



S J P N Trust's

Hirasugar Institute of Technology, Nidasoshi.

Inculcating Values, Promoting Prosperity

Approved by AICTE, New Delhi, Permanently Affiliated to VTU, Belagavi

Recognized under 2(f) & 12B of UGC Act, 1956

Accredited at 'A' Grade by NAAC & Programmes Accredited by NBA: CSE, ECE, and EEE & ME.

FIRST
YEAR

NAAC

Course
Outcome

2021-22

DEPARTMENT OF FIRST YEAR ENGINEERING

List of Course Outcomes for All Courses

Course Outcomes for 1st Semester

Sub: Calculus and Linear Algebra

Sub. Code: 21MAT11

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C101.1 | Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve. |
| C101.2 | Learn the notion of partial differentiation to calculate rate of change of multivariate functions and solve problems related to composite functions and Jacobian. |
| C101.3 | Solve first-order linear/nonlinear ordinary differential equations analytically through standard methods. |
| C101.4 | Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations. |
| C101.5 | Test the consistency of a system of linear equations and to solve them by direct and iterative methods. |

Sub: Engineering Physics

Sub. Code: 21PHY12/22

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C102.1 | Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields. |
| C102.2 | Demonstrate the quantization of energy for microscopic system. |
| C102.3 | Apply LASER and Optical fibers in optoelectronic system. |
| C102.4 | Illustrate merits of quantum free electron theory and applications of Hall effect. |
| C102.5 | Analyse the importance of XRD and Electron Microscopy in Nano material characterization. |



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DEPARTMENT OF FIRST YEAR ENGINEERING

Sub: Basic Electrical Engineering

Sub. Code: 21ELE13/23

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C103.1 | Analyze DC circuits and explain the generation of sinusoidal voltage and AC fundamentals |
| C103.2 | Analyze DC circuits and explain the generation of sinusoidal voltage and AC fundamentals |
| C103.3 | Discuss the construction and operation of DC machines |
| C103.4 | Discuss the construction and operation of three phase induction motors and synchronous generators. |
| C103.5 | Explain the concepts of electric power transmission and distribution, electricity billing, circuit protective devices and personal safety measures. |

Sub: Elements of Civil Engineering & Engineering Mechanics

Sub. Code: 21CIV14/24

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C104.1 | Describing the basics of civil engineering, its scope of study, knowledge about roads, bridges and dams. Understanding the action of forces, moments and other loads on systems of rigid bodies. |
| C104.2 | Understanding the concept of equilibrium and friction- Static and Dynamic. |
| C104.3 | Analyzing and Interpreting the reactive forces and the effects those develop as a result of external loads on beams and trusses. |
| C104.4 | Finding the centroid and moment of inertia of composite plane and curved figures. |
| C104.5 | Describing the basics of kinematics and kinetics, different types of motions. Analyzing the motion of the body |



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DEPARTMENT OF FIRST YEAR ENGINEERING

Sub: Engineering Visualization

Sub. Code: 21EVLN15/25

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C105.1 | Understand and visualize the objects with definite shape and dimensions |
| C105.2 | Analyze the shape and size of objects through different views |
| C105.3 | Develop the lateral surfaces of the object |
| C105.4 | Create a 3D view using CAD software. |
| C105.5 | Identify the interdisciplinary engineering components or systems through its graphical representation. |

Sub: Engineering Physics Laboratory

Sub. Code: 21PHYL16/26

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C106.1 | Develop skills to impart practical knowledge in real time solution. |
| C106.2 | Explain principle, concept, working and application of new technology and comparison of results with theoretical calculations. |
| C106.3 | Gain knowledge of new concept in the solution of practical oriented problems and to understand more deep knowledge about the solution to theoretical problems. |

Sub: Basic Electrical Engineering Laboratory

Sub. Code: 21ELEL17/27

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C107.1 | Verify KCL and KVL and maximum power transfer theorem for DC circuits. |
| C107.2 | Compare power factors of different types of lamps. |
| C107.3 | Demonstrate the measurement of the impedance of an Electrical circuit and power consumed by three phase load. |
| C107.4 | Analyze two way and three way control of lamps. |
| C107.5 | Explain the effect of open and short circuits in simple circuits. |
| 107.6 | Interpret the stability of earth resistance measured. |



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DEPARTMENT OF FIRST YEAR ENGINEERING

Sub: Communicative English

Sub. Code: 21EGH18

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C108.1 | Understand and apply the Fundamentals of Communication Skills in their communication skills. |
| C108.2 | Identify the nuances of phonetics, intonation and enhance pronunciation skills. |
| C108.3 | To impart basic English grammar and essentials of language skills as per present requirement. |
| C108.4 | Understand and use all types of English vocabulary and language proficiency. |
| C108.5 | Adopt the Techniques of Information Transfer through presentation. |

Course Outcomes for 4th Semester

Sub: Innovation & Design Thinking

Sub. Code: 21IDT19

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C109.1 | To understand Health and wellness (and its Beliefs) |
| C109.2 | To acquire Good Health & It's balance for positive mindset |
| C109.3 | To inculcate and develop the healthy lifestyle habits for good health. |
| C109.4 | To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world |
| C109.5 | Adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus |
| C109.6 | To positively fight against harmful diseases for good health through positive mindset. |



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DEPARTMENT OF FIRST YEAR ENGINEERING

Sub: Advanced Calculus and Numerical Methods

Sub. Code: 21MAT21

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C110.1 | Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve. |
| C110.2 | Learn the notion of partial differentiation to calculate rate of change of multivariate functions and solve problems related to composite functions and Jacobian. |
| C110.3 | Solve first-order linear/nonlinear ordinary differential equations analytically through standard methods. |
| C110.4 | Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations. |
| C110.5 | Test the consistency of a system of linear equations and to solve them by direct and iterative methods. |

Sub: Engineering Chemistry

Sub. Code: 21CHE12/22

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C111.1 | The course able to impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices using thermodynamic considerations and its commercial applications. |
| C111.2 | The course has able to understand the basic principles of corrosion and its prevention by modifying the surface properties of metals to develop resistance to corrosion and metal finishing, and its technological importance by wear, tear impact etc. by electroplating and electroless plating processes. |
| C111.3 | The course has able to master in the knowledge of synthesis, properties, and utilization of engineering materials and applications of polymer, lubricants, and refractories in various fields of engineering and science. |
| C111.4 | The course has able to Apply the knowledge of Green Chemistry principles for the production of chemical compounds. Understanding the concepts of synthesis and characterization of nanomaterials. |



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|--------|---|
| C111.5 | The course has able to illustrate the sources, causes and water analysis and Understanding the theory, basic principle, and applications of volumetric analysis and analytical instruments. |
|--------|---|

Sub: Problem-Solving through Programming

Sub. Code: 21PSP13/23

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C112.1 | Explain the basic architecture and functionalities of a Computer and familiar with elements of C-Program. |
| C112.2 | Understand and Apply Programming constructs of C language to solve the real-world problems. |
| C112.3 | Explore user-defined data structures like arrays in implementing solution to searching, sorting and other problems. |
| C112.4 | Design and Develop Solutions to problems using modular programming constructs using functions. |
| C112.5 | Explore user-Defined data structures like structures, unions and pointers in implementing solution to the problems. |

Sub: Basic Electronics & Communication Engineering

Sub. Code: 21ELN14/24

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C113.1 | Describe the concepts of electronic circuits encompassing power supplies, amplifiers and oscillators. |
| C113.2 | Present the basics of digital logic engineering including data representation, circuits and the microcontroller system with associated sensors and actuators. |
| C113.3 | Discuss the characteristics and technological advances of embedded systems. |
| C113.4 | Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved including antennas. |
| C113.5 | Explain the different modes of communications from wired to ireless and the computing |



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involved.

Sub: Elements of Mechanical Engineering

Sub. Code: 21ME15/25

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C114.1 | Understanding the role & contribution of Mechanical Engineering for society, industry and GDP. Interpret the concepts of energy, its sources and conversions and comprehend the basic concepts of thermodynamics & its properties during the steam formation. Understand and differentiate the working principle of hydraulic turbines and pumps. |
| C114.2 | Understanding the compositions, properties & applications of common engineering materials, metal joining processes and modes of heat transfer and its applications. |
| C114.3 | Differentiate the working principle of internal combustion engines and understand the applications of engines and future mobility technologies such as electrical and hybrid vehicles. Understanding the refrigeration and air conditioning systems and their applications. |
| C114.4 | Understand the mechanical power transmission systems and linkages and their applications. Understanding the basics of robotics and its applications & usage. |
| C114.5 | Understand the conventional metal removing principles, processes and advanced manufacturing systems and their machines. Understanding the basics of mechatronics |

Sub: Engineering Chemistry Laboratory

Sub. Code: 21CHEL16/26

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C115.1 | The course able to Determine the pKa and coefficient of Viscosity of a given organic liquid. |
| C115.2 | The course able to Estimate the amount of substance present in the given solution using Potentiometer Conductometric and Colorimetric. |
| C115.3 | The course able to Determine the total hardness and chemical oxygen demand in the given solution by volumetric analysis method. |
| C115.4 | The course able to Estimate the percentage of Nickel, copper and Iron in the given |



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| | |
|--------|---|
| | analytical solution by titration method. |
| C115.5 | The course able to Demonstrate flame photometric estimation of sodium & potassium and the synthesis of nonmaterial's by Precipitation method. |

Sub: Computer Programming Laboratory

Sub. Code: 21CPL17/27

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|--|
| C116.1 | Define the problem statement and identify the need for computer programming |
| C116.2 | Make use of C compiler, IDE for programming, identify and correct the syntax and syntactic errors in programming |
| C116.3 | Develop algorithm, flowchart and write programs to solve the given problem |
| C116.4 | Demonstrate use of functions, recursive functions, arrays, strings, structures and pointers in problem solving. |
| C116.5 | Document the inference and observations made from the implementation. |

Sub: Professional writing skills in English

Sub. Code: 21EGH28

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C117.1 | Understand and apply the Fundamentals of Communication Skills in their communication skills. |
| C117.2 | Identify the nuances of phonetics, intonation and enhance pronunciation skills. |
| C117.3 | To impart basic English grammar and essentials of language skills as per present requirement. |
| C117.4 | Understand and use all types of English vocabulary and language proficiency. |
| C117.5 | Adopt the Techniques of Information Transfer through presentation. |

Scientific Foundation of Health

Sub. Code: 21SFH29

After successful completion of the course, the student will be able to:

| CO | Description |
|--------|---|
| C118.1 | Appreciate various design process procedure |
| C118.2 | Generate and develop design ideas through different technique |



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DEPARTMENT OF FIRST YEAR ENGINEERING

| | |
|--------|---|
| C118.3 | Identify the significance of reverse Engineering to Understand products |
| C118.4 | Draw technical drawing for design ideas |
| C118.5 | Empathizing prototyping & testing |