications
2. Measure different parameters using various measuring instruments
3. Distinguish various signal used for analog and digital communications
4. Distinguish various signal generators and measuring instruments in the measurement. of various parameters.
5. Design simple circuits to measure the voltage and current with Voltmeter and Ammeter.

Subject Name: APPLIED PHYSICS LAB

Course Code: 22PH107BS

Course Outcomes: The students will be able to:

1. Able to study the (V-I/P-I) characteristics of LED, LASER and Solar cell.
2. Able to understand the energy gap of semiconductor diode
3. Correlate the theory of Hall Effect with experiment by determining the Hall coefficient.
4. Examine the Bending losses for different Optical fiber cables.
5. Able to understand various concepts-Resonance, Time constant and Magnetic field using LCR, RC, Stewart and Gees circuits.

Subject Name: C PROGRAMMING FOR ENGINEERS LABORATORY Course Code: 22PH107BS

Course Outcomes: Upon completing this course, the students will be able to

1. Write algorithms and to draw flowcharts for solving problems and translate the algorithms/flowcharts to programs (in C language).
2. Use functions to develop modular reusable code.
3. Use arrays, pointers, strings and structures to formulate algorithms and programs.
4. develop sample programs using dynamic memory allocation and Files I/O operations
5. Understand Searching and sorting algorithms

Subject Name: ENGLISH LANGUAGE COMMUNICATION SKILLS LAB Course Code: 22EN109HS

Course outcomes:

Students should be able to

1. Employ the nuances of English language through audio-visual experience and group activities.
2. Articulate a neutral accent of English for intelligibility by overcoming mother tongue influence.
3. Develop the skill of using appropriate language in various speaking contexts.
4. Understand how to use language to make formal presentations.
5. Interpret speaking skills with clarity and confidence which in turn enhances their interpersonal skills.

Subject Name: ORDINARY DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

Subject Code: 22MA201BS

Course outcomes: After learning the contents of this paper, the student must be able to

1. Identify whether the given differential equation of first order is exact or not.
2. Apply the concept of differential equation to real world problems.
3. Use the Laplace transforms techniques for solving ODE's.
4. Use gradient to evaluate directional derivatives and conservative vector field.
5. Calculate the line, surface and volume integrals and converting them from one to another

Subject Name: ENGINEERING CHEMISTRY

Course Code: 22CH202BS

Course Outcomes:

At the end of the course, the students will be able to:

1. Apply the principle of potable water for industrial and domestic purposes.
2. Identify the electrolytic and electrochemical cells with different types of batteries and make use of corrosion control methods in industry.
3. Explore the fundamental properties of polymers and other materials in engineering field.
4. Distinguish various types of fuels and their applications in day-to-day life.
5. Develop understanding of engineering materials like cement, smart materials and Lubricants.

Subject Name: COMPUTER AIDED ENGINEERING GRAPHICS

Course Code: 22ME204ES

Course Outcomes: Using conventional and computer aided drafting tools, the student will be able to:

- 1: Apply the principles of Engineering Graphics to create Engineering Drawings of various geometric constructions, conic sections, curves and scales as per BIS standards.
- 2: Construct orthographic projections for points, lines and planes in different quadrants and Auxiliary views.
- 3: Draw the sectional views and true shape of sections of solids, by applying principles of projections.
- 4: Draw the development of surfaces in real time situations.
- 5: Develop isometric and orthographic views of the objects.

Subject Name: BASIC ELECTRICAL ENGINEERING

Course Code: 22EE204ES

Course Outcomes: After learning the contents of this paper the student must be able to

1. Verify the basic Electrical circuits through different experiments.
2. Evaluate the performance calculations of Electrical Machines and Transformers through various testing methods.
3. Analyze the transient responses of R, L and C circuits for different input conditions.
4. To determine the performance of different types of DC, AC machines and Transformers.
5. To impart the knowledge of various electrical installations and the concept of power, power factor and its improvement.

Subject Name: Electronic Devices and Circuits

Course Code: 22EC205ES

Course Outcomes: Upon completion of the Course, the students will be able to:

1. Apply the concepts of Diode applications.
2. Apply concepts of Non-Linear application in solving various problems.
3. Analyse the switching concepts of BJT
4. Compare BJT with FET and MOSFET
5. Design circuits using Special Purpose Devices

Subject Name: Applied Python Programming Laboratory

Course Code: 22EC206ES

Course Outcomes: After completion of the course, the student should be able to

1. Develop the application specific codes using python.
2. Understand Strings, Lists, Tuples and Dictionaries in Python
3. Verify programs using modular approach, file I/O, Python standard library
4. Implement Digital Systems using Python

Subject Name: ENGINEERING CHEMISTRY LAB

Course Code: 22CH207BS

Course Outcomes: The experiments will make the student gain skills on:

1. Determination of parameters like hardness of water and rate of corrosion of mild steel in various conditions.
2. Performing experimental methods such as conductometry, potentiometry and pH metry in order to find out the concentrations or equivalence points of acids and bases.
3. Preparation of polymers like Bakelite and nylon-6.
4. Estimation of saponification value, surface tension and viscosity of lubricant oils.
5. Estimation of different types of qualitative and quantitative measurements of a given compound.

Subject Name: BASIC ELECTRICAL ENGINEERING LAB

Course Code: 22EE208ES

Course Outcomes: After learning the contents of this paper the student must be able to

- 1 :** Verify the basic Electrical DC and AC circuits through different experiments.
- 2 :** Evaluate the performance calculations of Transformers through various testing methods.
- 3:** Evaluate the performance calculations of DC Electrical Machines through various testing methods.
- 4:** Evaluate the performance calculations of AC Electrical Machines through various testing methods.
- 5:** Analyze the simple circuit for lighting and power installations.

Subject Name: Electronic Devices and Circuits Laboratory

Course Code: 22EC209ES

Course Outcomes: Students will be able to

1. Acquire the knowledge of various semiconductor devices and their use in real life.
2. Designing of clippers and clampers for various reference voltage levels
3. Design aspects of biasing for various configurations of BJT
4. Design aspects of biasing for various configurations of FET
5. Acquire the knowledge about the role of special purpose devices and their applications.

TEEGALAKRISHNAREDDYENGINEERINGCOLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC-'A' Grade

Medbowli, Meerpet, Balapur, Hyderabad, Telangana - 500097

Mob: 9393959597. Email: info@tkrec.ac.in, deanacademics@tkrec.ac.in

Subject Name: NUMERICAL METHODS AND COMPLEX VARIABLES

Subject Code: 22MA301BS

Course out comes: After learning the content of this paper, the student must be able to

1. Express any periodic function in terms of sine and cosine
2. Find the root of a given polynomial and transcendental equations and estimate the value for the given data using interpolation
3. Find the numerical solutions for a given first order ODEs
4. Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems and transformations on different planes.
5. Apply Taylor's and Laurent's series expansions in complex function.

Subject Name: ANALOG CIRCUITS

Subject Code: 22EC301PC

Course Outcomes: Upon completing this course, the students will be able to

1. Apply various biasing techniques in design of amplifiers
2. Analyze single stage amplifiers using BJT and FET
3. Distinguish various multistage amplifier circuits using BJT
4. Utilize the Concepts of negative feedback to improve the stability of amplifiers
5. Design various oscillator circuits

Subject Name: NETWORK ANALYSIS AND SYNTHESIS

Subject Code: 22EC302PC

Course Outcomes: Upon successful completion of the course, students will be able to:

1. Apply RLC network concepts in solving electrical and magnetic circuits.
2. Analyse the Steady state and transient analysis of RLC Circuits.
3. Calculate two port network parameters.
4. Analyse the Design aspect of various filters and attenuators
5. Determine the elements required to network synthesis methods.

Subject Name: DIGITAL LOGIC DESIGN

Course Code: 22EC303PC

Course Outcomes: Upon completing this course, the students will be able to

1. Acquire the knowledge on various types of number system and reduce the Boolean expressions using theorems and properties.
2. Minimize the Boolean functions using K-map and Tabular methods and Characterize logic Families and compare them with their specifications.
3. Design the Combinational and sequential circuits for various cyclic functions.
4. Draw the state table for the register and counters and design the N bit UP/DOWN Counters using flip flops.
5. Design the sequential Machines using Moore and Mealy models.

TEEGALAKRISHNAREDDYENGINEERINGCOLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC-'A' Grade

Medbowli, Meerpeta, Balapur, Hyderabad, Telangana - 500097

Mob: 9393959597. Email: info@tkrec.ac.in, deanacademics@tkrec.ac.in

Subject Name: SIGNALS AND SYSTEMS

Course Code: 22EC304PC

Course Outcomes: Upon completing this course the students are able to:

1. Apply the concept of orthogonality on signals and systems.
2. Analyze the concepts of Fourier series and Fourier Transform techniques for given specifications.
3. Analyze system characteristics for given specifications.
4. Estimate ROC and stability conditions of S and Z domains for given conditions.
5. Design system using the concept of sampling theorem and correlation.

Subject Name: ANALOG CIRCUITS LABORATORY Course Code: 22EC305PC

Course Outcomes: Upon completing this course the students will be able to

1. Design amplifiers with required Q point and determine the stability factors.
2. Analyze transistor characteristics and calculate its parameters.
3. Design high frequency model of BJT to calculate gain bandwidth product.
4. Examine the effect of amplification on frequency response.
5. Investigate feedback concept in amplifiers and oscillator.

Subject Name: DIGITAL LOGIC DESIGN LABORATORY Course Code: 22EC306PC

Course Outcomes: Upon completing this course, the students will be able to

1. Acquire the knowledge on numerical information in different forms and Boolean Algebra theorems.
2. Define Postulates of Boolean algebra and to minimize combinational functions, and design the combinational circuits.
3. Design and analyze sequential circuits for various cyclic functions.
4. Characterize the logic families and analyze them for the purpose of AC and DC parameters.
5. Design and analyze the Finite state machines-FSM's

Subject Name: BASIC SIMULATION LAB

Course Code: 22EC307PC

Course Outcomes: Upon completing this course, the students will be able to

1. Practice the characteristics of signals and its operations.
2. Demonstrate the concept of Correlation and Convolution on given signals and sequences.
3. Analyze the different types of systems to obtain their characteristics.
4. Analyze the given signal using Wiener-Khinchin relation and noises.
5. Estimate a given system for observing its LTI & Response characteristics.

Subject Name: CONSTITUTION OF INDIA

Course Code: 22MC310

Course Outcomes: Upon completing this course, the students will be able to

1. Practice the characteristics of signals and its operations.
2. Demonstrate the concept of Correlation and Convolution on given signals and sequences.
3. Analyze the different types of systems to obtain their characteristics.
4. Analyze the given signal using wiener-khinchin relation and noises.
5. Estimate a given system for observing its LTI & Response characteristics.

Subject Name: PROBABILITY THEORY AND STOCHASTIC PROCESSES

Course Code: 22MC310

Course Outcomes: Upon completing this course, the students will be able to:

1. Apply the Concepts of probability and Random variable to real timeApplications.
2. Analyze probability density and distribution functions for random variables.
3. Determine the temporal characteristics of random processes.
4. Evaluate the spectral density of random Processes.
5. Use the concepts of noise and information theory in communication systems.

Subject Name: ELECTROMAGNETIC FIELDS AND TRANSMISSION LINES

Course Code: 22EC402PC

Course Outcomes: Upon completing this course, the student able to

1. Apply the characteristics of basic laws of Electrostatics
2. Use Basic laws of Magneto statics
3. Distinguish Maxwell's equations for various boundary conditions
4. Analyze Uniform plane wave characteristics for several media.
5. Analyze transmission line parameters with different impedances

Subject Name: ANALOG AND DIGITAL COMMUNICATIONS

Course Code: 22MC310

Course Outcomes: Upon completing this course, the student able to

1. Apply amplitude modulation and demodulation techniques in communication systems
2. Use the concepts of angle modulation in communication systems
3. Analyze working principle of analog transmitters and receivers
4. Summarize the different pulse code modulation techniques
5. Estimate probability of error for different digital modulation techniques

Subject Name: LINEAR AND DIGITAL IC APPLICATIONS Course Code: 22EC404PC

Course Outcomes: Upon completing this course, the students will be able to

1. Apply the inverting, non-inverting and differential concepts of Op-Amp.
2. Demonstrate the applications of op- Amp, 555 timer and PLL.
3. Analyzes the operation of ADC and DAC.
4. Discuss the application of various digital logic families of combinational Logic ICs
5. Design the sequential logic circuits and architecture of memories.

Subject Name: ELECTRONIC CIRCUIT ANALYSIS Course Code: 22EC405PC

Course Outcomes: Upon completing this course, the student will be able to

1. Analyze the concepts of power amplifiers and determine its efficiency.
2. Analyze the tuned amplifiers to sketch the frequency response
3. Design Multivibrators for various applications.
4. Use sweep circuits in the concepts of synchronization and frequency division.
5. Analyze the PN Junction Diode as sampling gates.

Subject Name: ANALOG AND DIGITAL COMMUNICATIONS LABORATORY

Course Code: 22EC406PC

Course Outcomes: Upon completing this course, the student able to:

1. Apply the concepts of Modulation and Demodulation to a given signal.
2. Demonstrate the knowledge of Multiplexing and Demultiplexing in Communication System.
3. Analyze various Pulse Modulation techniques.
4. Examine Digital Modulation and Demodulation schemes.
5. Evaluate the performance of Digital Communication system.

Subject Name: LINEAR AND DIGITAL IC APPLICATIONS LABORATORY

Course Code: 22EC407PC

Course Outcomes: Upon completing this course, the student able to

1. Design and implementation of various analog circuits using 741 ICs.
2. Design and implementation of various Multivibrators using 555 timer.
3. Design and implement ADC, DAC and voltage regulators
4. Designing and implement various combinational circuits using ICs
5. Designing and implement various sequential circuits using ICs

Subject Name: ELECTRONIC CIRCUIT ANALYSIS LABORATORY

Course Code: 22EC408PC

Course Outcomes: Upon completing this course the students will be able to

1. Design power amplifiers and find its efficiency
2. Design tuned amplifiers and find its Q –factor.
3. Design various multivibrators and generate waveforms for different time periods.
4. Design various sweep circuits. Understand the necessity of linearity.
5. Design sampling gates and understanding the concepts of frequency division.

Subject Name: GENDERSENSITIZATIONLAB

Course Code: 22MC409

Objectives of the Course

1. Students will have developed a better understanding of important issues related to gender in contemporary India.
2. Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
3. Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
4. Students will acquire insight into the gendered division of labor and its relation to politics and economics.
5. Men and women students and professionals will be better equipped to work and live together as equals.
6. Students will develop a sense of appreciation of women in all walks of life.
7. Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.