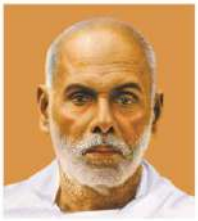
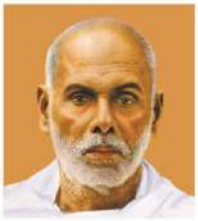
Sree Narayana Guru College
of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



COURSE OBJECTIVES AND COURSE OUTCOMES

Sree Narayana Guru College
of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



COURSE OBJECTIVES

Sree Narayana Guru College of Engineering & Technology
Est. 2003

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF CIVIL ENGINEERING

YEAR	SEMESTER	SUBJECT	COURSE OBJECTIVES
First Year	I & II	EST130 BASICS OF CIVIL & MECHANICAL ENGINEERING	• To provide an insight and inculcate the essentials of Civil Engineering discipline to the students of all branches of Engineering and to provide the students an illustration of the significance of the Civil Engineering Profession in satisfying the societal needs. • To introduce the students to the basic principles of mechanical engineering
		EST 120 CIVIL & MECHANICAL WORKSHOP	• To provide an insight and inculcate the essentials of Civil Engineering discipline to the students of all branches of Engineering and to provide the students an illustration of the significance of the Civil Engineering Profession in satisfying the societal needs. • To introduce the students to the basic principles of mechanical engineering
		EST 100 ENGINEERING MECHANICS	• To expose the students to the fundamental concepts of mechanics and enhance their problem-solving skills. It introduces students to the influence of applied force system and the geometrical properties of the rigid bodies while stationary or in motion. • After this course students will be able to recognize similar problems in real-world situations and respond accordingly.
		MAT101 LINEAR ALGEBRA AND CALCULUS	• To introduce fundamental principles of daigonalisation. • To impart knowledge of the Taylor and Fourier series expansion of functions and learn their applications
		EST 110 ENGINEERING GRAPHICS	• To enable the student to effectively perform technical communication through graphical representation as per global standards.
		CYT100 ENGINEERING CHEMISTRY	• To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • Enable them to develop abilities and skills that are relevant to the study and practice of chemistry.
		MAT102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS & TRANSFORMS	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
		HUN102 PROFESSIONAL COMMUNICATION	• To familiarize students with the basics of English language and help them to learn to identify language structures for correct English usage.

Dr. LEENA A V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			• Develop and Expand Writing Skills through Controlled and Guided Activities
		HUN101 LIFE SKILLS	• To enhance the employability and maximize the potential of the students. • To develop one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete.
		PHL120 ENGINEERING PHYSICS LAB	• To impart physical measurement skills. • To make the students understand coherence between theoretical and practical measurement. • Be able to interpret results and develop correct conclusions
		PHT100 ENGINEERING PHYSICS A	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
		CYL120 ENGINEERING CHEMISTRY LAB	• To impart scientific approach and to familiarize with the experiments in chemistry relevant for research projects in higher semesters
Second Year	III	CET201 MECHANICS OF SOLIDS	• The course provides the fundamental concepts of mechanics of deformable bodies and helps students to develop their analytical and problem solving skills. The course introduces students to the various internal effects induced in structural members as well as their deformations due to different types of loading. • After this course students will be able to determine the stress, strain and deformation of loaded structural elements.
		MAT201 PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity
		HUT200 PROFESSIONAL ETHICS	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas
		CET 203 FLUID MECHANICS AND HYDRAULICS	• To expose the students to the fundamental concepts of fluid mechanics, hydraulics of pipes and open channels and to enhance the problem solving skills. T • The concepts learned will help in applying them for the design of hydraulic structures and to real world fluid flow problems.
		CET 205 SURVEYING AND GEOMATICS	• To impart an awareness on the principles of surveying, various methods and instruments of surveying, errors associated with field measurements and advanced surveying techniques.
		CEL 201 CIVIL ENGINEERING PLANNING AND DRAFTING LAB	• To introduce the fundamentals of Civil Engineering drawing and understand the principles of planning. • The students will be able to learn the drafting of buildings manually and using drafting software such as AutoCAD.
		CEL 203 SURVEY LAB	• To impart practical experience to students by exposing them to various techniques of field surveying. • The course is designed to make student familiar with conventional and advanced surveying instruments.

	IV	MAT202 PROBABILITY STSTISTICS AND NUMERICAL METHODS	• This course helps the learner to apply the modern theory of probability and statistics also familiarises students with some basic numerical techniques
		MCN202 CONSTITUTION OF INDIA	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
		CET 202 ENGINEERING GEOLOGY	• To introduce to the students the basics of earth processes, materials, groundwater and the geological characteristics of such processes and materials which are relevant to the Civil Engineering applications
		CET 204 GEOTECHNICAL ENGINEERING -1	• To expose the students to the fundamental concepts of soil mechanics and laboratory tests to determine the basic, index and engineering properties of soils. • After this course, students will be able to identify and classify the soil and to recognize practical problems in real-world situations and respond accordingly.
		CET 206 TRANSPORTATION ENGINEERING	• To introduce the principles and practice of Highway, Railway, Harbour and dock, Tunnel and Airport Engineering
		CEL202 MATERIAL TESING LAB – I	• To enrich the understanding of the fundamental concepts of mechanics of deformable bodies through systematic experimental techniques for the estimation of various mechanical properties of engineering materials
		EST 200 DESIGN AND ENGINEERING	The purpose of this course is to • Introduce the undergraduate engineering students the fundamental principles of design engineering, make them understand the steps involved in the design process and familiarize them with the basic tools used and approaches in design.
		CEL 204 FLUID MECHANICS LAB	• To train the students to familiarize and understand the different flow measurement equipment's and their procedures. • Students will be introduced to a team working environment where they develop the necessary skills of experimentation techniques for the study of flow phenomena in channels/pipes.
Third Year	V	CET 301 STRUCTURAL ANALYSIS -I	• To analyse various types of simple structures using appropriate methods and tools. It introduces the applications of principles of mechanics of solids to determine stress resultants in statically determinate and indeterminate structures. • Specific cases of cables, suspension bridges and arches are also discussed at length. The course trains the students to develop mathematical models and helps to sharpen their analytical skills. After this course students will be able to analyse structures subjected to moving loads as well.
		CET 303 DESIGN OF CONCRETE STRUCTURES	• The course provides all the fundamental topics in reinforced concrete design and enable students to design and detail reinforced concrete structural members such as beam, slab, column and footing. • The course also provides an introduction to earthquake resistant design and detailing.

		CET 305 GEOTECHNICAL ENGINEERING II	• To impart to the students, in-depth knowledge about the basic concepts and theories of foundation engineering. After this course, students will be able to recognize practical problems of foundations in real-world situations and respond accordingly
		CET 307 HYDROLOGY AND WATER RESOURCES	• To expose the students to the fundamental concepts of surface and groundwater components of hydrology and basics of water resources engineering. The course aim to impart the knowledge on the availability of water on hydrosphere, its distribution and quantification, scientific methods for computing irrigation water requirements, reservoir engineering and river engineering
		CET 309 CONSTRUCTION TECHNOLOGY AND MANAGEMENT	• The course provides a detailed insight into the materials used in construction, various building elements and construction technology. Management is essential for successful completion of construction projects and the course introduces the students to the basic concepts of construction project management and planning. After the course, students will be familiar with the fundamental concepts of building construction and management.
		CEL 331 MATERIAL TESING LAB	• To enrich the students to gain hands-on experience in conducting laboratory tests on various construction materials and thereby evaluate material quality and performance.
		CEL 333 GEOTECHNICAL ENGINEERING LAB	• To familiarize students with the laboratory tests used to determine physical, index and engineering properties of geomaterials
	VI	CET 302 STRUCTURAL ANALYSIS - II	• To analyse various types of multistoreyed structures using appropriate methods and tools. It utilises the procedures of force methods and displacement methods for analysing framed structures. • Plastic theory and its applications are introduced to students. A very important topic of applications of principles of dynamics to analyse structures while undergoing dynamic deformations is also made familiar with. • The course trains the students to develop mathematical models and helps to sharpen their analytical skills, which also helps the student to lay foundation for further advanced topics like finite element method.
		CET304 ENVIRONMENTAL ENGINEERING	• Students will learn the role of an environmental engineer in ensuring public health. • They will understand how engineering approach can enhance the environmental quality by scaling up the physical and biological purification processes that exist in nature.
		CET306 DESIGN OF HYDRAULIC STRUCTURES	• The general objective of this course is to expose the students to the fundamental concepts of hydraulic design of different hydraulic structures and to develop the drawings of minor irrigation structures. • This course equip the students to perform the hydraulic design of minor irrigation structures such as cross drainage works, canal falls and regulators and prepare drawings of the same. To impart the knowledge on causes of failure and design criteria of hydraulic structures like dams and canal structures.
		CET332	• This course equip the students to perform the hydraulic

		ADVANCED CONCRETE TECHNOLOGY	design of minor irrigation structures such as cross drainage works, canal falls and regulators and prepare drawings of the same. To impart the knowledge on causes of failure and design criteria of hydraulic structures like dams and canal structures.
		CET308 COMPREHENSIVE COURSE WORK	• The course is designed to ensure that the student have firmly grasped the foundational knowledge in Civil Engineering familiar enough with the technological concepts. • It provides an opportunity for the students to demonstrate their knowledge in various Civil Engineering subjects
		CEL334 CIVIL ENGINEERING SOFTWARE LAB	• The course aims to train the students to use different software tools needed for professional practice in civil engineering also the field expertise needed for undertaking the surveying activity using modern instruments and hence to prepare the necessary engineering documentation are included in this laboratory course.
		HUT300 INDUSTRIAL ECONOMICS AND FOREIGN TRADE	• The aim of the course is to introduce the student to the main concepts of industrial organisation in the context of open economies. First, the course analyses the interaction of firms in the market focusing on their strategic behaviour and on how the latter is affected by competition policy. Second, the course introduces the models of international trade to illustrate how international competition affects firms and country behaviour and its impact on economic growth.
		CEL332 TRANSPORTATION ENGINEERING LAB	• The objective of this course is to enable students to assess the quality of various pavement materials and their suitability in highway construction. The course is designed to make student familiar with mix design and do functional evaluation of pavements.
Fourth Year	VII	MCN401 INDUSTRIAL SAFETY ENGINEERING	• The course is intended to give knowledge of various safety management principles,various safety systems, various machine guarding devices, hazard identification techniques,energy sources, systems & applications and the need in the present context. Learners will be able to compare different hazard identification tools and choose the most appropriate based on the nature of industry. It aims to equip students in working with projects and to take up research work in connected areas
		CST415 INTRODUCTION TO MOBILE COMPUTING	• The purpose of this course is to prepare learners to understand the functionalities and design considerations of mobile computing. The course content is designed to cover the mobile computing architecture, features of different communication systems and major elements of mobile security and next generation computer systems. This course enables the learners to acquire advanced concepts on mobile and ad-hoc networks.
		CET401 DESIGN OF STEEL STRUCTURES	• Goal of this course is to expose the students to the fundamental concepts of DESIGN OF STEEL STRUCTURES. After this course, students will be able to design steel structures and to recognize practical problems in real-world situations and respond accordingly.
		CEL411 ENVIRONMENTAL ENGINEERING	• This lab provides the knowledge on tests used to analyse the physio-chemical and bacteriological properties of water and explains the various method followed in the test

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		LAB	along with its suitability as a drinking water.
		CET453 CONSTRUCTION PLANNING AND MANAGEMENT	• Construction Planning and Management is an elective course designed to provide in-depth knowledge in the planning and management of construction projects. • The course details various operations encountered in a construction project in different phases throughout the lifecycle of a project, from planning, design, construction and operations. • The course also helps students to develop the required skills to plan and manage various types of construction projects effectively and efficiently using the latest technologies like BIM.
		CED415 PROJECT PHASE I	• To apply engineering knowledge in practical problem solving. • To foster innovation in design of products, processes or systems. • To develop creative thinking in finding viable solutions to engineering problems.
		CEQ413 SEMINAR	• The course 'Seminar' is intended to enable a B.Tech graduate to read, understand,present and prepare report about an academic document. The learner shall search in the literature including peer reviewed journals, conference, books, project reports etc., and identify an appropriate paper/thesis/report in her/his area of interest, in consultation with her/his seminar guide. This course can help the learner to experience how a presentation can be made about a selected academic document and also empower her/him to prepare a technical report.
	VIII	CET438 AIRPORT, SEAPORT AND HARBOUR ENGINEERING	• Objective of the course is to introduce the principles of planning design and practice of Airport, Sea port and Harbor Engineering.
		CET402 QUANTITY SURVEYING AND VALUATION	• The course provides the knowledge about various types of estimation and specification of different civil engineering works. It equips students to analyze the rate of various items of work with reference to the standard data and schedule of rate. This course develops capability of students to prepare the detailed estimate of various items of work related to civil engineering construction and also preparation of the valuation of land and buildings.
		CET464 AIRQUALITY MANAGEMENT	• The course is designed to provide engineering knowledge on air pollution, air quality monitoring and air pollution control strategies among students. It motivates the students in maintaining and improving the air quality of the environment and empower learners to take appropriate actions to reduce the air pollution for the benefit of the society.
		CED416 PROJECT PHASE II	• The course 'Project Work' is mainly intended to evoke the innovation and invention skills in a student. The course will provide an opportunity to synthesize and apply the knowledge and analytical skills learned, to be developed as a prototype or simulation. The project extends to 2 semesters and will be evaluated in the 7th and 8th semester separately, based on the achieved objectives. • One third of the project credits shall be completed in 7th

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			semester and two third in 8th semester. It is recommended that the projects may be finalized in the thrust areas of the respective engineering stream or as interdisciplinary projects. Importance should be given to address societal problems and developing indigenous technologies.
		CET404 COMPREHENSIVE COURSE VIVA	• The objective of this Course viva is to ensure the basic knowledge of each student in the most fundamental core courses in the curriculum. • The viva voce shall be conducted based on the core subjects studied from third to eighth semester. This course helps the learner to become competent in placement tests and other competitive examinations.

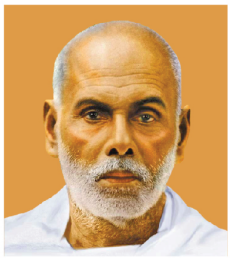
Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD CE

Sree Narayana Guru College of Engineering & Technology
Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



DEPARTMENT OF MECHANICAL ENGINEERING

YEAR	SEMESTER	SUBJECT	COURSE OBJECTIVES
First Year	I	MAT101 Linear Algebra and Calculus	• To introduce fundamental principles of daigonalisation. • To impart knowledge of the Taylor and Fourier series expansion of functions and learn their applications
	I & II	CYT100 Engineering Chemistry	• To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • Enable them to develop abilities and skills that are relevant to the study and practice of chemistry.
	I & II	CYL120 Engineering Chemistry lab	• To impart scientific approach and to familiarize with the experiments in chemistry relevant for research projects in higher semesters
	I & II	PHT100 Engineering Physics A	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
	I & II	PHT110 Engineering Physics B	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
	I & II	PHL120 Engineering Physics Lab	• To impart physical measurement skills. • To make the students understand coherence between theoretical and practical measurement. • Be able to interpret results and develop correct conclusions
	I	HUN101 Life Skills	• To enhance the employability and maximize the potential of the students. • To develop one's personality by being aware of the self, connecting with others, reflecting on the

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			abstract and the concrete.
	II	MAT102-Vector Calculus, Differential Equations and Transforms	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
	II	HUN102 Professional Communication	• To familiarize students with the basics of English language and help them to learn to identify language structures for correct English usage. • Develop and Expand Writing Skills through Controlled and Guided Activities
	I& II	EST100 Engineering Mechanics	• To expose the students to the fundamental concepts of mechanics and enhance their problem-solving skills. • It introduces students to the influence of applied force system and the geometrical properties of the rigid bodies while stationary or in motion. • After this course students will be able to recognize similar problems in real-world situations and respond accordingly.
	I& II	EST110 Engineering Graphics	• To enable the student to effectively perform technical communication through graphical representation as per global standards.
	I& II	EST120 Basics of civil and mechanical engineering	• Objective of this course is to provide an insight and inculcate the essentials of Civil Engineering discipline to the students of all branches of Engineering and to provide the students anillustration of the significance of the Civil Engineering Profession in satisfying the societal needs.
	I& II	EST130 Basics Of Electrical And Electronics Engineering	• This course aims to equip the students with an understanding of the fundamental principles ofelectrical engineering • Provide an overview of evolution of electronics, and introduce the working principle and examples of fundamental electronic devices and circuits • Provide an overview ofevolution of communication systems, and introduce the basic concepts in radio communication.
	III	MAT201 Partial Differential Equations and Complex Analysis	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

	III	MAT203 Discrete Mathematical Structures.	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity
	III & IV	HUT200 Professional Ethics	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
Second Year	IV	MAT202 Probability,Statistics And. Numerical Methods	• This course helps the learner to apply the modern theory of probability and statistics also familiarises students with some basic numerical techniques
	IV	MAT204 Probability, Random. Processes And Numerical. Methods	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
	IV	MAT206 Graph Theory	• This course helps the learner to apply the theory and applications of different types of graphs
	IV	MCN202 Constitution of India	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
			•
Second Year	III	MET201 MECHANICS OF SOLIDS	• To understand the physics and working of solid state devices to understand the concept of stress and strain in different types of structure/machine under various loading conditions. The course also covers simple and compound stresses due to forces, stresses and deflection in beams due to bending, torsion in circular section, strain energy, different theories of failure, stress in thin cylinder thick cylinder and spheres due to external and internal pressure.
		MET203 MECHANICS OF FLUIDS	• This course provides an introduction to the properties and behaviour of fluids. It enables to apply the concepts in engineering, pipe networks. It introduces the concepts of boundary layers,

			dimensional analysis and model testing.
		MET205 METALLURGY & MATERIAL SCIENCE	• To determine properties of unknown materials and develop an awareness to apply this knowledge in material design
		EST 200 DESIGN AND ENGINEERING	• The purpose of this course is to • i) introduce the undergraduate engineering studentsthe fundamental principles of design engineering, • ii) make them understand the steps involved in the design process and familiarize them with the basic tools used and approaches in design.
		MEL201 COMPUTER AIDED MACHINE DRAWING	• To introduce students to the basics and standards of engineering drawing related to machines and components. • To make students familiarize with different types of riveted and welded joints, surface roughness symbols; limits, fits and tolerances. • To convey the principles and requirements of machine and production drawings. • To introduce the preparation of drawings of assembled and disassembled view of important valves and machine components used in mechanical engineering applications. • To introduce standard CAD packages for drafting and modeling of engineering components
	IV	MET202 ENGINEERING THERMODYNAMICS	• Thermodynamics is the study of energy . Without energy life cannot exist. Activities from breathing to the launching of rockets involves energy transactions and are subject to thermodynamic analysis. • Engineering devices like engines, turbines, refrigeration and air conditioning systems, propulsion systems etc., work on energy transformations and must be analysed using principles of thermodynamics. So, a thorough knowledge of thermodynamic concepts is essential for a mechanical engineer. This course offers an introduction to the basic concepts and laws of thermodynamics.
		MET204 MANUFACTURING PROCESS	• To gain theoretical and practical knowledge in material casting processes and develops an understanding of the dependent and independent variables which control materials casting in a production processes. • Provide a detailed discussion on the welding process and the physics of welding. Introduce students to different welding processes weld testing and advanced processes to be able to appreciate the practical applications of welding. The course will also provide methods of analysis allowing a mathematical/physical description of forming

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			processes. ● Correlate the material type with the possible fabrication processes Generate solutions to problems that may arise in manufacturing engineering
		MET206 FLUID MACHINERY	● This course provides an understanding of reciprocating and rotary fluid machinery. The course consists of hydraulic pumps, turbines, air compressors and gas turbines
		MEL202 FM & HM LAB	● This lab is mainly focussed to develop a platform where the students can enhance their engineering knowledge in the fluid mechanics domain by applying their theoretical knowledge acquired.
		MEL 204 MACHINE TOOLS LAB- I	● To understand the parts of various machine tools and impart hands on experience on lathe, drilling, shaping, milling, slotting, grinding, tool and cutter grinding machines. ● To develop knowledge and importance of metal cutting parameters such as feed, velocity and depth of cut etc on cutting force and surface roughness obtainable. ● To develop fundamental knowledge on tool materials, cutting fluids and tool wear Mechanisms. ● To apply knowledge of basic mathematics to calculate the machining parameters for different machining processes. To study process parameters and practice on arc and gas welding technologies. To gain knowledge on the structure, properties, heat treatment, testing and applications of ferrous and non ferrous metals.
Third Year	V	MET301 MECHANICS OF MACHINERY	● This course aims to introduce the students to the fundamentals of the kinematics of various mechanisms and also its analysis for its displacement, velocity, and acceleration. ● The course will also cover the design of cams, theory and analysis of gears, gear trains and synthesis of mechanisms. The static force analysis of planar mechanisms and concept of gyroscopic couple along with its effect has also been included. This course also aids students in estimating unbalance in rotating and reciprocating masses and suggesting methods to overcome it.
		MET303 THERMAL ENGINEERING	● This course involve the application of principles studied in thermodynamics to different energy conversion systems like steam turbine, steam

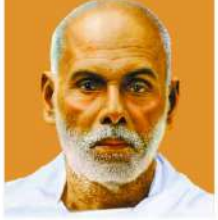
			nozzle, steam powerplant, IC engines and refrigeration systems. This course also covers the methods for improving and evaluating the performance of different energy conversion systems. This course also helps to understand the combustion phenomenon in IC engines.
		MET305 INDUSTRIAL & SYSTEMS ENGINEERING	• This course is designed to facilitate the students to acquire knowledge about management principles and practices of an industry. • It empowers the students to amalgamate their knowledge of materials management, inventory management, lean manufacturing, agile manufacturing, industrial relations and enterprise resource planning and thus inculcate the skills needed to apply these principles in an industry.
		MET 307 MACHINE TOOLS AND METROLOGY	• To develop knowledge of appropriate process parameters to be used for various machining operations. • Understand the fundamentals of modem quality concepts. Be able to apply statistical techniques. • Understand the principles and operation of precision measurement tools and equipment used in modern manufacturing
		MEL331 MACHINE TOOLS LAB II	• To learn the measurement of bores by internal micrometers, bore indicators, indirect methods etc. • To learn the measurement of the Angle and taper by Bevel protractor, Sine bars, indirect methods etc. • Allow to study the various limits, fits and tolerances adopted in the production drawings. • To learn to measure straightness, flatness, roundness, profile, screw threads and gear teeth. • To learn, to prepare programs for CNC machines and measurements in CMM.
		MEL333 THERMAL ENGINEERING LAB 1	• The course is intended to impart basic understanding on the working of internal combustion engines. This includes various performance tests on internal combustion engines as well as makes the students familiar with the evaluation of fuel properties such as viscosity, flash and fire points, calorific value etc. which are key to any performance test.
	VI	MET302 HEAT &MASS TRANSFER	• •To introduce the various modes of heat transfer and to develop methodologies for solving a wide variety of practical heat transfer problems • To provide useful information concerning the performance and design of simple heat transfer systems
		MET304 DYNAMICS AND	• This course focuses on important topics of dynamics of machinery and design of machine elements. It covers

		DESIGN OF MACHINERY	the topics namely force of four bar mechanisms, design of flywheels, welded joints, riveted joints and spring. Design of machine elements due to impact, shock and fatigue loading are covered in the syllabus. Analysis of free and forced vibration of single degree of freedom systems and a brief introduction about free vibration of two degree of freedom systems is also included.
		MET306 ADVANCED MANUFACTURING ENGINEERING	• Understand the capabilities, limitations of conventional manufacturing &machining process and what the need of advanced manufacturing processes is. • Understand, how to formulate tool path and program CNC machines. Understand, how PLC operate and control automated equipment and systems. Understand the need of atomic level surface roughness and machining process. • Understand the need of high velocity forming of metals.
		MEL332 COMPUTER AIDED DESIGN & ANALYSIS LAB	• To introduce students to the basics and standards of engineering design and analysis related to machine components. • To make students familiarize with different solid modelling and analysis soft wares • To convey the principles and requirements ofmodelling and analysis of machine elements. • To introduce the preparation of part modelling and assembly modelling of machineries • To introduce standard CAD packages to perform Finite Element Analysis of machine parts
		MET308 COMPREHENSIVE COURSE WORK	• The course is designed to ensure that the students have firmly grasped the foundational knowledge in Mechanical Engineering familiar enough with the technological concepts. It provides an opportunity for the students to demonstrate their knowledge in various Mechanical Engineering subjects.
Fourth Year	VIII	MET401 DESIGN OF MACHINE ELEMENTS	• This course focuses on important topics in design of machine elements. It covers the topics of shaft design with due consideration based on strength and rigidity. The course also includes the design procedure of flat belts and connecting rod of IC engines. The other topics included are journal bearings design, ball and roller bearings, spur gear and helical gear deign considerations. The syllabus also covers design procedure of bevel gear and worm gear.
		MET413 ADVANCED METHODS IN NON DESTRUCTIVE TESTING	• To develop a fundamental knowledge about the advanced techniques and the recent developments in non-destructive testing so as to control the quality in manufacturing engineering components • To gain practical knowledge in non-destructive testing (NDT)processes and provide a detailed discussion on

			the advanced non destructive testing methods ● To equip them with the knowledge of different NDT methods in complex geometries and enable them to select the appropriate methods for better evaluation. ● .To gain advanced knowledge of ultrasonic testing and X- ray radiography which enables them to perform inspection of samples. ● To equip them with the knowledge of different NDT methods so as to control the quality in manufacturing of engineering comp
		MEL411 MECHANICAL ENGINEERING LAB	● The course is intended to enable the students to get an exposure to equipment and exercises related to machine dynamics, cutting forces in milling machine, basics of pneumatic and hydraulic devices, basic concepts of stepper motors, basic ideas of data acquisition systems and automation.
		MEQ413 SEMINAR	● To enable a B.Tech graduate to read, understand, present and prepare report about an academic document. The learner shall search in the literature including peer reviewed journals, conference, books, project reports etc., and identify an appropriate paper/thesis/report in her/his area of interest, in consultation with her/his seminar guide ● To experience how a presentation can be made about a selected academic document and also empower her/him to prepare a technical report
		MED415 PROJECT PHASE I	● To evoke the innovation and invention skills in a student. The course will provide an opportunity to synthesize and apply the knowledge and analytical skills learned, to be developed as a prototype or simulation
	VIII	MET458 ADVANCED ENERGY ENGINEERING	● This course provides basic ideas about various energy source and its environmental impacts.
		MED416 PROJECT PHASE II	● To evoke the innovation and invention skills in a student. The course will provide an opportunity to synthesize and apply the knowledge and analytical skills learned, to be developed as a prototype or simulation

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR



YEAR	SEMESTER	COURSE	COURSE OBJECTIVE
First year	I&II	EST130 Basics Of Electrical And Electronics Engineering	• Set a firm and solid foundation in Electrical Engineering with strong analytical skills and conceptual understanding of basic laws • Analysis methods in electrical and magnetic circuits.
		MAT101 Linear Algebra and Calculus	• To introduce fundamental principles of daigonalisation. • To impart knowledge of the Taylor and Fourier series expansion of functions and learn their applications
		CYT100 Engineering Chemistry	• To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • Enable them to develop abilities and skills that are relevant to the study and practice of chemistry.
		CYL120 Engineering Chemistry lab	• To impart scientific approach and to familiarize with the experiments in chemistry relevant for research projects in higher semesters
		PHT100 Engineering Physics A	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
		PHT110 Engineering Physics B	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HODEEE

			technology for engineering applications.
		PHL120 Engineering Physics Lab	• To impart physical measurement skills. • To make the students understand coherence between theoretical and practical measurement. • Be able to interpret results and develop correct conclusions
		HUN101 Life Skills	• To enhance the employability and maximize the potential of the students. • To develop one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete.
		MAT102-Vector Calculus, Differential Equations and Transforms	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
		HUN102 PROFESSIONAL COMMUNICATION	• To familiarize students with the basics of English language and help them to learn to identify language structures for correct English usage. • Develop and Expand Writing Skills through Controlled and Guided Activities
		ESL 130 Electrical and Electronics Workshop	• Familiarize the students with commonly used components, accessories and measuring equipment in Electrical installations. • The course also provides hands on experience in setting up of simple wiring circuits.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

SECOND YEAR	III & IV	EET 201 Circuits And Networks	• To learn about various techniques available to solve various types of circuits and networks • To gain the capability to synthesize a circuit for a particular purpose
		MCN 201 Sustainable Engineering	• Objective of this course is to inculcate in students an awareness of environmental issues and the global initiatives towards attaining sustainability • The student should realize the potential of technology in bringing in sustainable practices.
		MAT201 Partial Differential Equations and Complex Analysis	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity
		MAT203 Discrete Mathematical Structures.	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity
		MCN202 Constitution of India	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
		EST 200	• To excite the student on creative design and its significance • To make the student aware of the processes involved in design • To make the student

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

			understand the interesting interaction of various segments of humanities, sciences and engineering in the evolution of a design • To make the student understand the interesting interaction of various segments of humanities, sciences and engineering in the evolution of a design • To get an exposure as to how to engineer a design
		HUT200 Professional Ethics	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
		EET 203 Measurement And Instrumentation	• To develop understanding of various electrical measuring instruments and instrumentation devices
		EET 205 Analog Electronics	• To impart an in depth knowledge in electronic semiconductor devices & circuits giving importance to the various aspects of design & analysis. • To provide knowledge about different types amplifier & oscillator circuits and their design • To provide a thorough understanding of the operational amplifier circuits and their functions.
		EEL201 Circuits and measurement lab	• To develop measurement systems for various electrical circuits and systems and to use different

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

			transducers for measurement of physical variables
		EEL203Analog Electronics Lab	• To design and develop various electronic circuits using discrete components and OPAMPs.
		EET202DC Machines and Transformers	• To give exposure to the students about the concepts of direct current machines and transformers, including their constructional details, principle of operation and performance analysis.
		EET204 Electromagnetic Theory	• To develop a conceptual basis of electrostatics, magnetostatics, electromagnetic waves • To understand various engineering applications of electromagnetics
		EET206 Digital Electronics	• To impart knowledge about digital logic and to gain the ability to design various digital circuit
		EEL202Electrical Machines Lab I	• To learn the working and testing methods of DC machines and transformers.
		EEL204 Digital Electronics Lab	• To impart practical experience in the design and setup of digital circuits and embedded systems. List of Exercises
THIRD YEAR	V	EET301Power Systems I	• To set a foundation on the fundamental concepts of Power System Generation, Transmission, Distribution and Protection
		HUT300 Industrial Economics And Foreign Trade	• The aim of the course is to introduce the student to the main concepts of industrial organisation in the context of open economies. First, the course analyses the interaction of firms in the market focusing on their

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

			strategic behaviour and on how the latter is affected by competition policy. Second, the course introduces the models of international trade to illustrate how international competition affects firms and country behaviour and its impact on economic growth.
		EET303Microprocessors and Microcontrollers	• To provide a strong foundation about the principles, programming and various applications of different microprocessors and microcontrollers
		EET305Signals and Systems	• To impart knowledge about the representation and properties of signal and systems and applications in engineering
		EET307Synchronous and Induction Machines	• To give exposure to the students about the concepts of alternating current machines including the Constructional details, principle of operation and performance analysis. • To learn the characteristics of induction machines and to learn how it can be employed for various applications
		EEL331Microprocessors and Microcontrollers Lab	• To provide a strong foundation about the principles, programming and various applications of different microprocessors and microcontrollers
		EEL333Electrical Machines Lab II	• To give hands on experience in testing Alternators, Three phase and Single phase Induction Motors and induction generators
	VI	EET302Linear Control	• To provide a strong foundation on

HODEEE

		Systems	the analytical and design techniques on classical control theory and modelling of dynamic systems
		HUT310 Management for Engineers	• To develop ability to critically analyse and evaluate a variety of management practices in the contemporary context. • To understand and apply a variety of management and organisational theories in practice. • To be able to mirror existing practices or to generate their own innovative management competencies required for today's complex and global workplace.
		EET304 Power Systems II	• To enable the students to analyse power systems under normal and abnormal conditions. • To understand the need for load flow analysis and different methods • To understand power system modeling • To understand the need for stability studies and their analysis
		EET306Power Electronics	• To get an overview of different types of power semiconductor devices and their switching characteristics • To study the operation and characteristics of various types of power electronic converters
		EET308 Comprehensive Course Work	• To assess the comprehensive knowledge gained in basic courses relevant to the branch of study • To comprehend the questions

Dr. LEENA A.V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

			asked and answer them with confidence.
		EEL332Power Systems Lab	• To develop mathematical models for electrical systems, analyse the systems and implement compensators for systems based on system performance.
		EEL334Power Electronics lab	• Impart practical knowledge for the design and setup of different power electronic converters and its application for motor control • Simulate the various power electronics converters, AC drives and DC drives
		EET312Biomedical Instrumentation	• To give a brief introduction to human physiology and various instrumentations system for measurement and analysis of physiological parameters.
		EET322Renewable Energy Systems	• To give sufficient knowledge about the promising new and renewable sources of energy • To equip students in working with projects and to take up research work in connected areas.
FOURTH YEAR	VII	EET401 Advanced Control Systems	• To provide a strong concept on the compensator design and on advanced control system analysis and design techniques • To analyse the behaviour of discrete time systems and nonlinear control systems.
			• The course is intended to give knowledge of various safety management principles, various safety systems, various machine guarding

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HODEEE

			devices, hazard identification techniques, energy sources, systems & applications and the need in the present context • Learners will be able to compare different hazard identification tools and choose the most appropriate based on the nature of industry • It aims to equip students in working with projects and to take up research work in connected areas
		CST 415 Introduction to Mobile Computing	• Describe the mobile computing applications, services, design considerations and architectures • Identify the technology trends for cellular wireless networks • Summarize the Short Messaging Service and General Packet Radio Service • Outline the LAN technologies used in mobile communication • Describe the security protocols and apply suitable security algorithm to secure the communication
		EEL411Control Systems lab	• To develop mathematical models for electrical systems, analyse the systems and implement compensators for systems based on system performance.
		EED413Seminar	• To develop skills in doing literature survey, technical presentation and report preparation. • To enable project identification and execution of preliminary works on final semester project

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

		EED415Project Phase I	• To develop skills in doing literature survey, technical presentation and report preparation. • To enable project identification and execution of preliminary works on final semester project
		EET463 Illumination Technology	• To provide an introduction to the fundamentals of illumination engineering and architectural lighting design. • To impart lighting fundamentals, measurement, and technology and their application in the analysis and design of architectural lighting systems
	VIII	EET402 Electrical System Design and Estimation	• To make aware of the Acts and Rules regulating the design of electrical .systems in India. • To impart knowledge in the design of low voltage and medium voltage electrical installations. • To give basic knowledge of design of distribution transformer substations, their installations and earthling design for transformer substations • To familiarise lighting calculations and external lighting.
		EET424Energy Management	• To enable the students to understand the concept of energy management and energy management opportunities • To understand the different methods used to control peak

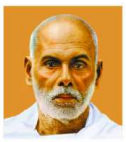
Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD EEE

			demand • To know energy auditing procedure • To understand the different methods used for the economic analysis of energy projects
		EET426 Special Electric Machines	• To get an overview of some of the special machines for control and industrial applications
		EET418 Electric and Hybrid Vehicles	• To present a comprehensive overview of Electric and Hybrid Electric Vehicles
		EET404 Comprehensive Viva	• To assess the comprehensive knowledge gained in basic courses relevant to the branch of study • To comprehend the questions asked and answer them with confidence.
		EED416Project Phase II	• To apply engineering knowledge in practical problem solving • To foster innovation in design of products, processes or systems • To develop creative thinking in finding viable solutions to engineering problems

HOD EEE

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR



YEAR	SEMESTER	SUBJECT	COURSE OBJECTIVES
First Year I & II		MAT101 LINEAR ALGEBRA AND CALCULUS	• To introduce fundamental principles of diagonalization. • To impart knowledge of the Taylor and Fourier series expansion of functions and learn their applications
		MAT102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS (S2)	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
		PHT 100 ENGINEERING PHYSICS	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
		CYT100 ENGINEERING CHEMISTRY	• To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • Enable them to develop abilities and skills that are relevant to the study and practice of chemistry.
		EST100 ENGINEERING MECHANICS	• To expose the students to the fundamental concepts of mechanics and enhance their problem-solving skills. • To recognize similar problems in real-world situations and respond accordingly
		EST120 BASICS OF CIVIL & MECHANICAL ENGINEERING	• To provide an insight and inculcate the essentials of Civil Engineering discipline to the students of all branches of Engineering • To provide the students an illustration of the significance of the Civil Engineering Profession in satisfying the societal needs..
		EST130 BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING	• To equip the students with an understanding of the fundamental principles of electrical engineering • To provide an overview of evolution of electronics, and introduce the working principle and examples of fundamental electronic devices and circuits • To provide an overview of evolution of communication systems, and introduce the basic concepts in radio communication
		EST102 PROGRAMING IN C	• To expose the students to capable of writing readable C programs to solve computational problems that they may have to solve in their professional life.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		HUN101 LIFE SKILLS	• To enhance the employability and maximize the potential of the students. • To develop one personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete.
		HUN102 PROFESSIONAL COMMUNICATION	• to equip students with the necessary skills to listen, read, write, and speak so as to comprehend and successfully convey any idea, technical, • to give them the necessary polish to become persuasive communicators.
		EST110 ENGINEERING GRAPHICS	• To enable the student to effectively perform technical communication through graphical representation as per global standards.
		PHL120 ENGINEERING PHYSICS LAB	• To impart physical measurement skills. • To make the students understand coherence between theoretical and practical measurement. • Be able to interpret results and develop correct conclusions
		CYL120 ENGINEERING CHEMISTRY LAB	• To impart scientific approach and to familiarize with the experiments in chemistry relevant for research projects in higher semesters
		ESL120 CIVIL & MECHANICAL WORKSHOP	• To train the students to identify and manage the tools, materials and methods required to execute an engineering project. • To develop the necessary skills for planning, preparing and executing an engineering project. • To enable the student to familiarize various tools, measuring devices, practices and different methods of manufacturing processes employed in industry for fabricating components.
		ESL130 ELECTRICAL & ELECTRONICS WORKSHOP	• To impart skills to plan and carry out simple electrical wiring • To identify the basic practices and safety measures in electrical wiring
Second Year	III	ECT201 SOLID STATE DEVICES	• To understand the physics and working of solid state devices
		ECT203 LOGIC CIRCUIT DESIGN	• To impart the basic knowledge of logic circuits and enable students to apply it to design a digital system
		ECT205 NETWORK THEORY	• To analyse the linear time invariant electronic circuits
		ECL201 SCIENTIFIC COMPUTING LABORATORY	• To translate the mathematical concepts into system design • To use Python for realization of experiments
		ECL203 LOGIC DESIGN LAB	• To familiarize students with the Digital Logic Design through the implementation of Logic Circuits using ICs of basic logic gates • To familiarize students with the HDL based Digital Design Flow •
		MAT201 PARTIAL DIFFERENTIAL	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		EQUATIONS AND COMPLEX ANALYSIS	function about a singularity
		MCN201 SUSTAINABLE ENGINEERING	• To inculcate in students an awareness of environmental issues and the global initiatives towards attaining sustainability. • The student should realize the potential of technology in bringing in sustainable practices.
	IV	MAT204 PROBABLITY RANDOM PROCESS AND NUMERICAL METHODS	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.
		ECT202 ANALOG CIRCUITS	• To develop the skill of analyse and design of different types of analog circuits using discrete electronic components
		ECT204 SIGNALS AND SYSTEMS	• To lay the foundational aspects of signals and systems in both continuous time and discrete time, in preparation for more advanced subjects in digital signal processing, image processing, communication theory and control systems
		ECT206 COMPUTER ARCHITECTURE AND MICROCONTROLLERS	• To impart knowledge of basic computer architecture and modern microcontrollers
		ECL202 ANALOG CIRCUITS AND SIMULATION LAB	• To familiarize students with the Analog Circuits Design through the implementation of basic Analog Circuits using discrete components • To familiarize students with simulation of basic Analog Circuits
		ECL204 MICROCONTROLLER LAB	• Familiarize the students with Assembly Language Programming of modern microcontrollers • To impart the skills for interfacing the microcontroller with the help of Embedded C/Assembly Language Programming
		MCN202 CONSTITUTION OF INDIA	• Instil the moral values that ought to guide their Profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
		EST200 DESIGN AND ENGINEERING	• Introduce the undergraduate engineering students the fundamental principles of design engineering • Make them understand the steps involved in the design process • Familiarize them with the basic tools used and approaches in design.
Third Year		ECT 301 LINEAR INTEGRATED CIRCUITS	• To develop the skill to design circuits using operational amplifiers and other linear ICs for various applications
		ECT303 DIGITAL SIGNAL PROCESSING	• To provide an understanding of the principles, algorithms and applications of DSP
		MCN301	• To introduce the fundamental concepts of hazards

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		DISASTER MANAGEMENT	and disaster management.
		ECT305 ANALOG AND DIGITAL COMMUNICATION	• To develop analog and digital communication systems
	V	HUT300 INDUSTRIAL ECONOMICS AND FOREIGN TRADE	• The aim of the course is to introduce the student to the main concepts of industrial organisation in the context of open economies. First, the course analyses the interaction of firms in the market focusing on their strategic behaviour and on how the latter is affected by competition policy. Second, the course introduces the models of international trade to illustrate how international competition affects firms and country behaviour and its impact on economic growth.
		ECT307 CONTROL SYSTEMS	• To develop the skills for mathematical modelling of various control systems and stability analysis using time domain and frequency domain approaches
		ECL331 ANALOG INTEGRATED CIRCUITS AND SIMULATION LAB	• To familiarize students with the Analog Integrated Circuits and Design and implementation of application circuits using basic Analog Integrated Circuits • To familiarize students with simulation of basic Analog Integrated Circuits
		ECL333 DIGITAL SIGNAL PROCESSING LABORATORY	• To make the student do real time DSP computing • To realize dedicated DSP hardware (such as TI or Analog Devices development/evaluation boards
	VI	ECT302 ELECTROMAGNETICS	• To impart knowledge on the basic concepts of electric and magnetic fields and its applications
		ECT304 VLSI CIRCUIT DESIGN	• To impart the knowledge of VLSI design methodologies and Digital VLSI circuit design
		ECT306 INFORMATION THEORY AND CODING	• To lay down the foundation of information theory introducing both source coding and channel coding • To expose students to algebraic and probabilistic error-control codes that are used for reliable transmission
		HUT310 MANAGEMENT FOR ENGINEERS	• To develop ability to critically analyse and evaluate a variety of management practices in the contemporary context. • To understand and apply a variety of management and organisational theories in practice. • To be able to mirror existing practices or to generate their own innovative management competencies required for today & complex and global workplace
		ECT332 COMMUNICATION LAB	• To design and setting up of prototype circuits on breadboard or trainer kits • To simulate software simulations using GNU Octave or Python
		ECD334 MINIPROJECT	• To estimate the ability of the students in transforming the theoretical knowledge studied in to a working model of an electronic system • To gain experience in organisation and implementation of small projects • To design and development of Small electronic project based on hardware or a combination of hardware and software for electronics systems

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Fourth Year	VII	ECT401 MICROWAVES AND ANTENNAS	• To impart knowledge on the basic parameters of antenna, design and working of various broad band antennas, arrays and its radiation patterns. • To introduce various microwave sources, their principle of operation and study of various microwave hybrid circuits and microwave semiconductor devices.
		MCN401 INDUSTRIAL SAFETY ENGINEERING	• To give knowledge of various safety management principles, various safety systems, various machine guarding devices, hazard identification techniques, energy sources, systems & applications and the need in the present context. Learners will be able to compare different hazard identification tools and choose the most appropriate based on the nature of industry. • It aims to equip students in working with projects and to take up research work in connected areas
		ECT413 OPTICAL FIBER COMMUNICATION	• To introduce the concepts of light transmission through optical fibres and introduce the working of optical components
		CST476 MOBILE COMPUTING	• The course is designed with the view of preparing the engineering students capable of understanding the communication protocols, various architectures and security features used in mobile computing. This course covers basics of mobile computing, architecture of wireless transmission systems and next generation networks. This course enables the learners to acquire advanced concepts on wireless communication systems and mobile ad-hoc networks.
		ECL411 ELECTROMAGNETICS LAB	• Design and analysis of few electronic devices and circuits used for Microwave and Optical communication engineering • To Familiarize students with simulation of basic Antenna experiments with simulation tools
		ECQ413 SEMINAR	• To enable a B.Tech graduate to read, understand, present and prepare report about an academic document. The learner shall search in the literature including peer reviewed journals, conference, books, project reports etc., and identify an appropriate paper/thesis/report in her/his area of interest, in consultation with her/his seminar guide • To experience how a presentation can be made about a selected academic document and also empower her/him to prepare a technical report
		ECD415 PROJECT PHASE I	• To evoke the innovation and invention skills in a student. The course will provide an opportunity to synthesize and apply the knowledge and analytical skills learned, to be developed as a prototype or simulation
	VIII	ECT402 WIRELESS COMMUNICATION	• To introduce students to basic theory and principles of wireless communication systems in general, and cellular systems in particular • To introduce basics of radio wave propagation
		ECT424 SATELLITE	• To impart the basic knowledge of satellite communication and its applications

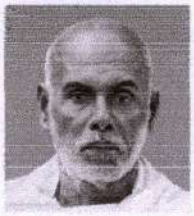
Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		COMMUNICATION	
		ECT446 MICROWAVE DEVICES AND CIRCUITS	• To understand with active and passive microwave semiconductor devices, components, microwave sources and amplifiers used in microwave communication systems, analysis of microwave networks and microwave integrated circuits
		ECD416 PROJECT PHASE II	• To evoke the innovation and invention skills in a student. The course will provide an opportunity to synthesize and apply the knowledge and analytical skills learned, to be developed as a prototype or simulation

HOD ECE

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OBJECTIVES

YEAR	SEMESTER	SUBJECT	COURSE OBJECTIVES
First Year	I	MAT101 LINEAR ALGEBRA AND CALCULUS	• To introduce fundamental principles of daigonalisation. • To impart knowledge of the Taylor and Fourier series expansion of functions and learn their applications
	I	CYT100 ENGINEERING CHEMISTRY	• To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • To enable the students to acquire knowledge in the concepts of chemistry for engineering applications. • Enable them to develop abilities and skills that are relevant to the study and practice of chemistry.
		EST100 ENGINEERING MECHANICS	• Goal of this course is to expose the students to the fundamental concepts of mechanicsand enhance their problem-solving skills. • It introduces students to the influence of applied force system and the geometrical properties of the rigid bodies while stationary or in motion. After this course students will be able to recognize similar problems in real-world situations and respond • accordingly
		EST120 BASICS OF CIVIL & MECHANICAL ENGINEERING	• Objective of this course is to provide an insight and inculcate the essentials of Civil Engineering discipline to the students of all branches of Engineering and to provide the students an illustration

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR

HOD/CSE

		of the significance of the Civil Engineering Profession in satisfying the societal needs. • To introduce the students to the basic principles of mechanical engineering
I	CYL120 ENGINEERING CHEMISTRY LAB	• To impart scientific approach and to familiarize with the experiments in chemistry relevant for research projects in higher semesters
I& II	PHT100 ENGINEERING PHYSICS A	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
I& II	PHT110 ENGINEERING PHYSICS B	• To impart knowledge in basic concepts of physics relevant to engineering applications • To introduce advances in technology for engineering applications.
I& II	PHL120 ENGINEERING PHYSICS LAB	• To impart physical measurement skills. • To make the students understand coherence between theoretical and practical measurement. • Be able to interpret results and develop correct conclusions
I	HUN101 LIFE SKILLS	• To enhance the employability and maximize the potential of the students. • To develop one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete.
II	EST 102 PROGRAMMING IN C	• To introduce fundamental principles of C programing, technical challenges and key design Issues. • To impart knowledge of the C programing concepts, algorithms, flowcharts and implementation of various • programs using c.
II	MAT102-VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	• To familiarize the prospective engineers with some advanced concepts and methods in Mathematics which include the Calculus of vector valued functions, ordinary differential equations and basic transforms such as Laplace and Fourier Transforms which are invaluable for any engineer's mathematical tool box.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/CIG

	II	HUN102 PROFESSIONAL COMMUNICATION	• To familiarize students with the basics of English language and help them to learn to identify language structures for correct English usage. • Develop and Expand Writing Skills through Controlled and Guided Activities
Second Year	III	CST 201 DATA STRUCTURES	• To introduce fundamental principles of data structures systems, technical challenges and key design issues. • To design and implement Data Structures for solving real world problems efficiently.
	III	MAT203 DISCRETE MATHEMATICAL STRUCTURES.	• To introduce fundamental principles of partial differential equation. • To Understand the series expansion of complex function about a singularity
	III & IV	HUT200 PROFESSIONAL ETHICS	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
	III	CST 203 LOGIC SYSTEM DESIGN	• To impart an understanding of the basic concepts of Boolean algebra and digital systems. • Design simple Combinational Circuits such as Adders, Subtractors, Code Convertors, Decoders, Multiplexers, and Magnitude Comparators etc.
	III	CST 205 OBJECT ORIENTED PROGRAMMG USING JAVA	• To introduce basic concepts of object oriented design and programming in java. • To give a thorough understanding of java languages • To provide basic exposure to basic of multithreading, data connectivity etc. • To impart the techniques of GUI based applications.
		CSL 201 DATA STRUCTURES LAB	• To introduce operations on data structures are traversing, searching, inserting, deleting and few special operations like merging and sorting. • To design and implement an efficient data structure to represent given data
		CSL 203 OBJECT ORIENTED PROGRAMMING LAB IN JAVA	• To provide and enhance the basic concepts of Object Oriented Programming techniques and concepts. • To provide hands-on experience to

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/CSE

			understand the Java language programming • To provide an exposure to basics of multithreading and database connectivity. • To impart techniques of GUI based applications.
	IV	CST 204 DATABASE MANAGEMENT SYSTEMS	• To impart the basic understanding of the theory and applications of database management systems • To give basic level understanding of internals of database systems.
	IV	CST 202 COMPUTER ORGANIZATION AND ARCHITECTURE	• To impart an understanding of the internal organization and operations of a computer • To introduce the concepts of processor logic design and control logic design.
	IV	MAT206 GRAPH THEORY	• This course helps the learner to apply the theory and applications of different types of graphs
	IV	MCN202 CONSTITUTION OF INDIA	• Instil the moral values that ought to guide their profession. • Resolve the moral issues in the profession. • Infer moral judgment concerning the profession. • Correlate the concepts in addressing the ethical dilemmas.
	IV	CST 206 OPERATING SYSTEMS	• To give an insight on process synchronization and deadlock • To understand the fundamental concept and techniques of memory management including virtual memory • Identification of issues related to file system and free space management and familiarization of various types of operating systems including Linux.
	IV	CSL 204 OPERATING SYSTEM LAB	• To introduce basic commands and operations. • To build an understanding on design and implementation of different types of system software
Third Year	V & VI	HUT300 INDUSTRIAL ECONOMICS AND	• • The aim of the course is to introduce the student to the main concepts of industrial organisation in the context of open economies. First, the course analyses the interaction of firms in the market

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/ME

Third Year		FOREIGN TRADE	focusing on their strategic behaviour and on how the latter is affected by competition policy. Second, the course introduces the models of international trade to illustrate how international competition affects firms and country behaviour and its impact on economic growth.
	V	HUT310 MANAGEMENT FOR ENGINEERS	• To develop ability to critically analyse and evaluate a variety of management practices in the contemporary context. • To understand and apply a variety of management and organisational theories in practice. • To be able to mirror existing practices or to generate their own innovative management competencies required for today's complex and global workplace.
	V	CST 301 FORMAL LANGUAGES AND AUTOMATA THEORY	• To discuss the Chomsky classification of languages with discussion on grammar and automata for regular, context-free, context-sensitive and unrestricted languages. To discuss the notations of decidability and halting problem
	V	CST 303 COMPUTER NETWORS	• To introduce fundamental concepts of networks and topologies. • To introduce the concepts of different network models and network devices. • To introduce routing algorithms and different protocols.
	V	CST 305 SYSTEM SOFTWARE	• To make students understand the design concepts of various system software likeAssembler, Linker, Loader & Macro pre-processor • To impart knowledge of some utility programs such as Text Editor, Debugger.
	V	CST 307 MICROPROCESSORS AND MICROCONTROLLERS	• To impart basic understanding of the internal organization of 8086 Microprocessor and8051 microcontroller. • To introduce the concepts of interfacing microprocessors with external devices. • To develop Assembly language programming skills.
	V	MCN 301	• To impart the knowledge of various types of disaster, its management and measures to control it.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/ME

		DISASTER MANGEMENT	
	V	CSL 331 SYSTEM SOFTWARE AND MICROPROCESSORS LAB	• To write ALP for arithmetic and logical operations in 8086 and 8051. • Implement interfacing of various I/O devices to the microprocessor/microcontroller through assembly language programming
	V	CSL 333 DATABASE MANAGEMENT SYSTEM LAB	• To introduce basic commands and operation on database. • To introduce stored programming concepts (PL- SOL) using Cursors and Triggers. • To familiarize front end tools of database.
FORTH YEAR	VII	CST 302 COMPILER DESIGN	• To provide a thorough understanding of the internals of Compiler Design. Describe the working principles of graphics devices. • Illustrate line drawing, circle drawing and polygon filling algorithms.
	VII	CST 304 COMPUTER GRAPICS AND IMAGE PROCESSING	• Demonstrate geometric representations, transformations on 2D & 3D objects, clipping algorithms and projection algorithms. • Summarize visible surface detection methods. • Summarize the concepts of digital image representation, processing demonstrate pixel relationships and spatial domain techniques.
	VII	CST 306 ALGORITHM ANATYSIS AND DESIGN	• To develop an understanding about basic algorithm and different problem solving strategies. • To improve creativeness and the confidence to solve non-conventional problems and expertise foranalysing existing solutions.
	VII	CST 372 DATA AND COMPUTER COMMUNICATION	• To give a thorough understanding of characteristics of signals for both analog and digital transmissions. • To provide basic exposure to transmission media ,propagation modes etc. • To impart the techniques in data communication.
	VII	CST 308 COMPREHENSIVE COURSE WORK	• To practice more with core subjects for crackingGate, placement test and other competitive examinations • To provide and enhance the basic

Dr. LEENA A. V.
PRINCIPAL
REE NARAYANA GURU COLLEGE OF
INEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/CSE

			concepts of Networking programming using Linux system calls.
	VII	CSL 332 NETWORKING LAB	• To provide hands-on experience to understandnetwork application and protocols. • To provide an exposure to basics of network services and familiarization of network simulators
	VII	CSD 334 MINIPROJECT	• To apply engineering knowledge in practical problem solving • To foster innovation in design of products, process for systems
			•
	VII	CST 401 ARTIFICIAL INTELLIGENCE	• To introduce the fundamental principles of intelligent systems. • To build an understanding on the design of self learning systems. • To introduce various progress made in machine learning. • To impart the fundamentals of virtualization techniques.
	VII	CST 423 CLOUD COMPUTING	• To introduce concepts and security issues of cloud paradigm. • To introduce cloud computing based programming techniques and cloud services. • Understand the basics of computer security
	VII	CST 433 SECURITY IN COMPUTING	• To explore various algorithms to offer confidentiality, integrity, authentication &non-repudiation services and different attacks on system security with their counter measures. • To understand classical encryption techniques, symmetric and public key crypto-system, key distribution techniques, authentication functions, intruders, malicious software, and DDoS attacks.
	VII	CST415- INTRODUCTION TO MOBILE COMPUTING	• A good knowledge of data communication and computer networks • To implement the different Phases of compile
	VII	CET 415- ENVIRONMENTAL IMPACT ASSESSMENT	• To provide the methods for recognizing, forecasting, assessing, and reducing any environmental effects resulting from projects or activities that are part of the development process.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD/CSE

			• To impart knowledge about environment management plan and get sufficient background regarding environmental clearance in India.
	VII	CSL 411 COMPILER LAB	• To implement the different Phases of compiler. • To implement and test simple optimization techniques. • To give exposure to compiler writing tools.
	VII	CSD 415 PROJECT PHASE I	• To foster innovation in design of products, processes or systems. • To develop creative thinking in finding viable solutions to engineering problems
	VII	CSQ 413 SEMINAR	• To do literature survey in a selected area of study • To understand an academic document from the literate and to give a presentation about it. • To prepare a technical report. • To introduce fundamental principles of distributed systems,technical challenges and key design issues.
	VIII	CST 402 DISTRIBUTED COMPUTING	• To introduce fundamental principles of distributed systems, technical challenges and key design issues. • To impart knowledge of the distributed deadlocks and election algorithms. • To understand the concept of distributed shared memory, consensus problem and agreetnci algorithms.
	VIII	CST 424 PROGRAMMING PARADIGM	• To introduce the basic constructs that underlies all programming languages • To introduce the basic programming language design and implementation • To introduce the organisational framework for learning new programming
	VIII	CST 434 NETWORK SECURITY PROTOCOLS	• To understand the basics of network security • To understand various protocols for authentication and identify the threats associated with user authentication over a network or Internet • To apply the knowledge in real world problems
	VIII	CST 466 DATA MINING	• To understand investigation of data using practical data mining tool • To introduce Association Rules Mining

Dr. LEENA A. V.
PRINCIPAL
EE NARAYANA GURU COLLEGE OF
NEERING & TECHNOLOGY, PAYYANUR
KANNUR

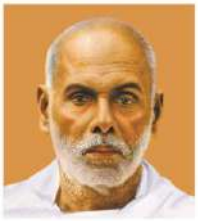
HOD CSE

			• To introduce advanced Data Mining
	VIII	CST 475 MOBILE COMPUTING	• A good knowledge of data communication and computer networks • To covers the architecture of IoT, communication mechanisms, protocols, hardware, software, data analytics, and the cloud platforms for IoT
	VIII	CST 448 INTERNET OF THINGS	• To train students to be equipped with a solid theoretical foundation systematic professional knowledge and strong practical skills in the fields of computer technology communication networks and IT that provide a wide range of applications in the Internet of Things
	VIII	CST 404 COMPREHENSIVE COURSE VIVA	• To practice more with core subjects for cracking Gate, placement test and other competitive examinations • To apply engineering knowledge in practical • problem solving
	VIII	CSD PROJECT PHASE II	• To apply engineering knowledge in practical problem solving • To foster innovation in design of products, processes or systems • To develop creative thinking in finding viable solutions to engineering problems

HOD/CSE

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College
of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



COURSE OUTCOMES

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER I & II			
MAT 101	LINEAR ALGEBRA AND CALCULUS	CO I	solve systems of linear equations, diagonalize matrices and characterise quadratic forms
		CO II	compute the partial and total derivatives and maxima and minima of multivariable functions
		COIII	compute multiple integrals and apply them to find areas and volumes of geometrical shapes,mass and centre of gravity of plane laminas
		CO IV	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
		CO V	determine the Taylor and Fourier series expansion of functions and learn their applications.
CYT100	ENGINEERING CHEMISTRY	CO I	Apply The Basic Concepts Of Electrochemistry And Corrosion To Explore Its Possible Applications In Various Engineering Fields.
		CO II	Understand Various Spectrocopic Techniques Like Uv-Visible, Ir, Nmr And Its Applications
		COIII	Apply The Knowledge Of Analytical Method For Characterising A Chemical Mixture Or A Compound. Understand The Basic Concept Of Sem For Surface Characterisation Of Nanomaterials.
		CO IV	Learn About The Basic Of Stereochemistry And Its Application. Apply The Knowledge Of Conducting Polymers And Advanced Polymers In Engineering.
		CO V	Study Various Types Of Water Treatment Methods To Develop Skills For Treating Wastewater
		CO I	CO1: Compute the quantitative aspects of waves and oscillations in engineering systems.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

PHT 100	ENGINEERING PHYSICS	CO II	CO2: Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
		COIII	CO3:Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
		CO IV	CO4: Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
		CO V	CO5:Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
EST 110	ENGINEERING GRAPHICS	CO I	Draw the projection of points and lines located in different quadrants
		CO II	Prepare multiview orthographic projections of objects by visualizing them in different positions
		COIII	Draw sectional views and develop surfaces of a given object
		CO IV	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
		CO V	Convert 3D views to orthographic views
		CO VI	Obtain multiview projections and solid models of objects using CAD tools
EST100	ENGINEERING MECHANICS	CO I	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
		CO II	Study the effect of friction in static and dynamic conditions.
		COIII	Understand the different properties of surfaces in relation to moment of inertia
		CO IV	Analyse and solve different problems of kinematics and kinetics.
		CO V	Analyse and solve with and without damping of SODF.
		CO I	Analyze a computational problem and develop an algorithm/flowchart to find its solution

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR

EST 102	PROGRAMING IN C	CO II	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
		COIII	Write readable C programs with arrays, structure or union for storing the data to be processed
		CO IV	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
		CO V	Write readable C programs which use pointers for array processing and parameter passing
		CO VI	Develop readable C programs with files for reading input and storing output
EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	CO I	Demonstrate safety measures against electric shocks.
		CO II	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
		COIII	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
		CO IV	Identify and test various electronic components
		CO V	Draw circuit schematics with EDA tools
		CO VI	Assemble and test electronic circuits on boards
		CO VII	Work in a team with good interpersonal skills
		CO VIII	Explain the basic principles of Refrigeration and Air Conditioning
		CO IX	Describe the working of hydraulic machines
		CO X	Explain the working of power transmission elements
		CO XI	Describe the basic manufacturing, metal joining and machining processes

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

EST130	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO I	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
		CO II	Develop and solve models of magnetic circuits
		COIII	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
		CO IV	Describe working of a voltage amplifier
		CO V	Outline the principle of an electronic instrumentation system
		CO VI	Explain the principle of radio and cellular communication
HUN 101	LIFE SKILLS	CO I	Define and Identify different life skills required in personal and professional life.
		CO II	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
		COIII	Explain the basic mechanics of effective communication and demonstrate these through presentations.
		CO IV	Take part in group discussion.
		CO V	Use appropriate thinking and problem solving techniques to solve new problem.
		CO VI	Understanding the basics of teamwork and leadership.
MAT 102	VECTOR CALCULUS DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO I	Compute the derivatives and line integrals of vector functions and learn their applications
		CO II	Evaluate surface and volume integrals and learn their inter-relations and applications.
		COIII	Solve homogeneous and non-homogeneous linear differential equation with constant coefficient
		CO IV	Compute Laplace transform and apply them to solve ODEs arising in engineering

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR

		CO V	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering
HUN 102	Professional Communication	CO I	Develop vocabulary and language skills relevant to engineering as a profession.
		CO II	Analyze, interpret and effectively summarize a variety of textual content.
		COIII	Create effective technical presentations.
		CO IV	Discuss a given technical/non-technical topic ina group setting and arrive at generalizations/consensus.
		CO V	Identify drawbacks in listening patterns and apply listening techniques for specific needs.
		CO VI	Create professional and technical documents
ESL 120	CIVIL AND MECHANICAL WORKSHOP	CO I	Name different devices and tools used for civil engineering measurements
		CO II	Explain the use of various tools and devices for various field measurements
		COIII	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work
		CO IV	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
		CO V	Compare different techniques and devices used in civil engineering measurements
		CO VI	Identify Basic Mechanical workshop operations in accordance with the material and objects
		CO VII	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
		CO VIII	Apply appropriate safety measures with respect to the mechanical workshop trades
		CO I	Demonstrate safety measures against electric shocks.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

ESL130	ELECTRICAL AND ELECTRONICS WORKSHOP	CO II	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
		COIII	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
		CO IV	Identify and test various electronic components
		CO V	Draw circuit schematics with EDA tools
		CO VI	Assemble and test electronic circuits on boards
		CO VII	Work in a team with good interpersonal skills
CYL 100	ENGINEERING CHEMISTRY LAB	CO I	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
		CO II	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
		COIII	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
		CO IV	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
		CO V	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
		CO VI	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum
PHL 100	ENGINEERING PHYSICS LAB	CO I	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
		CO II	Understand the need for precise measurement practices for data recording
		COIII	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
		CO IV	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
		CO V	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER III			
MAT 201	PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO I	Understand the concept and the solution of partial differential equation.
		CO II	Analyse and solve one dimensional wave equation and heat equation.
		CO III	Understand complex functions, its continuity differentiability with the use of Cauchy-Riemann equations.
		CO IV	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integralformula, understand the series expansion of analytic function
		CO V	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integralformula, understand the series expansion of analytic function
CET 201	MECHANICS OF SOLIDS	CO I	Recall the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies
		CO II	Explain the behavior and response of various structural elements under various loading conditions
		CO III	Apply the principles of solid mechanics to calculate internal stresses/strains, stress resultants and strain energies in structural elements subjected to axial/transverse loadsand bending/twisting moments.
		CO IV	Choose appropriate principles or formula to find the elastic constants of materials making use of the information available.
		CO V	Perform stress transformations, identify principal planes/ stresses and maximum shear stress at a point in a structural member
		CO VI	Analyse the given structural member to calculate the safe load or proportion the cross section to carry the load safely.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET 203	FLUID MECHANICS AND HYDRAULICS	CO I	Recall the relevant principles of hydrostatics and hydraulics of pipes and open channels
		CO II	Identify or describe the type, characteristics or properties of fluid flow
		CO III	Estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
		CO IV	Compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or momentum
		CO V	Analyze or compute the flow through open channels, perform the design of prismatic channels
CET205	SURVEYING AND GEOMATIICS	CO I	Apply surveying techniques and principles of leveling for the preparation of contour maps, computation of area-volume and sketching mass diagram
		CO II	Apply the principles of surveying for triangulation
		CO III	Apply different methods of traverse surveying and traverse balancing
		CO IV	Identify the possible errors in surveying and apply the corrections in field measurements
		CO V	Apply the basic knowledge of setting out of different types of curves
		CO VI	Employ surveying techniques using advanced surveying equipments
HUT 200	PROFESSIONAL ETHICS	CO I	Understand the core values that shape the ethical behaviour of a professional.
		CO II	Adopt a good character and follow an ethical life.
		CO III	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
		CO IV	Solve moral and ethical problems through exploration and assessment by established experiments.
		CO V	Apply the knowledge of human values and social values to contemporary ethical values and global issues.
		CO I	Understand the relevance and the concept of sustainability and the global initiatives in this direction

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR

MCN 201	SUSTAINABLE ENGINEERING	CO II	Explain the different types of environmental pollution problems and their sustainable solutions
		CO III	Discuss the environmental regulations and standards
		CO IV	Outline the concepts related to conventional and non-conventional energy
		CO V	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
CEL203	SURVEY LAB	CO I	Use conventional surveying tools such as chain/tape and compass for plotting and area determination.
		CO II	Apply levelling principles in field
		COIII	Solve triangulation problems using theodolite
		CO IV	Employ total station for field surveying
		CO V	Demonstrate the use of distomat and handheld GPS
CEL201	CIVIL ENGINEERING PLANNING AND DRAFTING LAB	CO I	Illustrate ability to organise civil engineering drawings systematically and professionally
		CO II	Prepare building drawings as per the specified guidelines.
		CO III	Assess a complete building drawing to include all necessary information
		CO IV	Create a digital formof the building plan using any drafting software

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA [illegible] COLLEGE OF ENGINEERING & [illegible], KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER IV			
MAT 202	PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO I	Understand the concept, properties and important models of discrete random variables and,using them, analyse suitable random phenomena.
		CO II	Understand the concept, properties and important models of continuous random variables and,using them, analyse suitable random phenomena
		CO III	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population
		CO IV	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
		CO V	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.
CET 202	ENGINEERING GEOLOGY	CO I	Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.
		CO II	Identify and describe the surface processes, subsurface process, earth materials,groundwater and geological factors in civil engineering constructions.
		CO III	Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.
		CO IV	Analyze and classify geological processes, earth materials and groundwater.
		CO V	Evaluation of geological factors in civil engineering constructions.
		CO I	Explain the fundamental concepts of basic and engineering properties of soil

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET204	GEOTECHNICAL ENGINEERING I	CO II	Describe the laboratory testing methods for determining soil parameters
		CO III	Solve the basic properties of soil by applying functional relationships
		CO IV	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
		CO V	Analyze the soil properties to identify and classify the soil
CET 206	TRANSPORTATION ENGINEERING	CO I	Apply the basic principles of Highway planning and design highway geometric elements
		CO II	Apply standard code specifications in judging the quality of highway materials; designing of flexible pavements
		CO III	Explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys; creative design of traffic control facilities
		CO IV	Understand about railway systems, tunnel, harbour and docks
		CO V	Express basics of airport engineering and design airport elements
EST 200	DESIGN & ENGINEERING	CO I	Explain the different concepts and principles involved in design engineering.
		CO II	Apply design thinking while learning and practicing engineering.
		CO III	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.
MCN 202	CONSTITUTION OF INDIA	CO I	Understand the core values that shapes the ethical behaviour of a professional.
		CO II	Adopt a good character and follow an ethical life.
		CO III	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
		CO IV	Solve moral and ethical problems through exploration and assessment by established experiments.
		CO V	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CEL202	MATERIAL TESTING LAB - I	CO I	The understand the behaviour of engineering materials under various forms and stages of loading.
		CO II	Characterize the elastic properties of various materials.
		CO III	Evaluate the strength and stiffness properties of engineering materials under various loading conditions.
CEL 204	FLUID MECHANICS LAB	CO I	Apply fundamental knowledge of Fluid Mechanics to corresponding experiments
		CO II	Apply theoretical concepts in Fluid Mechanics to respective experiments
		CO III	Analyse experimental data and interpret the results
		CO IV	Document the experimentation in prescribed manner

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003
DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER V			
CET 301	STRUCTURAL ANALYSIS - I	CO I	Apply the principles of solid mechanics to analyse trusses
		CO II	Apply energy principles to analyse statically determinate structures.
		COIII	Identify the problemswith static indeterminacy and understand the basic concepts of tackling such problems by means of the method of consistent deformations.
		CO IV	Apply suitable methods of analysis for various types of structures including cables, suspension bridges and arches.
		CO V	Analyse the effects of moving loads on structures using influence lines.
		CO VI	Apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.
CET 303	Design of Concrete Structures	CO I	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending
		CO II	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending
		COIII	Design and detail slab and stairs using IS code provisions
		CO IV	Design and detail columns using IS code and SP 16 design charts.
		CO V	earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET305	GEOTECHNICAL ENGINEERING II	CO I	Analyze shallow and deep foundations, Calculate earth pressure
		CO II	Calculate bearing capacity
		COIII	Calculate foundation settlement pile capacity, Explain the basic concepts,theories and methods of analysis in foundation Engineering
		CO IV	Calculate pile capacity
		CO V	Solve the field problems related to geotechnical engineering Understand soil exploration methods
CET 307	HYDROLOGY & WATER RESOURCES ENGINEERING	CO I	Describe and estimate the different components of hydrologic cycle by processing hydrometeorological data
		CO II	Determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering
		COIII	Perform the estimation of streamflow and/or describe the river behavior and control structures
		CO IV	Describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life
CET 309	CONSTRUCTION TECHNOLOGY AND MANAGEMENT	CO I	Describe the properties of materials used in construction
		CO II	Explain the properties of concrete and its determination
		CO III	Describe the various elements of building construction
		CO IV	Explain the technologies for construction
		CO V	Describe the procedure for planning and executing public works
		CO VI	Apply scheduling techniques in project planning and control
		CO I	each of these terms in relation to the disaster management cycle (Cognitive knowledge level: Understand).
		CO II	Distinguish between different hazard types and vulnerability types and do vulnerability assessment (Cognitive knowledge level: Understand).

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

MCN301	DISASTER MANAGEMENT	COIII	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk (Cognitive knowledge level: Understand).
		CO IV	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community (Cognitive knowledge level: Apply)
		CO V	Identify factors that determine the nature of disaster response and discuss the various disaster response actions (Cognitive knowledge level: Understand).
		CO VI	Explain the various legislations and best practices for disaster management and risk reduction at national and international level (Cognitive knowledge level: Understand).
CEL331	MATERIAL TESTING LAB – II	CO I	To describe the basic properties of various construction materials
		CO II	Characterize the physical and mechanical properties of various construction materials.
		CO III	Interpret the quality of various construction materials as per IS Codal provisions.
CEL 333	GEOTECHNICAL ENGINEERING LAB	CO I	Identify and classify soil based on standard geotechnical experimental methods.
		CO II	Perform and analyze permeability tests
		CO III	Interpret engineering behavior of soils based on test results.
		CO IV	Perform laboratory compaction, CBR and in-place density test for fill quality control in the field.
		CO V	Evaluate the strength of soil by performing various tests viz. direct shear test, unconfined compressive strength test and triaxial shear test.
		CO VI	Evaluate settlement characteristics of soils.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER VI			
CET302	STRUCTURAL ANALYSIS - II	CO I	Understand the principles of plastic theory and its applications in structural analysis.
		CO II	Examine the type of structure and decide on the method of analysis.
		CO III	Apply approximate methods of analysis for framed structures to ascertain stress resultants approximately but quickly.
		CO IV	Apply the force method to analyse framed structures.
		CO V	Apply the displacement methods to analyse framed structures.
		CO VI	Remember basic dynamics, understand the basic principles of structural dynamics and apply the same to simple structures.
CET 304	ENVIRONMENTAL ENGINEERING	CO I	To appreciate the role of environmental engineering in improving the quality of water and estimating the quantity to plan for collection and conveyance of water and waste water
		CO II	To understand the layout of treatment plant and the sedimentation process
		CO III	To enhance water quality through filtration, disinfection and to plan the distribution of water
		CO IV	To understand the various waste water treatment processes
		CO V	To decide on appropriate technology for low cost treatment for high strength waste water

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET 306	DESIGN OF HYDRAULIC STRUCTURES	CO I	Elucidate the causes of failure, principles of design of different components of hydraulic structures
		CO II	Describe the features of canal structures and perform the design of alluvial canals
		CO III	Perform the hydraulic design of minor irrigation structures such as cross drainage works, canal falls, cross regulator.
		CO IV	Prepare the scaled drawings of different minor irrigation structures
		CO V	Describe the design principles and features of dams and perform the stability analysis of gravity dams
CET308	COMPREHENSIVE COURSE WORK	CO I	Learn to prepare for a competitive examination
		CO II	Comprehend the questions in Civil Engineering field and answer them with confidence
		COIII	Communicate effectively with faculty in scholarly environments
		CO IV	Analyze the comprehensive knowledge gained in basic courses in the field of Civil Engineering
HUT 300	INDUSTRIAL ECONOMI	CO I	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
		CO II	Take appropriate decisions regarding volume of output and to evaluate the social cost of production. (Cognitive knowledge level: Apply)
		CO III	Determine the functional requirement of a firm under various competitive conditions. (Cognitive knowledge level: Analyse)
		CO IV	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
		CO V	Determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)
		CO I	To recall the properties and testing procedure of concrete materials as per IS code

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET 352	ADVANCED CONCRETE TECHNOLOGY	CO II	To describe the procedure of determining the properties of fresh and hardened concrete
		CO III	To design concrete mix using IS Code Methods.
		CO IV	To explain nondestructive testing of concrete
		CO V	To describe the various special types of concretes
CEL 332	TRANSPORTATION ENGINEERING LAB	CO I	Analyse the suitability of soil as a pavement subgrade material
		CO II	Assess the suitability of aggregates as a pavement construction material
		CO III	Characterize bitumen based on its properties so as to recommend it as a pavement construction material.
		CO IV	Design bituminous mixes for pavement layers
		CO V	Assess functional adequacy of pavements based on roughness of pavement surface.
CEL334	CIVIL ENGINEERING SOFTWARE LAB	CO I	To undertake analysis and design of multi-storeyed framed structure, schedule a given set of project activities using a software.
		CO II	To prepare design details of different structural components, implementation plan for a project.
		COIII	To prepare a technical document on engineering activities like surveying , structural design and project planning.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	
SEMESTER VII			
CET401	DESIGN OF STEEL STRUCTURES	CO I	Explain the behaviour and properties of structural steel members to resist various structural forces and actions and apply the relevant codes of practice for the design of connections.
		CO II	Design and learn behaviour of tension members as per the relevant codes of practice
		COIII	Explain the theoretical and design aspects of compression members
		CO IV	Design beams and apply a diverse knowledge of Design of Steel engineering practices applied to real life problems.
		CO V	Demonstrate experience in the implementation of design of structures on engineering concepts which are applied in field Structural Engineering
CEL411	ENVIRONMENTAL ENGINEERING LAB	CO I	Analyse various physico-chemical and biological parameters of water
		CO II	Compare the quality of water with drinking water standards and recommend its suitability for drinking purposes
CEQ413	SEMINAR	CO I	Identify academic documents from the literature which are related to her/his areas of interest
		CO II	Read and apprehend an academic document from the literature which is related to her/ his areas of interest
		COIII	Prepare a presentation about an academic document
		CO IV	Give a presentation about an academic document

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		CO V	Prepare a technical report
CED 415	PROJECT PHASE I	CO I	Model and solve real world problems by applying knowledge across domains
		CO II	Develop products, processes or technologies for sustainable and socially relevant applications
		COIII	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
		CO IV	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms
		CO V	Identify technology/research gaps and propose innovative/creative solutions
		CO VI	Organize and communicate technical and scientific findings effectively in written and oral forms
CET453	CONSTRUCTION PLANNING & MANAGEMENT	CO I	Apply knowledge of Planning and Management for planning and execution of Construction Projects
		CO II	Explain techniques for Project Planning, Scheduling, Construction Administration and Management
		COIII	Identify the criteria for selecting the appropriate method and tools as per the requirement of each project or site.
		CO IV	Discuss the latest industry standards and technologies used in construction projects for planning and management.
		CO V	Explain the financial and legal aspects involved in a construction project.
MCN 401	INDUSTRIAL SAFETY ENGINERING	CO I	Describe the theories of accident causation and preventive measures of industrial accidents
		CO II	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping
		COIII	Explain different issues in construction industries.
		CO IV	Describe various hazards associated with different machines and mechanical material handling.
		CO V	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CST 415	INTRODUCTION TO MOBILE COMPUTING	CO I	Describe the mobile computing applications, services, design considerations and architectures
		CO II	Identify the technology trends for cellular wireless networks
		COIII	Summarize the Short Messaging Service and General Packet Radio Service
		CO IV	Outline the LAN technologies used in mobile communication
		CO V	Describe the security protocols and apply suitable security algorithm to secure the communication
			Explain the fundamental concepts of next generation mobile networks(

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003
DEPARTMENT OF CIVIL ENGINEERING

SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
		SEMESTER VIII	
CET402	QUANTITY SURVEYING & VALUATION	CO I	Define basic terms related to estimation, quantity surveying and contract document
		CO II	Interpret the item of work from drawings and explain its general specification and unit of measurement.
		COIII	Make use of given data from CPWD DAR/DSR for calculating the unit rate of different items of work associated with building construction
		CO IV	Develop detailed measurement (including BBS) and BoQ of a various work like buildings, earthwork for road, sanitary and water supply work
		CO V	Explain various basic terms related to valuation of land and building
		CO VI	Develop valuation of buildings using different methods of valuation.
CET456	REPAIR AND REHABILITATION OF BUILDINGS	CO I	Recall the basics ideas and theories associated with Concrete technology and Masonry structures.
		CO II	Understand the need and methodology of repair and rehabilitation of structures, the various mechanisms used, and tools for diagnosis of structures
		COIII	Identifying the criterions for repairing / maintenance and the types and properties of repair materials used in site. Learn various techniques for repairing dam- aged and corroded structures
		CO IV	Proposing wholesum solutions for maintenance/rehabilitation and applying methodologies for repair- ing structures or demolishing structures.
		CO V	Analyse and asses the damage to structures using various tests
		CO I	Outline the geo-environmental considerations of waste containment

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

CET424	GEOENVIRONMENTAL ENGINEERING	CO II	Explain the contaminant transport mechanism, Choose the suitable system for waste containment and its various components
		COIII	Choose the suitable system for landfill and its various components
		CO IV	Outline various waste collection system
		CO V	Plan suitable remediation method for contaminated site
CET 438	AIRPORT, SEAPORT AND HARBOUR ENGINEERING		Explain the basic principles of planning and design for site selection, Airport components based on air traffic characteristics
			Explain the basic design principles of Runway orientation, basic runway length and corrections required, Geometric design of runways, Design of taxiways and aprons, Terminal area planning,
			Explain various aspects such as Airport markings, Lighting of runway approaches, taxiways and aprons, Air traffic control methods.
			Explain the basic principles ,site selection characteristics ,lay out ,break waters, quays, piers, wharves, jetties, transit sheds and warehouses - navigational aids - light houses, signals - types - Moorings
			Explain the basics of Docks – Functions and types - dry docks, wet docks arrangement of basins and docks
CED 416	PROJECT PHASE II	CO I	Model and solve real world problems by applying knowledge across domains
		CO II	Develop products, processes or technologies for sustainable and socially relevant applications
		COIII	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
		CO IV	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms
		CO V	Identify technology/research gaps and propose innovative/creative solutions
		CO VI	Organize and communicate technical and scientific findings effectively in written and oral forms

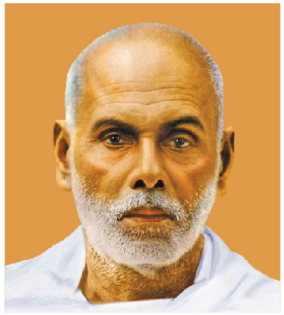
Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

(HOD)

Sree Narayana Guru College of Engineering & Technology
Est. 2003

Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S1&S2	MAT101	LINEAR ALGEBRA AND CALCULUS	CO I	Solve the consistent system of linear equations and apply orthogonal to a quadratic form
			CO II	Find the maxima and minima of multivariable functions
			COIII	Find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas using double and triple integrals
			CO IV	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			CO V	Determine the power series expansion of a given function
S1&S2	EST100	ENGINEERING MECHANICS	CO I	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
			CO II	Study the effect of friction in static and dynamic conditions.
			COIII	Understand the different properties of surfaces in relation to moment of inertia
			CO IV	Analyse and solve different problems of kinematics and kinetics.
			CO V	Analyse and solve with and without damping of SODF.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S1&S2	EST130	BASICS OF ELECTRICAL AND ELECTRONICS	CO I	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
			CO II	Develop and solve models of magnetic circuits
			COIII	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
			CO IV	Describe working of a voltage amplifier
			CO V	Outline the principle of an electronic instrumentation system
			CO VI	Explain the principle of radio and cellular communication

S1&S2	CYT100	ENGINEERING CHEMISTRY	CO I	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
			CO II	Understand various spectrocopic techniques like uv-visible, ir, nmr and its applications
			COIII	Apply the knowledge of analytical method for characterising a chemical mixture or a compound. Understand the basic concept of sem for surface characterisation of nanomaterials.
			CO IV	Learn about the basic of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
			CO V	Study various types of water treatment methods to develop skills for treating wastewater

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S1&S2	PHT100	ENGINEERING PHYSICS	CO I	Compute the quantitative aspects of waves and oscillations in engineering systems.
			CO II	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			COIII	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			CO IV	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
			CO V	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
S1&S2	HUN101	LIFE SKILLS	CO I	Define and Identify different life skills required in personal and professional life.
			CO II	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
			COIII	Explain the basic mechanics of effective communication and demonstrate these through presentations.
			CO IV	Take part in group discussion.

			CO V	Use appropriate thinking and problem solving techniques to solve new problem.
			CO VI	Understanding the basics of teamwork and leadership.
S1&S2	CYL100	ENGINEERING CHEMISTRY LAB	CO I	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			CO II	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			COIII	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
			CO IV	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CO V	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
			CO VI	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S1&S2	PHL100	ENGINEERING PHYSICS LAB	CO I	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			CO II	Understand the need for precise measurement practices for data recording
			COIII	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
			CO IV	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
			CO V	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S1&S2	MAT102	VECTOR CALCULUS DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO I	Compute the derivatives and line integrals of vector functions and learn their applications
			CO II	Evaluate surface and volume integrals and learn their inter-relations and applications.
			COIII	Solve homogeneous and non-homogeneous linear differential equation with constant coefficient
			CO IV	Compute Laplace transform and apply them to solve odes arising in engineering
			CO V	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S1&S2	MAT102	VECTOR CALCULUS DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO I	Compute the derivatives and line integrals of vector functions and learn their applications
			CO II	Evaluate surface and volume integrals and learn their inter-relations and applications.
			COIII	Solve homogeneous and non-homogeneous linear differential equation with constant coefficient
			CO IV	Compute Laplace transform and apply them to solve odes arising in engineering
			CO V	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S3	MET 201	MECHANICS OF SOLIDS	CO I	Determine the stresses, strains and displacements of structures by tensorial and graphical (Mohr's circle) approaches
			CO II	Analyse the strength of materials using stress-strain relationships for structural and thermal loading
			COIII	Perform basic design of shafts subjected to torsional loading and analyse beams subjected to bending moments
			CO IV	Determine the deformation of structures subjected to various loading conditions using strain energy methods
			CO V	Analyse column buckling and appreciate the theories of failures and its relevance in engineering design

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S3	MET 203	MECHANICS OF FLUIDS	CO I	Define Properties of Fluids and Solve hydrostatic problems
			CO II	Explain fluid kinematics and Classify fluid flows
			CO III	Interpret Euler and Navier-Stokes equations and Solve problems using Bernoulli's equation
			CO IV	Evaluate energy loses in pipes and sketch energy gradient lines
			CO V	Explain the concept of boundary layer and its applications
			CO VI	Use dimensional Analysis for model studies
S3	MET205	METALLURGY & MATERIAL SCIENCE	CO I	Understand the basic chemical bonds, crystal structures (BCC, FCC, and HCP), and their relationship with the properties.
			CO II	Analyze the microstructure of metallic materials using phase diagrams and modify the microstructure and properties using different heat treatments.
			CO III	How to quantify mechanical integrity and failure in materials.
			CO	Apply the basic principles of ferrous and non-ferrous

			IV	metallurgy for selecting materials for specific applications.
			CO V	Define and differentiate engineering materials on the basis of structure and properties for engineering applications.
S3	MEL201	COMPUTER AIDED MACHINE DRAWING	CO I	Apply the knowledge of engineering drawings and standards to prepare standard dimensioned drawings of machine parts and other engineering components.
			CO II	Prepare standard assembly drawings of machine components and valvesusing part drawings and bill of materials.
			COIII	Apply limits and tolerances to components and choose appropriate fits for given assemblies
			CO IV	Interpret the symbols of welded, machining and surface roughness on the component drawings.
			CO V	Prepare part and assembly drawings and Bill of Materials of machine components and valves using CAD software.

S3	MET203	MATERIALS TESTING LAB	CO I	To understand the basic concepts of analysis of circular shafts subjected to torsion.
			CO II	To understand the behaviour of engineering component subjected to cyclic loading and failure concepts
			CO III	Evaluate the strength of ductile and brittle materials subjected to compressive, Tensile shear and bending forces
			CO IV	Evaluate the microstructural morphology of ductile or brittle materials and its fracture modes (ductile /brittle fracture) during tension test
			CO V	To specify suitable material for applications in the field of design and manufacturing.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S4	MET 202	ENGINEERING THERMODYNAMICS	CO I	Understand basic concepts and laws of thermodynamics
			CO II	Conduct first law analysis of open and closed systems
			CO III	Determine entropy and availability changes associated with different processes
			CO IV	Understand the application and limitations of different equations of state
			CO V	Determine change in properties of pure substances during phase change processes
S4	MET204	MANUFACTURING PROCESS	CO I	Illustrate the basic principles of foundry practices and special casting processes, their advantages, limitations and applications
			CO II	Categorize welding processes according to welding principle and material.
			CO III	Understand requirements to achieve sound welded joint while welding different similar and dissimilar engineering materials.
			CO IV	Student will estimate the working loads for pressing, forging, wire

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

				drawing etc.
			CO V	Recommend appropriate part manufacturing processes when provided a set of functional requirements and product development constraints.
S4	MET 206	FLUID MACHINERY	CO I	Explain the characteristics of centrifugal and reciprocating pumps
			CO II	Calculate forces and work done by a jet on fixed or moving plate and curved plates
			CO III	Explain the working of turbines and Select a turbine for specific application.
			CO IV	Analyse the working of air compressors and Select the suitable one based on application.
			CO V	Analyse gas turbines and Identify the improvements in basic gas turbine cycles.
			CO II	Calibrate flow measuring devices (notches, orifice meter and Venturi meter)
			CO III	Evaluate the losses in pipes
			CO IV	Determine the metacentric height and stability of floating bodies
			CO V	Determine the efficiency and plot the characteristic curves of different types of pumps and turbines

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S4	MEL 204	MACHINE TOOLS LAB- I	CO I	The students can operate different machine tools with understanding of work holders and operating principles to produce different part features to the desired quality.
			CO II	Apply cutting mechanics to metal machining based on cutting force and power consumption.
			CO III	Select appropriate machining processes and process parameters for different metals.
			CO IV	Fabricate and assemble various metal components by welding and students will be able to visually examine their work and that of others for discontinuities and defects.
			CO V	Infer the changes in properties of steel on annealing, normalizing, hardening and tempering.

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S5	MET301	MECHANICS OF MACHINERY	CO I	Explain the fundamentals of kinematics, various planar mechanisms and interpret the basic principles of mechanisms and machines
			CO II	Perform analysis and synthesis of mechanisms
			COIII	Solve the problem on cams and gear drives, including selection depending on requirement.
			CO IV	Calculate the gyroscopic effect in various situations
			CO V	Analyse rotating and reciprocating masses for its unbalance
			CO II	Discuss the working of steam turbines and methods for evaluating the performance
			COIII	Illustrate the performance testing and evaluation of IC engines
			CO IV	Explain the combustion phenomenon and pollution in IC engines
			CO V	Discuss the principles of refrigeration and air-conditioning and basic design considerations

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S5	MET 305	INDUSTRIAL & SYSTEMS ENGINEERING	CO I	Implement various tools and techniques in industrial engineering
			CO II	Calculate the inventory system for a given requirement
			COIII	Explain the importance of industrial relations
			CO IV	Select the lean manufacturing tools to find and eliminate wastes
			CO V	Identify the framework of agile manufacturing
			CO VI	Identify core and extended modules of enterprise resource planning

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S5	MET 307	MACHINE TOOLS AND METROLOGY	CO I	Analyze various machining process and calculate relevant quantities such us velocities, forces and powers.
			CO II	Analyze of the tool nomenclature with surface roughness obtainable in each machining processes.
			CO III	Understand the limitations of various machining process with regard to shape formation and surface texture.
			CO IV	Demonstrate knowledge of the underlying principles of measurement, as they relate to mechanical measurement, electronic instrumentation, and thermal effects.
			CO V	Get an exposure to advanced measuring devices and machine tool metrology.
S5	MEL331	MACHINE TOOLS LAB II	CO I	Apply the procedures to measure length, angles, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments and by different indirect methods.
			CO II	Determine limits and fits and allocate tolerances for machine components
			CO III	CNC programming and to use coordinate measuring machine to record measurements of complex profiles with high sensitivity.
			CO IV	Use effective methods of measuring straightness, Squareness, flatness, roundness, profile, screw threads and gear teeth.
			CO V	Securing knowledge of manufacturing components within the tolerance limit and surface roughness according to given drawings using various machine tools.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S5	MEL 333	THERMAL ENGINEERING LAB 1	CO I	Measure thermo-physical properties of solid, liquid and gaseous fuels
			CO II	Identify various systems and subsystems of Diesel and petrol engines
			CO III	Analyse the performance characteristics of internal combustion engines
			CO IV	Investigate the emission characteristics of exhaust gases from IC Engines
			CO V	Interpret the performance characteristics of air compressors / blowers

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S6	MET 302	HEAT &MASS TRANSFER	CO I	Apply principles of heat and mass transfer to engineering problems
			CO II	Analyse and obtain solutions to problems involving various modes of heat transfer
			COIII	Design heat transfer systems such as heat exchangers, fins, radiation shields etc.
			CO IV	Define laminar and turbulent boundary layers and ability to formulate energy equation in flow systems.
S6	MET304	DYNAMICS AND DESIGN OF MACHINERY	CO I	Do engine force analysis and to draw turning moment diagrams
			CO II	Analyse free and forced vibrations of single degree of freedom systems
			COIII	Determine the natural frequencies of a two degree of freedom vibrating system and to calculate the stresses in a structural member due to combined loading
			CO IV	Design machine elements subjected to fatigue loading and riveted joints

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S6	MET 306	ADVANCED MANUFACTURING ENGINEERING	CO I	To be conversant with the advanced machining process and to appreciate the effect of process parameters on the surface integrity aspects during the advanced machining process.
			CO II	CNC programming, select appropriate tooling and fixtures.
			COIII	To categorize the various nontraditional material removal process based on energy sources and mechanism employed.
			CO IV	Analyze the processes and evaluate the role of each process parameter during micro machining of various advanced material removal processes.
			CO V	Explain the processes used in additive manufacturing for a range of materials and applications.
S6	MET308	COMPREHENSIVE COURSE WORK	CO I	Learn to prepare for a competitive examination
			COIII	Comprehend the questions in Mechanical Engineering field and answer them with confidence
			CO IV	Communicate effectively with faculty in scholarly environments
			CO V	Analyze the comprehensive knowledge gained in basic courses in the field

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S6	MEL 332	COMPUTER AIDED DESIGN & ANALYSIS LAB	CO I	Gain working knowledge in Computer Aided Design and modelling procedures.
			CO II	Gain knowledge in creating solid machinery parts.
			COIII	Gain knowledge in assembling machine elements.
			CO IV	Gain working knowledge in Finite Element Analysis.
			CO V	Solve simple structural, heat and fluid flow problems using standard software
S6	MEL334	THERMAL ENGINEERING LAB-II	CO I	Evaluate thermal properties of materials in conduction, convection and radiation
			CO II	Analyse the performance of heat exchangers
			COIII	Illustrate the operational performances of refrigeration and air conditioning systems
			CO IV	Perform calibration of thermocouples and pressure gauges
S6	MET312	NON DESTRUCTIVE TESTING	CO I	Have a basic knowledge of surface NDT which enables to carry out various inspections in accordance with the established procedures.
			CO II	The students will be able to differentiate various defect types and select the appropriateNDT methods for the specimen.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			CO III	Calibrate the instrument and evaluate the component for imperfections.
			CO IV	Have a basic knowledge of ultrasonic testing which enables them to perform inspection of samples.
			CO V	Have a complete theoretical and practical understanding of the radiographic testing, interpretation and evaluation.

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S7	MET401	DESIGN OF MACHINE ELEMENTS	CO I	Design shafts based on strength, rigidity and design for static and fatigue loads, design flat belts and connecting rod of IC engines
			CO II	Design clutches and brakes
			COIII	Analyse sliding contact bearings and understand design procedure of journal, ball and roller bearings.
			CO IV	Design Spur gear and helical gear
			CO V	Design Bevel gears and worm gears
S7	MEL411	MECHANICAL ENGINEERING LAB	CO I	Get practical knowledge on design and analysis of mechanisms in the machines.
			CO II	Measure the cutting forces associated with milling machining operations.
			COIII	Apply the basic concepts of hydraulic and pneumatic actuators and their applications in product and processes
			CO IV	Use appropriate systems for data acquisition and control of product and processes

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S7	MET413	ADVANCED METHODS IN NON DESTRUCTIVE TESTING	CO I	Understand the theoretical and practical knowledge in methods of non-destructive testing processes
			CO II	Understand the knowledge of advanced methods in ultrasonic testing which enables them to perform inspection of samples.
			COIII	Illustrate complete theoretical and practical understanding of the radiographic testing, interpretation and evaluation.
			CO IV	Understand the recent advances in the field of non-destructive testing
			CO V	Outline the recent and advanced developments in radiography testing
S7	MET458	ADVANCED ENERGY ENGINEERING	CO II	Describe the theories of accident causation and preventive measures of industrial accidents.
			COIII	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping.
			CO IV	Explain different issues in construction industries.
			CO V	Describe various hazards associated with different machines and mechanical material handling.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S7	CST415	INTRODUCTION TO MOBILE COMPUTING	CO I	Describe the mobile computing applications, services, design considerations and architectures
			CO II	Identify the technology trends for cellular wireless networks
			COIII	Summarize the Short Messaging Service and General Packet Radio Service
			CO IV	Outline the LAN technologies used in mobile communication
			CO V	Describe the security protocols and apply suitable security algorithm to secure the communication

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOMES
S8	MET402	MECHATRONICS	CO I	Explain the sensors and actuators used in mechatronics
			CO II	Design hydraulic and pneumatic circuits for automation.
			COIII	Explain the manufacturing processes used in MEMS
			CO IV	Demonstrate the various components of a CNC machine
			CO V	Create a PLC program
			CO VI	Explain the robotic sensors and vision system
S8	MET414	QUALITY MANAGEMENT QUALITY	CO I	To be conversant with important terms for quality management in organisations
			CO II	Have a complete theoretical and practical understanding of the contributions of Quality Gurus
			COIII	Demonstrate knowledge of the underlying principles of strategic quality management
			CO IV	Identify various human dimensions of TQM
			CO V	Implement different tools and techniques in TQM
			CO VI	Identify core and extended modules of ISO 9000 family of standards

DR. LEENA A.V
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

S8	MET466	TECHNOLOGY MANAGEMENT	CO I	Be conversant with important terms for technology management in organisations
			CO II	Explain the need of technology forecasting
			COIII	Understand the essence of technology acquisition
			CO IV	Describe the elements of technology strategy
			CO V	Outline the basics of innovation
			CO VI	Identify human factors in technology management
S8	MET458	ADVANCED ENERGY ENGINEERING	CO I	Explain the concept of various types of power generation
			CO II	Explain solar and wind power generation and its economics
			COIII	Explain biomass energy sources and its economics
			CO IV	Explain various renewable energy sources
			CO V	Explain environmental impacts of various energy generation
			CO I	Explain the concept of various types of power generation

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUT COME 2019 SCHEME

SL NO	SEMESTER	COUSRE CODE WITH NAME		COURSE OUT COMES
1	S1&S2	MAT101 LINEAR ALGEBRA AND CALCULUS	CO1	solve the system of linear equations, diagonalize matrices and characterise quadratic forms.
			CO2	compute the partial and total derivatives and maxima and minima of multivariable functions
			CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
			CO4	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
2		PHT100 ENGINEERING PHYSICS A	CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
			CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
			CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
3		EST100 ENGINEERING MECHANICS	CO1	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
			CO2	Study the effect of friction in static and dynamic conditions.
			CO3	Understand the different properties of surfaces in relation to moment of inertia
			CO4	Analyse and solve different problems of kinematics and kinetics.
			CO5	Analyse and solve with and without damping of SODF.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

4	S1&S2	EST120 BASICS OF CIVIL & MECHANICAL ENGINEERING	CO1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
			CO2	Explain different types of buildings, building components, building materials and building construction
			CO3	Describe the importance, objectives and principles of surveying.
			CO4	Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
			CO5	Discuss the Materials, energy systems, water management and environment for green buildings.
			CO6	Analyse thermodynamic cycles and calculate its efficiency C
			CO7	Illustrate the working and features of IC Engines
			CO8	Explain the basic principles of Refrigeration and Air Conditioning
			CO9	Describe the working of hydraulic machinesh graphical representations as per standards.
			CO10	Explain the working of power transmission elements
			CO11	Describe the basic manufacturing, metal joining and machining processesenable the student to effectively communicate basic designs throug
5		HUN 101 LIFE SKILLS	CO1	Define and Identify different life skills required in personal and professional life
			CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress
			CO3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
			CO4	Take part in group discussions
			CO5	Use appropriate thinking and problem solving techniques to solve new problems
			CO6	Understand the basics of teamwork and leadership
6		PHL 120 ENGINEERING PHYSICS LAB	CO1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			CO2	Understand the need for precise measurement practices for data recording
			CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
			CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
			CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (EEE)

7	S1&S2	ESL 120 CIVIL & MECHANICAL WORKSHOP	CO1	Name different devices and tools used for civil engineering measurements
			CO2	Explain the use of various tools and devices for various field measurements
			CO3	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			CO4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
			CO5	Compare different techniques and devices used in civil engineering measurements
			CO6	Identify Basic Mechanical workshop operations in accordance with the material and objects
			CO7	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
			CO8	Apply appropriate safety measures with respect to the mechanical workshop trades
8		MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORM	CO1	Compute the derivatives and line integrals of vector functions and learn their applications
			CO2	Evaluate surface and volume integrals and learn their inter-relations and applications
			CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			CO4	compute Laplace transforms and apply them to solve problems arising in engineering
			CO5	Determine the Fourier transforms of functions and apply them to solve problems
9		CYT 100 ENGINEERING CHEMISTRY	CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields
			CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
			CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
			CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
			CO5	Study various types of water treatment methods to develop skills for treating wastewater.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (CCC)

10	S1&S2	EST 110 ENGINEERING GRAPHICS	CO1	Draw the projection of points and lines located in different quadrants
			CO2	Prepare multiview orthographic projections of objects by visualizing them in differentpositions
			CO3	Draw sectional views and develop surfaces of a given object
			CO4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimension
			CO5	Convert 3D views to orthographic views
			CO6	Obtain multiview projections and solid models of objects using CAD tools
11		EST 130 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
			CO2	Develop and solve models of magnetic circuits
			CO3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
			CO4	Describe working of a voltage amplifier
			CO5	Outline the principle of an electronic instrumentation system
			CO6	Explain the principle of radio and cellular communication
12		HUN 102 PROFESSIONAL COMMUNICATION	CO1	Develop vocabulary and language skills relevant to engineering as a profession
			CO2	Analyze, interpret and effectively summarize a variety of textual content
			CO3	Create effective technical presentations
			CO4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
			CO5	Identify drawbacks in listening patterns and apply listening techniques for specific needs
			CO6	Create professional and technical documents that are clear and adhering to all the

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

13	S1&S2	EST 102 PROGRAMING IN C	CO1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
			CO2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			CO3	Write readable C programs with arrays, structure or union for storing the data to be processed
			CO4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
			CO5	Write readable C programs which use pointers for array processing and parameter passing
			CO6	Develop readable C programs with files for reading input and storing output
14		CYL 120 ENGINEERING CHEMISTRY LAB	CO 1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			CO 2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			CO 3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
			CO 4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CO 5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
			CO 6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum
15		ESL 130 ELECTRICAL & ELECTRONICS WORKSHOP	CO1	Demonstrate safety measures against electric shocks.
			CO2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
			CO3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
			CO4	The student will be able to identify and test various electronic components
			CO5	The student will be able to Draw circuit schematics with EDA tools
			CO6	The student will be able to Assemble and test electronic circuits on boards

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HoD(EEE)

16	S3	MAT 201 COURSE NAME PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO1	Understand the concept and the solution of partial differential equation.
			CO2	Analyse and solve one dimensional wave equation and heat equation.
			CO3	Understand complex functions, its continuity differentiability with the use of CauchyRiemann equations.
			CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function
			CO5	Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.
17		EET201 CIRCUITS AND NETWORKS	CO1	Apply circuit theorems to simplify and solve complex DC and AC electric networks.
			CO2	Analyse dynamic DC and AC circuits and develop the complete response to excitations.
			CO3	Solve dynamic circuits by applying transformation to s-domain.
			CO4	Analyse three-phase networks in Y and Δ configurations.
			CO5	Solve series /parallel resonant circuits.
			CO6	Develop the representation of two-port networks using network parameters and analyse.
18		EET203 MEASUREMENTS AND INSTRUMENTATION	CO 1	Identify and analysethe factors affecting performance of measuring system
			CO 2	Choose appropriate instruments for the measurement of voltage, current in ac and dc measurements
			CO 3	Explain the operating principle of power and energy measurement
			CO 4	Outline the principles of operation of Magnetic measurement systems
			CO 5	Describe the operating principle of DC and AC bridges, transducersbased systems.
			CO 6	Understand the operating principles of basic building blocks of digital systems, recording and display units

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

19	S3	EET205 ANALOG ELECTRONICS	CO1	Design biasing scheme for transistor circuits.
			CO2	Model BJT and FET amplifier circuits.
			CO3	Identify a power amplifier with appropriate specifications for electronic circuit applications.
			CO4	Describe the operation of oscillator circuits using BJT.
			CO5	Explain the basic concepts of Operational amplifier (OPAMP)
			CO6	Design and develop various OPAMP application circuits and 555 timer circuits
20		HUT 200 Professional Ethics	CO1	Understand the core values that shape the ethical behaviour of a professional.
			CO2	Adopt a good character and follow an ethical life.
			CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
			CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
			CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues
21		MCN201 SUSTAINABLE ENGINEERING	CO1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
			CO2	Explain the different types of environmental pollution problems and their sustainable solutions
			CO3	Discuss the environmental regulations and standards
			CO4	Outline the concepts related to conventional and non-conventional energy
			CO5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles

HOD(EEE)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

22	S3	EEL201 CIRCUITS AND MEASUREMENTS LAB	CO1	Analyse voltage current relations of RLC circuits
			CO2	Verify DC network theorems by setting up various electric circuits
			CO3	Measure power in a single and three phase circuits by various methods Calibrate various meters used in electrical systems
			CO4	Calibrate various meters used in electrical systems
			CO5	Determine magnetic characteristics of different electrical devices
			CO6	Analyse the characteristics of various types of transducer systems
			CO7	Determine electrical parameters using various bridges
			CO8	Analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.
23		EEL203 ANALOG ELECTRONICSLAB	CO1	Use the various electronic instruments and for conducting experiments.
			CO2	Design and develop various electronic circuits using diodes and Zener diodes
			CO3	Design and implement amplifier and oscillator circuits using BJT and JFET.
			CO4	Design and implement basic circuits using IC (OPAMP and 555 timers).
			CO5	Simulate electronic circuits using any circuit simulation software.
			CO6	Use PCB layout software for circuit design
24	S4	MAT 204 COURSE NAME PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS	CO1	Understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.
			CO2	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
			CO3	Analyse random processes using autocorrelation, power spectrum and Poisson process model as appropriate.
			CO4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
			CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (EEE)

25	S4	EET202 DC MACHINES AND TRANSFORMERS	CO1	Acquire knowledge about constructional details of DC machines
			CO2	Describe the performance characteristics of DC generators
			CO3	Describe the principle of operation of DC motors and select appropriate motor types for different applications
			CO4	Acquire knowledge in testing of DC machines to assess its performance
			CO5	Describe the constructional details and modes of operation of single phase and three phase transformers
			CO6	Analyse the performance of transformers under various conditions
26		EET204 ELECTROMAGNETIC THEORY	CO1	Apply vector analysis and coordinate systems to solve static electric and magneticfield problems. Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters
			CO2	Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law.
			CO3	Apply Maxwell Equations for the solution of timevarying fields
			CO4	Analyse electromagnetic wave propagation in different media
27		EET206 DIGITAL ELECTRONICS	CO1	Identify various number systems, binary codes and formulate digital functions using Boolean algebra..
			CO2	Design and implement combinational logic circuits.
			CO3	Design and implement sequential logic circuits.
			CO4	Compare the operation of various analog to digital and digital to analog conversion circuits.
			CO5	Explain the basic concepts of programmable logic devices and VHDL.
28		EST 200 DESIGN AND ENGINEERING	CO1	Explain the different concepts and principles involved in design engineering.
			CO2	Apply design thinking while learning and practicing engineering.
			CO3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (EEE)

29	S4	MCN202 COURSE NAME CONSTITUTION OF INDIA	CO1	Explain the background of the present constitution of India and features.
			CO2	Utilize the fundamental rights and duties.
			CO3	Understand the working of the union executive, parliament and judiciary.
			CO4	Understand the working of the state executive, legislature and judiciary.
			CO5	Utilize the special provisions and statutory institutions.
			CO6	Show national and patriotic spirit as responsible citizens of the country
30		EEL202 ELECTRICAL MACHINES LAB I	CO1	Analyse the performance of DC motors and DC generators by performing load test.
			CO2	Sketch the Open Circuit Characteristics of a self excited DC shunt generator and check conditions of voltage build up by performing suitable experiment.
			CO3	Develop equivalent circuit and predetermine their regulation and efficiency by performing OC & SC tests on transformer.
			CO4	Analyse the efficiency and regulation of the transformer by performing load test.
			CO5	Analyse the efficiency of a DC machine when working as motor and generator by conducting suitable test.
			CO6	Examine the efficiency by performing Sumpner's test on two similar transformers
31		EL204 DIGITAL ELECTRONICS LAB	CO1	Formulate digital functionsusing Boolean Algebra and verify experimentally
			CO2	Design and implement combinational logic circuits
			CO3	Design and implement sequential logic circuits
			CO4	Design and fabricate a digital circuit using the knowledge acquired from the laboratory

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

32	S5	EET301 POWER SYSTEMS I	CO1	Identify the power generating system appropriate for a given area
			CO2	Evaluate the electrical performance of any transmission line
			CO3	Compute various physical characteristics of underground and overhead transmission systems
			CO4	Select appropriate switchgear for protection schemes
			CO5	Design a simple electrical distribution system as per the standards.
33		EET303 MICROPROCESSORS AND MICROCONTROLLERS	CO1	Describe the architecture and timing diagram of 8085 microprocessor.
			CO2	Develop assembly language programs in 8085 microprocessor.
			CO3	Identify the different ways of interfacing memory and I/O with 8085 microprocessor.
			CO4	Understand the architecture of 8051 microcontroller and embedded systems.
			CO5	Develop assembly level and embedded C programs in 8051 microcontroller.
34		EET305 SIGNALS AND SYSTEMS	CO1	The student will be able to explain the basic operations on signals and systems.
			CO2	The student will be able to apply Fourier Series and Fourier Transform concepts for continuous time signals & The student will be able to Analyze the continuous time systems with laplace transform
			CO3	The student will be able to analyze various system models and response.
			CO4	The student will be able to analyze the discrete time system using Z Transform and sampling.
			CO5	The student will be able to apply fourier series and fourier transform concepts for discrete time domain and sampled data systems.

HOD (EEE)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

35	S5	EET307 SYNCHRONOUS AND INDUCTION MACHINES	CO1	Analyse the performance of different types of alternators.
			CO2	Analyse the performance of a synchronous motor.
			CO3	Analyse the performance of different types of induction motors.
			CO4	Describe operating principle of induction machine as generator.
			CO5	Explain the types of single phase induction motors and their working principle.
36		EEL331 MICROPROCESSORS AND MICROCONTROLLERS LAB	CO1	Develop and execute assembly language programs for solving arithmetic and logical problems using microprocessor/microcontroller.
			CO2	Design and Implement systems with interfacing circuits for various applications.
			CO3	Execute projects as a team using microprocessor/microcontroller for real life applications.
37		EEL333 ELECTRICAL MACHINES LAB II	CO 1	Analyse the performance of single phase and three phase induction motors by conducting suitable tests.
			CO 2	Analyse the performance of three phase synchronous machine from V and inverted V curves.
			CO 3	Analyse the performance of a three phase alternator by conducting suitable tests.

HOD (EEE)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

38	S6	EET302 LINEAR CONTROL SYSTEMS	CO1	Describe the role of various control blocks and components in feedback systems.
			CO2	Analyse the time domain responses of the linear systems.
			CO3	Apply Root locus technique to assess the performance of linear systems and design compensators using time domain techniques.
			CO4	Analyse the stability of the given LTI systems.
			CO5	Analyse the frequency domain response of the given LTI systems and design compensators using time domain and frequency domain techniques
39		EET304 POWER SYSTEMS II	CO1	Apply the per unit scheme for any power system network and compute the fault levels.
			CO2	Analyse the voltage profile of any given power system network using iterative methods
			CO3	Analysethe steady state and transient stability of power system networks
			CO4	Model the control scheme of power systems.
			CO5	Schedule optimal generation scheme.
40		EET306 POWERELECTRONICS	CO1	Explain the operation of modern power semiconductor devices and its characteristics.
			CO2	Design Analyse the working of controlled rectifiers.
			CO3	Explain the working of AC voltage controllers, inverters and PWM techniques.
			CO4	Compare the performance of different dc-dc converters.
			CO5	Describe basic drive schemes for ac and dc motors.

HOD (EEE)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

41	S6	EET312 BIOMEDICAL INSTRUMENTATION	CO1	Explain the basics of anatomy and physiology of human body.
			CO2	Explain different techniques for the measurement of various physiological parameters
			CO3	Describe modern imaging techniques for medical diagnosis
			CO4	Identify the various therapeutic equipments used in biomedical field
			CO5	Discuss the patient safety measures and recent advancements in medical field
42		EET308 COMPREHENSIVE COURSE WORK	CO1	Apply the knowledge of circuit theorems to solve the problems in electrical networks
			CO2	Evaluate the performance of DC machines and Transformers under different loadingconditions
			CO3	Identify appropriate digital components to realise any combinational or sequential logic.
			CO4	Apply the knowledge of Power generation, transmission and distribution to select appropriate components for power system operation.
			CO5	Apply appropriate mathematical concepts to analyse continuous time and discrete time signals and systems
43		EEL332 POWER SYSTEMS LAB	CO1	Develop mathematical models and conduct steady state and transient analysis of power system networks using standard software.
			CO2	Develop a frequency domain model of power system networks and conduct the stability analysis.
			CO3	Conduct appropriate tests for any power system component as per standards.
			CO4	Conduct site inspection and evaluate performance ratio of solar power plant.
44		EEL334 POWER ELECTRONICS LAB	CO1	Determine the characteristics of SCR and design triggering circuits for SCR based circuits.
			CO2	Design, set up and analyse single phase AC voltage controllers.
			CO3	Design, set up and test suitable gate drives for MOSFET/IGBT.
			CO4	Design, set up and test basic inverter topologies.
			CO5	Design and set up dc-dc converters.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (EEE)

45	S7	EET401 ADVANCED CONTROL SYSTEMS	CO1	Develop the state variable representation of physical systems
			CO2	Analyse the performance of linear and nonlinear systems using state variable approach
			CO3	Design state feedback controller for a given system
			CO4	Explain the characteristics of nonlinear systems
			CO5	Apply the tools like describing function approach or phase plane approach for assessing the performance of nonlinear systems
			CO6	Apply Lyapunov method for the stability analysis of physical systems.
46		EET463 ILLUMINATION TECHNOLOGY	CO 1	Explain the fundamental concepts of natural and artificial lighting schemes
			CO 2	Design efficient indoor lighting systems
			CO 3	Design efficient outdoor lighting systems
			CO 4	Describe aesthetic and emergency lighting systems
47		MCN401 INDUSTRIAL SAFETY ENGINERING	CO1	Describe the theories of accident causation and preventive measures of industrial accidents. (Cognitive Knowledge level: Understand)
			CO2	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping. (Cognitive Knowledge level: Understand)
			CO3	Explain different issues in construction industries. (Cognitive Knowledge level: Understand)
			CO4	Describe various hazards associated with different machines and mechanical material handling. (Cognitive Knowledge level: Understand)
			CO5	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards. (Cognitive Knowledge level: Apply)

HOD(EEE)

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

48	S7	EEL411 CONTROL SYSTEMS LAB	CO 1	Demonstrate the knowledge of simulation tools for control system design.
			CO 2	Develop the mathematical model of a given physical system by conducting appropriate experiments.
			CO 3	Analyse the performance and stability of physical systems using classical and advanced control approaches.
			CO 4	Design controllers for physical systems to meet the desired specifications.
49		EEQ413 SEMINAR	CO1	Identify academic documents from the literature which are related to her/his areas of interest (Cognitive knowledge level: Apply).
			CO2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest (Cognitive knowledge level: Analyze).
			CO3	Prepare a presentation about an academic document (Cognitive knowledge level: Create).
			CO4	Give a presentation about an academic document (Cognitive knowledge level: Apply).
			CO5	Prepare a technical report (Cognitive knowledge level:Create).
		EED415 PROJECT PHASE I	CO1	Model and solve real world problems by applying knowledge across domains.
			CO2	Develop products, processes or technologies for sustainable and socially relevant applications.
			CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
			CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms
			CO5	Identify technology/research gaps and propose innovative/creative solutions

DR. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

53	S8	EET426 SPECIAL ELECTRICA MACHINES	CO1	Analyse the performance of different types of permanent magnet motors.
			CO2	Analyse the performance of a stepper motor
			CO3	Analyse the performance of different types of reluctance motors.
			CO4	Explain the construction and principle of operation of servo motors, single phase motors and linear motors.
			CO5	Analyse the performance of linear induction motors..
54		EET418 ELECTRIC AND HYBRID VEHICLES	CO1	Explain the basic concepts of Conventional, Electric, Hybrid EV and Autonomous Vehicles
			CO2	Describe different configurations of electric and hybrid electric drive trains
			CO3	Discuss the propulsion unit for electric and hybrid vehicles
			CO4	Compare various energy storage and EV charging systems
			CO5	Select drive systems and various communication protocols for EV
55		EED416 PROJECT PHASE II	CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: Apply).
			CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).
			CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).
			CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
			CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze).
			CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply).

DR. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

50	S7	CST476 MOBILE COMPUTING	CO1	Explain the various mobile computing applications, services, design considerations and architectures
			CO2	Describe the various technology trends for next generation cellular wireless networks and use the spreading concept on data transmission
			CO3	Summarize the architecture of various wireless LAN technologies
			CO4	Identify the functionalities of mobile network layer and transport layer
			CO5	Explain the features of Wireless Application Protocol
			CO6	Interpret the security issues in mobile computing and next generation technologies
51	S8	EET402 ELECTRICAL SYSTEM DESIGN AND ESTIMATION	CO1	Explain the rules and regulations in the design of components for medium and high voltage installations.
			CO2	Design lighting schemes for indoor and outdoor applications.
			CO3	Design low/medium voltage domestic and industrial electrical installations.
			CO4	Design, testing and commissioning of 11 kV transformer substation.
			CO5	Design electrical installations in high rise buildings.
52		EET455 ENERGY MANAGEMENT	CO 1	Explain the significance and procedure for energy management and audit.
			CO 2	Discuss the energy efficiency and management of electrical loads.
			CO 3	Discuss the energy efficiency in boilers and furnaces.
			CO 4	Explain the energy management opportunities in HVAC systems
			CO 5	Compute the economic feasibility of the energy conservation measures.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

HOD (EEE)

REGULATI	SEMESTER	UNIVERSITY CODE	SUBJECT NAME	CO CODE	COURSE OUTCOME
	S1	MAT101	LINEAR ALGEBRA AND CALCULUS	CO1	solve the system of linear equations, diagonalize matrices and characterise quadratic forms.
				CO2	compute the partial and total derivatives and maxima and minima of multivariable functions
				CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
				CO4	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
				CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
		EST100	ENGINEERING MECHANICS	CO1	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
				CO2	Study the effect of friction in static and dynamic conditions.
				CO3	Understand the different properties of surfaces in relation to moment of inertia
				CO4	Analyse and solve different problems of kinematics and kinetics.
				CO5	Analyse and solve with and without damping of SODF.
		HUN101	LIFESKILLS	CO1	Define and Identify different life skills required in personal and professional life
				CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress
				CO3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
				CO4	Take part in group discussions
				CO5	Use appropriate thinking and problem solving techniques to solve new problems
				CO6	Understand the basics of teamwork and leadership
		CYL100	ENGINEERING CHEMISTRY LAB	CO 1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
				CO 2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
				CO 3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
				CO 4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
				CO 5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
				CO 6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum
		CYT100	ENGINEERING CHEMISTRY	CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields
				CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
				CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
				CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
				CO5	Study various types of water treatment methods to develop skills for treating wastewater.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		ESL120	CIVIL & MECHANICAL WORKSHOP	CO2	Explain the use of various tools and devices for various field measurements
				CO3	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
				CO4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
				CO5	Compare different techniques and devices used in civil engineering measurements
				CO6	Identify Basic Mechanical workshop operations in accordance with the material and objects
				CO7	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
				CO8	Apply appropriate safety measures with respect to the mechanical workshop trades
		EST120	BASICS OF CIVIL & MECHANICAL ENGINEERING	CO1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
				CO2	Explain different types of buildings, building components, building materials and building construction
				CO3	Describe the importance, objectives and principles of surveying.
				CO4	Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
				CO5	Discuss the Materials, energy systems, water management and environment for green buildings.
				CO6	Analyse thermodynamic cycles and calculate its efficiency C
				CO7	Illustrate the working and features of IC Engines
				CO8	Explain the basic principles of Refrigeration and Air Conditioning
				CO9	Describe the working of hydraulic machinesh graphical representations as per standards.
				CO10	Explain the working of power transmission elements
				CO11	Describe the basic manufacturing, metal joining and machining processesenable the student to effectively communicate basic designs throug
		HUN102	PROFESSIONAL COMMUNICATION	CO1	Develop vocabulary and language skills relevant to engineering as a profession
				CO2	Analyze, interpret and effectively summarize a variety of textual content
				CO3	Create effective technical presentations
				CO4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
				CO5	Identify drawbacks in listening patterns and apply listening techniques for specific needs
				CO6	Create professional and technical documents that are clear and adhering to all the
		EST102	PROGRAMING IN C	CO1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
				CO2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
				CO3	Write readable C programs with arrays, structure or union for storing the data to be processed
				CO4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
				CO5	Write readable C programs which use pointers for array processing and parameter passing
				CO6	Develop readable C programs with files for reading input and storing output
				CO1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

	S2	PHL120	ENGINEERING PHYSICS LAB	CO2	Understand the need for precise measurement practices for data recording
				CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
				CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
				CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
		PHT100	ENGINEERING PHYSICS	CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
				CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
				CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
				CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
				CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
		MAT102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORM	CO1	Compute the derivatives and line integrals of vector functions and learn their applications
				CO2	Evaluate surface and volume integrals and learn their inter-relations and applications
				CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
				CO4	compute Laplace transforms and apply them to solve problems arising in engineering
				CO5	Determine the Fourier transforms of functions and apply them to solve problems
		EST110	ENGINEERING GRAPHICS	CO1	Draw the projection of points and lines located in different quadrants
				CO2	Prepare multiview orthographic projections of objects by visualizing them in differentpositions
				CO3	Draw sectional views and develop surfaces of a given object
				CO4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimension
				CO5	Convert 3D views to orthographic views
				CO6	Obtain multiview projections and solid models of objects using CAD tools
		EST130	BASIS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
				CO2	Develop and solve models of magnetic circuits
				CO3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
				CO4	Outline the basic concepts and principles of semiconductor devices
				CO5	Outline the principle of an electronic instrumentation system
				CO6	Explain the principle of radio and cellular communication
		ESL130	ELECTRICAL AND ELECTRONICS ENGINEERING WORKSHOP	CO4	The student will be able to identify and test various electronic components
				CO5	The student will be able to draw circuit schematics with EDA tools
				CO6	The student will be able to aassemble and test electronic circuits on boards

			CO7	The student will be able to work in a team with good interpersonal skills
S3	ECT201	SOLID STATE DEVICES	CO1	Apply Fermi-Dirac Distribution function and Compute carrier concentration at equilibrium and the parameters associated with generation, recombination and transport mechanism
			CO2	Explain drift and diffusion currents in extrinsic semiconductors and Compute current density due to these effects
			CO3	Define the current components and derive the current equation in a pn junction diode and bipolar junction transistor
			CO4	Explain the basic MOS physics and derive the expressions for drain current in linear and saturation regions
			CO5	Discuss scaling of MOSFETs and short channel effects
	ECT203	LOGIC CIRCUIT DESIGN	CO1	Explain the elements of digital system abstractions such as digital representations of information, digital logic and Boolean algebra.
			CO2	Create an implementation of a combinational logic function described by a truth table using and/or/inv gates/ muxes.
			CO3	Compare different types of logic families with respect to performance and efficiency.
			CO4	Design a sequential logic circuit using the basic building blocks like flip-flops.
			CO5	Design and analyse combinational and sequential logic circuits through gate level Verilog models
	HUT100	PROFESSIONAL ETHICS	CO1	Understand the core values that shape the ethical behaviour of a professional.
			CO2	Adopt a good character and follow an ethical life.
			CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
			CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
			CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.
	MAT201	PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO1	Understand the concept and the solution of partial differential equation.
			CO2	Analyse and solve one dimensional wave equation and heat equation.
			CO3	Understand complex functions, its continuity differentiability with the use of Cauchy-Riemann equations.
			CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integralformula, understand the series expansion of analytic function
			CO5	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integralformula, understand the series expansion of analytic function
	MCN201	SUSTAINABLE ENGINEERING	CO1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
			CO2	Explain the different types of environmental pollution problems and their sustainable solutions
			CO3	Discuss the environmental regulations and standards
			CO4	Outline the concepts related to conventional and non-conventional energy
			CO5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
	ECT205	NETWORK THEORY	CO1	Apply Mesh / Node analysis or Network Theorems to obtain steady state response of the linear time invariant networks
			CO2	Apply Laplace Transforms to determine the transient behaviour of RLC networks
			CO3	Apply Network functions and Network Parameters to analyse the single port and two port networks

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		ECL201	SCIENTIFIC COMPUTING LAB	CO1	Describe the needs and requirements of scientific computing and to familiarize one programming language for scientific computing and data visualization.
				CO2	Approximate an array/matrix with matrix decomposition.
				CO3	Implement numerical integration and differentiation.
				CO4	CO 4- Solve ordinary differential equations for engineering applications
				CO5	Compute with exported data from instruments
				CO6	Realize how periodic functions are constituted by sinusoids
				CO7	Simulate random processes and understand their statistics
		ECL203	LOGIC DESIGN LAB	CO1	Design and demonstrate the functioning of various combinational and sequential circuits using ICs.
				CO2	Apply an industry compatible hardware description language to implement digital circuits.
				CO3	Implement digital circuits on FPGA boards and connect external hardware to the boards.
	S4	MAT204	PROBABLITY RANDOM PROCESS AND NUMERICAL METHODS	CO1	Understand the concept, properties and important models of discrete random variables and,using them, analyse suitable random phenomena.
				CO2	Understand the concept, properties and important models of continuous random variables and,using them, analyse suitable random phenomena
				CO3	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population
				CO4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
				CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.
		MCN202	CONSTITUTION OF INDIA	CO1	Understand the core values that shapes the ethical behaviour of a professional.
				CO2	Adopt a good character and follow an ethical life.
				CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
				CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
				CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.
		EST200	DESIGN AND ENGINEERING	CO1	Explain the different concepts and principles involved in design engineering.
				CO2	Apply design thinking while learning and practicing engineering.
				CO3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.
		ECT202	ANALOG CIRCUITS	CO1	Design analog signal processing circuits using diodes and first order RC circuit
				CO2	Analyse basic amplifiers using BJT
				CO3	Analyse basic amplifiers using MOSFET.
				CO4	Analyse basic amplifiers using BJT and MOSFET and apply the principle of oscillator
				CO1	Apply properties of signals and systems to classify them

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

KTU 2019 REGULATION		ECT204	SIGNALS AND SYSTEMS	CO2	Represent signals with the help of series and transforms
				CO3	Describe orthogonality of signals and convolution integral
				CO4	Apply transfer function to compute the LTI response to input signals
				CO5	Apply sampling theorem to discretize continuous time signals
		ECT206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	CO1	Explain the functional units, I/O and memory management w.r.t a typical computer architecture
				CO2	Distinguish between microprocessor and microcontroller
				CO3	Develop simple programs using assembly language programming.
				CO4	Interface 8051 microcontroller with peripheral devices using ALP/Embedded C
				CO5	Familiarize system software and Advanced RISC Machine Architecture
		ECL202	ANALOG CIRCUITS AND SIMULATION LAB	CO1	Design and demonstrate the functioning of basic analog circuits using discrete components.
				CO2	Design and simulate the functioning of basic analog circuits using simulation tools.
				CO3	Function effectively as an individual and in a team to accomplish the given task
		ECL204	MICROCONTROLLER LAB	CO1	Write an Assembly language program/Embedded C program for performing data manipulation.
				CO2	Develop ALP/Embedded C Programs to interface microcontroller with peripherals
				CO3	Perform programming/interfacing experiments with IDE for modern microcontrollers
		ECT301	LINEAR INTEGRATED CIRCUITS	CO1	The students will be able to understand Op Amp fundamentals and differential amplifier configurations
				CO2	The students will be able to design operational amplifier circuits for various applications.
				CO3	The students will be able design oscillators and active filters using op amps.
				CO4	The students will be able to explain the working and applications of timer, VCO and PLL ICs.
				CO5	The students will be able to outline the working of Voltage regulator IC's and Data converters
		ECT303	DIGITAL SIGNAL PROCESSING	CO1	State and prove the fundamental properties and relations relevant to DFT and solve basic problems involving DFT based filtering methods.
				CO2	Compute DFT and IDFT using DIT and DIF radix-2 FFT algorithms.
				CO3	Design linear phase FIR filters and IIR filters for a given specification & basic multi-rate DSP operations decimation and interpolation in both time and frequency domains using supported mathematical equations.
				CO4	Illustrate the various FIR and IIR filter structures for the realization of the given system function.
				CO5	Explain the architecture of DSP processor (TMS320C67xx) and the finite word length effects
		ECT305	ANALOG AND DIGITAL COMMUNICATION	CO1	Explain the existent analog communication systems.
				CO2	Apply the concepts of random processes to LTI systems.
				CO3	Apply waveform coding techniques in digital transmission..
				CO4	Apply GS procedure to develop digital receivers and Apply equalizer design to counteract ISI.
				CO5	Apply digital modulation techniques in signal transmission

S5	ECT307	CONTROL SYSTEMS	CO1	Analyse electromechanical systems by mathematical modelling and derive their transfer functions
			CO2	Determine Transient and Steady State behaviour of systems using standard test signals
			CO3	Determine absolute stability and relative stability of a system
			CO4	Apply frequency domain techniques to assess the system performance and to design a control system with suitable compensation techniques
			CO5	Analyse system Controllability and Observability using state space representation
	MCN301	DISASTER MANAGEMENT	CO1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle (Cognitive knowledge level: Understand).
			CO2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment (Cognitive knowledge level: Understand).
			CO3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk (Cognitive knowledge level: Understand).
			CO4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community (Cognitive knowledge level: Apply)
			CO5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions (Cognitive knowledge level: Understand).
	HUT300	NDUSTRIAL ECONOMICS AND FOREIGN TRAI	CO1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
			CO2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production. (Cognitive knowledge level: Apply)
			CO3	Determine the functional requirement of a firm under various competitive conditions. (Cognitive knowledge level: Analyse)
			CO4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
			CO5	Determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)
	ECL331	ANALOG INTEGRATED CIRCUITS AND SIMULATION LAB	CO1	Use data sheets of basic Analog Integrated Circuits and design and implement application circuits using Analog ICs.
			CO2	Design and simulate the application circuits with Analog Integrated Circuits using simulation tools
			CO3	Function effectively as an individual and in a team to accomplish the given task
	ECL333	DIGITAL SIGNAL PROCESSING LAB	CO1	Simulate digital signals.
			CO2	Verify the properties of DFT computationally
			CO3	Familiarize the DSP hardware and interface with computer
			CO4	Implement LTI systems with linear convolution.
			CO5	Implement FFT and IFFT and use it on real time signals.
			CO6	Implement FIR low pass filter.
			CO7	Implement real time LTI systems with block convolution and FFT

S6	ECT302	ELECTROMAGNETICS	CO1	To summarize the basic mathematical concepts related to electromagnetic vector fields.
			CO2	Analyse Maxwell's equation in different forms and apply them to diverse engineering problems.
			CO3	To analyse electromagnetic wave propagation and wave polarization
			CO4	To analyse the characteristics of transmission lines and solve the transmission line
			CO5	To analyse and evaluate the propagation of EM waves in Wave guides
	ECT304	VLSI CIRCUIT DESIGN	CO1	Students will be able to explain the various methodologies in ASIC and FPGA design.
			CO2	Students will be able to design VLSI Logic circuits with various MOSFET logic families.
			CO3	Students can compare different types of memory elements.
			CO4	Data path elements such as Adders and multipliers can be designed and analysed.
			CO5	Students will be able to explain MOSFET fabrication techniques and layout design rules.
	ECT306	INFORMATION THEORY AND CODING	CO1	Explain measures of information – entropy, conditional entropy, mutual information
			CO2	Apply Shannon's source coding theorem for data compression.
			CO3	Apply the concept of channel capacity for characterize limits of error-free transmission.
			CO4	Apply linear block codes for error detection and correction
			CO5	Apply algebraic codes with reduced structural complexity for error correction
			CO6	Understand encoding and decoding of convolution and LDPC codes
	ECT352	DIGITAL IMAGE PROCESSING	CO1	The students will be able to distinguish / analyse the various concepts and mathematical transforms necessary for image processing
			CO2	The students will be able to understand transforms & compression techniques.
			CO3	The students will be able to differentiate and interpret the various image enhancement techniques.
			CO4	The students will be able to illustrate image restoration.
			CO5	The students will be able to illustrate image segmentation algorithm
	HUT310	MANAGEMENT FOR ENGINEERS	CO1	Explain the characteristics of management in the contemporary context (Cognitive Knowledge level: Understand).
			CO2	Describe functions of Management
			CO3	Demonstrate ability in decision making process and productivity analysis (Cognitive Knowledge level: Understand).
			CO4	Illustrate project management technique and develop a project schedule (Cognitive Knowledge level: Apply).
			CO5	Summarize the functional areas of Management
			CO6	Comprehend the concept of entrepreneurship and create business plans (Cognitive Knowledge level: Understand).
	ECT308	COMPREHENSIVE COURSE WORK	CO1	Apply the knowledge of circuit theorems and solid state physics to solve the problems in electronic Circuits
			CO2	Design a logic circuit for a specific application
			CO3	Design linear IC circuits for linear and non-linear circuit applications.
			CO4	Explain basic signal processing operations and Filter designs

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

			CO5	Explain existent analog and digital communication systems
	ECL332	COMMUNICATION LAB	CO1	Setup simple prototype circuits for waveform coding and digial modulation techniques working in a team.
			CO2	Simulate the error performance of a digital communication system using standard binary and M -ary modulation schemes.
			CO3	Develop hands-on skills to emulate a communication system with software-designed-radio working in a team
	ECD334	MINIRPOJECT	CO1	The students will be able to Be able to practice acquired knowledge within the selected area of technology for project development.
			CO2	The students will be able to identify, discuss and justify the technical aspects and design aspects of the project with a systematic approach.
			CO3	The students will be able to Reproduce, improve and refine technical aspects for engineering projects
			CO4	The students will be able to work as a team in development of technical projects
			CO5	The students will be able to communicate and report effectively project related activities and findings
	ECT401	MICROWAVES AND ANTENNAS	CO1	Understand the basic concept of antennas and its parameters.
			CO2	Analyze the far filed pattern of Short dipole and Half wave dipole antenna.
			CO3	Design of various broad band antennas, arrays and its radiation patterns.
			CO4	Illustrate the principle of operation of cavity resonators and various microwave sources.
			CO5	Explain various microwave hybrid circuits and microwave semiconductor devices
	ECT413	OPTICAL FIBRE COMUNICATION	CO1	Understand the working and classification of optical fibers in terms of propagation modes
			CO2	Solve problems of transmission characteristics and losses in optical fiber
			CO3	Explain the constructional features and the characteristics of optical sources and detectors
			CO4	Describe the operations of optical amplifiers
			CO5	Understand the concept of WDM, FSO and LiFi
	CST476	MOBILE COMPUTING	CO1	Explain the various mobile computing applications, services, design considerations and architectures (Cognitive knowledge: Understand)
			CO2	Describe the various technology trends for next generation cellular wireless networks and use the spreading concept on data transmission (Cognitive knowledge: Apply)
			CO3	Summarize the architecture of various wireless LAN technologies (Cognitive knowledge: Understand)
			CO4	Identify the functionalities of mobile network layer and transport layer (Cognitive knowledge: Understand)
			CO5	Explain the features of Wireless Application Protocol (Cognitive knowledge: Understand)
			CO6	Interpret the security issues in mobile computing and next generation technologies (Cognitive knowledge: Understand)
			CO1	Describe the theories of accident causation and preventive measures of industrial accidents. (Cognitive Knowledge level: Understand)
			CO2	Explain about personal protective equipment, its selection, safety performance &indicators and importance of housekeeping. (Cognitive Knowledge level:Understand)

DR. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

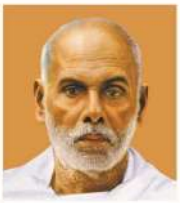
	S7	MCN401	INDUSTRIAL SAFETY ENGINEERING	CO3	Explain different issues in construction industries. (Cognitive Knowledge level:Understand)
				CO4	Describe various hazards associated with different machines and mechanical material handling. (Cognitive Knowledge level: Understand)
				CO5	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards. (Cognitive Knowledge level:Apply)
		ECL411	ELECTROMAGNETICS LAB	CO1	Familiarize the basic Microwave components and to analyse few microwave measurements and its parameters.
				CO2	Understand the principles of fiber-optic communications and the different kind of losses, signal distortion and other signal degradation factors.
				CO3	Design and simulate basic antenna experiments with simulation tools
		ECD415	PROJECT PHASE I	CO1	Identify academic documents from the literature which are related to her/his areas of interest (Cognitive knowledge level: Apply).Read and apprehend an academic document from the literature which is related to her/ his areas of interest (Cognitive knowledge level: Analyze).
				CO2	Prepare a presentation about an academic document (Cognitive knowledge level: Create). Give a presentation about an academic document (Cognitive knowledge level: Apply).
				CO3	Prepare a technical report (Cognitive knowledge level: Create
				CO1	Model and solve real world problems by applying knowledge across domains
				CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).
				CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).
				CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
				CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze).
				CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply)
		ECT402	WIRELESS COMMUNICATION	CO1	Summarize the basics of cellular system and cellular design fundamentals.
				CO2	Describe the wireless channel models and discuss capacity of wireless channels.
				CO3	Analyze the performance of the modulation techniques for flat-fading channels and multicarrier modulation and Illustrate how receiver performance can be enhanced by various diversity techniques.
				CO4	Identify advantages of various equalization techniques and multiple-access techniques in wireless communication.
				CO5	Calculate system parameters such antenna height, range, maximum usable frequency in different modes of radio wave propagation
		ECT424	SATELLITE COMMUNICATION	CO1	Define satellite communications& possible satellite orbits.
				CO2	Describe satellite communication subsystems& launching mechanisms of satellites.
				CO3	Calculate link budgets. Provide an in-depth treatment of satellite communication systems operation and planning

				CO4	Analyze the various methods of satellite access.
				CO5	Discuss various applications of satellite communications
		ECT446	MICROWAVE DEVICES AND CIRCUITS	CO1	CO1: Understand the limitation of conventional solid state devices at Microwave, Gunn–effect diodes, Microwave generation and amplification, IMPATT and TRAPATT diodes
				CO2	CO2: Design of Bipolar transistors, MESFET, Microwave amplifiers and oscillators
				CO3	CO3: Analysis of Microwave Network Analysis and the corresponding signal flow graphs
	S8			CO4	CO4: Design of Microwave filters, Filter design by image parameter method, Filter transformation and implementation
				CO5	CO5: Understand different MICs, Distributed and lumped elements of integrated circuits, Diode control devices.
		ECT458	INTERNET OF THINGS	CO1	Understand the IoT fundamentals and architecture modelling (K1)
				CO2	Understand the smart things in IoT and functional blocks (K2)
				CO3	To understand the communication networks and protocols used in IoT. (K2)
				CO4	To understand the cloud resources, data analysis and applications. (K3)
				CO5	To apply the IoT processes in embedded applications. (K3)
		ECD416	PROJECT PHASE II	CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: Apply).
				CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).
				CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).
				CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
				CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze).
				CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply).

HOD ECE

Dr. LEENA. A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

Sree Narayana Guru College of Engineering & Technology
CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307
Est. 2003



DEPARTMENT OFCOMPUTER SCIENCE AND ENGINEERING

REGULATION	SEMESTER	UNIVERSITY CODE	SUBJECT NAME	CO CODE	COURSE OUTCOME
		MAT 101	LINEAR ALGEBRA AND CALCULUS	CO1	Solve systems of linear equations, diagonalize matrices and characterise quadratic forms
				CO2	Compute the partial and total derivatives and maxima and minima of multivariable functions
				CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes,mass and centre of gravity of plane laminas
				CO4	Perform various tests to determine whether a given series is convergent, absolutely, convergent or conditionally convergent
				CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
		CYT100	ENGINEERING CHEMISTRY	CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
				CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
				CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
				CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
				CO5	Study various types of water treatment methods to develop skills for treating wastewater.
		EST100	ENGINEERING MECHANICS	CO1	Recall principles and theorems related to rigid body mechanics
				CO2	Identify and describe the components of system of forces acting on the rigid body
				CO3	Apply the conditions of equilibrium to various practical problems involving different force system.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY					
DEPARTMENT OFCOMPUTER SCIENCE AND ENGINEERING					
REGULATION	SEMESTER	UNIVERSITY CODE	SUBJECT NAME	CO CODE	COURSE OUTCOME
		MAT 101	LINEAR ALGEBRA AND CALCULUS	CO1	Solve systems of linear equations, diagonalize matrices and characterise quadratic forms
				CO2	Compute the partial and total derivatives and maxima and minima of multivariable functions
				CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes,mass and centre of gravity of plane laminas
				CO4	Perform various tests to determine whether a given series is convergent, absolutely, convergent or conditionally convergent
				CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
		CYT100	ENGINEERING CHEMISTRY	CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
				CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
				CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
				CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
				CO5	Study various types of water treatment methods to develop skills for treating wastewater.
		EST100	ENGINEERING MECHANICS	CO1	Recall principles and theorems related to rigid body mechanics
				CO2	Identify and describe the components of system of forces acting on the rigid body
				CO3	Apply the conditions of equilibrium to various practical problems involving different force system.

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF
ENGINEERING & TECHNOLOGY, PAYYANUR

				CO4	Choose appropriate theorems, principles or formulae to solve problems of mechanics.
				CO5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses
	S1	EST120	BASICS OF CIVIL & MECHANICAL ENGINEERING	CO1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering. Explain different types of buildings, building components, building materials and building construction
				CO2	Describe the importance, objectives and principles of surveying. Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
				CO3	Discuss the Materials, energy systems, water management and environment for green buildings.Analyse thermodynamic cycles and calculate its efficiency.Illustrate the working and features of IC Engines
				CO4	Explain the basic principles of Refrigeration and Air Conditioning. Describe the working of hydraulic machines
				CO5	Explain the working of power transmission elements.Describe the basic manufacturing, metal joining and machining processes
		HUN101	LIFE SKILLS(LS)	CO1	Define and Identify different life skills required in personal and professional life
				CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
				CO3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
				CO4	Take part in group discussions
				CO5	Use appropriate thinking and problem solving techniques to solve new problems.Understand the basics of teamwork and leadership
				CO1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
				CO2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs

		CYL120	ENGINEERING CHEMISTRY LAB(CHEM LAB)	CO3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of someorganic compounds
				CO4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis.Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
				CO5	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum
		ESL120	CIVIL & MECHANICAL WORKSHOP	CO1	Name different devices and tools used for civil engineering measurements.Explain the use of various tools and devices for various field measurements
				CO2	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
				CO3	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
				CO4	Compare different techniques and devices used in civil engineering measurements Identify Basic Mechanical workshop operations in accordance with the material and objects
				CO5	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades.Apply appropriate safety measures with respect to the mechanical workshop trades
		EST110	ENGINEERING GRAPHICS	CO1	Draw the projection of points and lines located in different quadrants
				CO2	Prepare multiview orthographic projections of objects by visualizing them in different positions
				CO3	Draw sectional views and develop surfaces of a given object
				CO4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
				CO5	Convert 3D views to orthographic views.Obtain multiview projections and solid models of objects using CAD tools
				CO1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits

		EST130	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO2	Develop and solve models of magnetic circuits
				CO3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
				CO4	Describe working of a voltage amplifier
				CO5	Outline the principle of an electronic instrumentation system. Explain the principle of radio and cellular communication
		MAT102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO1	Compute the derivatives and line integrals of vector functions and learn their applications
				CO2	Evaluate surface and volume integrals and learn their inter-relations and applications.
				CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
				CO4	Compute Laplace transform and apply them to solve ODEs arising in engineering
				CO5	Determine the Fourier transforms of functions and apply them to solve problems arising engineering
		HUN102	PROFESSIONAL COMMUNICATION	CO1	Develop vocabulary and language skills relevant to engineering as a profession
				CO2	Analyze, interpret and effectively summarize a variety of textual content.Create effective technical presentations
				CO3	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
				CO4	Identify drawbacks in listening patterns and apply listening techniques for specific needs.
				CO5	Create professional and technical documents that are clear and adhering to all the necessary conventions
	S2			C01	Demonstrate safety measures against electric shocks.
				C02	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols

		ESL130	ELECTRICAL & ELECTRONICS WORKSHOP	C03	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings
				C04	Identify and test various electronic components.Draw circuit schematics with EDA tools
				C05	Assemble and test electronic circuits on boards.Work in a team with good interpersonal skills
		PHL120	ENGINEERING PHYSICS LAB	CO1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
				CO2	Understand the need for precise measurement practices for data recording
				CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
				CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
				CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
		PHT100	ENGINEERING PHYSICS	CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
				CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
				CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
				CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
				CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
				CO1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
				CO2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.

		EST 102	**PROGRAMING IN C**	**CO3**	Write readable C programs with arrays, structure or union for storing the data to be processed
				CO4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
				CO5	Write readable C programs which use pointers for array processing and parameter passing and Develop readable C programs with files for reading input and storing output
		MAT 203	**DISCRETE MATHEMATICAL STRUCTURES**	**CO1**	Check the validity of predicates in Propositional and Quantified Propositional Logic using truth tables, deductive reasoning and inference theory on Propositional Logic (Cognitive Knowledge Level: Apply)
				CO2	Solve counting problems by applying the elementary counting techniques - Rule of Sum, Rule of Product, Permutation, Combination, Binomial Theorem, Pigeonhole Principle and Principle of Inclusion and Exclusion (Cognitive Knowledge Level: Apply)
				CO3	Classify binary relations into various types and illustrate an application for each type of binary relation, in Computer Science (Cognitive Knowledge Level: Understand)
				CO4	Illustrate an application for Partially Ordered Sets and Complete Lattices, in Computer Science (Cognitive Knowledge Level: Apply)
				CO5	Explain Generating Functions and solve First Order and Second Order Linear Recurrence Relations with Constant Coefficients , Illustrate the abstract algebraic systems - Semigroups, Monoids, Groups, Homomorphism and Isomorphism of Monoids and Groups(Cognitive Knowledge Level: Understand, Apply)
		CST 201	**DATA STRUCTURES**	**CO1**	Design an algorithm for a computational task and calculate the time/space complexities of that algorithm (Cognitive Knowledge Level: Apply)
				CO2	Identify the suitable data structure (array or linked list) to represent a data item required to be processed to solve a given computational problem and write an algorithm to find the solution of the computational problem (Cognitive Knowledge Level: Apply)
				CO3	Write an algorithm to find the solution of a computational problem by selecting an appropriate data structure (binary tree/graph) to represent a data item to be processed (Cognitive Knowledge Level: Apply)

				CO4	Store a given dataset using an appropriate Hash Function to enable efficient access of data in the given set (Cognitive Knowledge Level: Apply)
				CO5	Select appropriate sorting algorithms to be used in specific circumstances (Cognitive Knowledge Level: Analyze) and Design and implement Data Structures for solving real world problems efficiently (Cognitive Knowledge Level: Apply)
		CST 203	LOGIC SYSTEM DESIGN	CO1	Illustrate decimal, binary, octal, hexadecimal and BCD number systems, perform conversions among them and do the operations - complementation, addition, subtraction, multiplication and division on binary numbers (Cognitive Knowledge level: Understand)
				CO2	Simplify a given Boolean Function and design a combinational circuit to implement the simplified function using Digital Logic Gates (Cognitive Knowledge level: Apply)
				CO3	Design combinational circuits - Adders, Code Convertors, Decoders, Magnitude Comparators, Parity Generator/Checker and design the Programmable Logic Devices - ROM and PLA. (Cognitive Knowledge level: Apply)
				CO4	Design sequential circuits - Registers, Counters and Shift Registers. (Cognitive Knowledge level: Apply)
				CO5	Use algorithms to perform addition and subtraction on binary, BCD and floating point numbers (Cognitive Knowledge level: Understand)
	S3	CST 205	OBJECT ORIENTED PROGRAMMING USING JAVA	CO1	Write Java programs using the object oriented concepts - classes, objects, constructors, data hiding, inheritance and polymorphism (Cognitive Knowledge Level: Apply)
				CO2	Utilise datatypes, operators, control statements, built in packages & interfaces, Input/ Output Streams and Files in Java to develop programs (Cognitive Knowledge Level: Apply)
				CO3	Illustrate how robust programs can be written in Java using exception handling mechanism (Cognitive Knowledge Level: Understand)
				CO4	Write application programs in Java using multithreading and database connectivity (Cognitive Knowledge Level: Apply)
				CO5	Write Graphical User Interface based application programs by utilising event handling features and Swing in Java (Cognitive Knowledge Level: Apply)
				C01	Draw the projection of points and lines located in different quadrants

		EST 200	DESIGN AND ENGINEERING	C02	Prepare multiview orthographic projections of objects by visualizing them in different positions
				C03	Draw sectional views and develop surfaces of a given object
				C04	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
				C05	Convert 3D views to orthographic views, Obtain multiview projections and solid models of objects using CAD tools
		MCN 201	SUSTAINABLE ENGINEERING	CO1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
				CO2	Explain the different types of environmental pollution problems and their sustainable solutions
				CO3	Discuss the environmental regulations and standards
				CO4	Outline the concepts related to conventional and non-conventional energy
				CO5	Demonstrate the broad perspective of sustainable practices by utilizing engineering
		CSL 201	DATA STRUCTURES LAB	CO1	Examine a given Data Structure to determine its space complexity and time complexities of operations on it (Cognitive Knowledge Level: Apply)
				CO2	Design and implement an efficient data structure to represent given data (Cognitive Knowledge Level: Apply)
				CO3	Write a time/space efficient program to convert an arithmetic expression from one notation to another (Cognitive Knowledge Level: Apply) and linked lists to simulate Memory Allocation and Garbage Collection (Cognitive Knowledge Level: Apply)
				CO4	Realize how periodic functions are constituted by sinusoids
				CO5	Simulate random processes and understand their statistics
				CO1	Implement the Object Oriented concepts - constructors, inheritance, method overloading & overriding and polymorphism in Java (Cognitive Knowledge Level: Apply)

PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR

		CSL 203	OBJECT ORIENTED PROGRAMMING LAB (IN JAVA)	CO2	Implement programs in Java which use datatypes, operators, control statements, built in packages & interfaces, Input/Output streams and Files (Cognitive Knowledge Level: Apply)
				CO3	Implement robust application programs in Java using exception handling (Cognitive Knowledge Level: Apply)
				CO4	Implement application programs in Java using multithreading and database connectivity (Cognitive Knowledge Level: Apply)
				CO5	Implement Graphical User Interface based application programs by utilizing event handling features and Swing in Java (Cognitive Knowledge Level: Apply)
	S4	MAT 206	GRAPH THEORY	CO1	Explain vertices and their properties, types of paths, classification of graphs and trees & their properties. (Cognitive Knowledge Level: Understand)
				CO2	Demonstrate the fundamental theorems on Eulerian and Hamiltonian graphs. (Cognitive Knowledge Level: Understand)
				CO3	Illustrate the working of Prim's and Kruskal's algorithms for finding minimum cost spanning tree and Dijkstra's and Floyd-Warshall algorithms for finding shortest paths. (Cognitive Knowledge Level: Apply)
				CO4	Explain planar graphs, their properties and an application for planar graphs. (Cognitive Knowledge Level: Apply)
				CO5	Illustrate how one can represent a graph in a computer. (Cognitive Knowledge Level: Apply)
		HUT 200	PROFESSIONAL ETHICS	CO1	Understand the core values that shape the ethical behaviour of a professional.
				CO2	Adopt a good character and follow an ethical life.
				CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
				CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
				CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.
		MCN 202	CONSTITUTION OF INDIA	CO1	Understand the core values that shapes the ethical behaviour of a professional.
				CO2	Adopt a good character and follow an ethical life.
				CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
				CO4	Solve moral and ethical problems through exploration and assessment by established experiments.

				CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.
		CST 202	COMPUTER ORGANISATION AND ARCHITECTURE	CO1	Recognize and express the relevance of basic components, I/O organization and pipelining schemes in a digital computer (Cognitive knowledge: Understand)
				CO2	Explain the types of memory systems and mapping functions used in memory systems (Cognitive Knowledge Level: Understand)
				CO3	Demonstrate the control signals required for the execution of a given instruction (Cognitive Knowledge Level: Apply))
				CO4	Illustrate the design of Arithmetic Logic Unit and explain the usage of registers in it (Cognitive Knowledge Level: Apply)
				CO5	Explain the implementation aspects of arithmetic algorithms in a digital computer (Cognitive Knowledge Level:Apply) and control logic for a given arithmetic problem(Cognitive Knowledge Level: Apply)
		CST 204	DATABASE MANAGEMENT SYSTEMS	CO1	Summarize and exemplify fundamental nature and characteristics of database systems (Cognitive Knowledge Level: Understand)
				CO2	Model real word scenarios given as informal descriptions, using Entity Relationship diagrams. (Cognitive Knowledge Level: Apply)
				CO3	Model and design solutions for efficiently representing and querying data using relational model (Cognitive Knowledge Level: Analyze)
				CO4	Demonstrate the features of indexing and hashing in database applications (Cognitive Knowledge Level: Apply)
				CO5	Discuss and compare the aspects of Concurrency Control and Recovery in Database systems (Cognitive Knowledge Level: Apply) and explain various types of NoSQL databases (Cognitive Knowledge Level: Understand)
TION		CST 206	OPERATING SYSTEMS	CO1	Explain the relevance, structure and functions of Operating Systems in computing devices. (Cognitive knowledge: Understand)
				CO2	Illustrate the concepts of process management and process scheduling mechanisms employed in Operating Systems. (Cognitive knowledge: Understand)
				CO3	Explain process synchronization in Operating Systems and illustrate process synchronization mechanisms using Mutex Locks, Semaphores and Monitors (Cognitive knowledge: Understand)

KTU 2019 REGULA				CO4	Explain any one method for detection, prevention, avoidance and recovery for managing deadlocks in Operating Systems. (Cognitive knowledge: Understand)
				CO5	Explain the memory management algorithms in Operating Systems. (Cognitive knowledge: Understand) and storage management in Operating Systems. (Cognitive knowledge: Understand)
		CSL204	OPERATING SYSTEMS LAB	CO1	Illustrate the use of systems calls in Operating Systems. (Cognitive knowledge: Understand)
				CO2	Implement Process Creation and Inter Process Communication in Operating Systems. (Cognitive knowledge: Apply)
				CO3	Implement Fist Come First Served, Shortest Job First, Round Robin and Priority-based CPU Scheduling Algorithms. (Cognitive knowledge: Apply)
				CO4	Illustrate the performance of First In First Out, Least Recently Used and Least Frequently Used Page Replacement Algorithms. (Cognitive knowledge: Apply)
				CO5	Implement modules for Deadlock Detection and Deadlock Avoidance in Operating Systems. (Cognitive knowledge: Apply) and Implement modules for Storage Management and Disk Scheduling in Operating Systems. (Cognitive knowledge: Apply)
		CSL 202	DIGITAL LAB	CO1	Design and implement combinational logic circuits using Logic Gates (Cognitive Knowledge Level: Apply)
				CO2	Design and implement sequential logic circuits using Integrated Circuits (Cognitive Knowledge Level: Apply)
				CO3	Simulate functioning of digital circuits using programs written in a Hardware Description Language (Cognitive Knowledge Level: Apply)
				CO4	Function effectively as an individual and in a team to accomplish a given task of designing and implementing digital circuits (Cognitive Knowledge Level: Apply)
		CST 301	FORMAL LANGUAGES AND AUTOMATA THEORY	CO1	Classify a given formal language into Regular, Context-Free, Context Sensitive, Recursive or Recursively Enumerable. [Cognitive knowledge level: Understand]
				CO2	Explain a formal representation of a given regular language as a finite state automaton, regular grammar, regular expression and Myhill-Nerode relation. [Cognitive knowledge level: Understand]
				CO3	Design a Pushdown Automaton and a Context-Free Grammar for a given context-free language. [Cognitive knowledge level : Apply]
				CO4	Design Turing machines as language acceptors or transducers. [Cognitive knowledge level: Apply]

				CO5	Explain the notion of decidability. [Cognitive knowledge level: Understand]
		CST 303	COMPUTER NETWORKS	CO1	Explain the features of computer networks, protocols, and network design models (Cognitive Knowledge: Understand) and describe the fundamental characteristics of the physical layer and identify the usage in network communication (Cognitive Knowledge: Apply)
				CO2	Explain the design issues of data link layer, link layer protocols, bridges and switches (Cognitive Knowledge: Understand)
				CO3	Illustrate wired LAN protocols (IEEE 802.3) and wireless LAN protocols (IEEE 802.11) (Cognitive Knowledge: Understand)
				CO4	Select appropriate routing algorithms, congestion control techniques, and Quality of Service requirements for a network (Cognitive Knowledge: Apply)
				CO5	Illustrate the functions and protocols of the network layer, transport layer, and application layer in inter-networking (Cognitive Knowledge: Understand)
		CST 305	SYSTEM SOFTWARE	CO1	Distinguish softwares into system and application software categories. (Cognitive Knowledge Level: Understand)
				CO2	Identify standard and extended architectural features of machines. (Cognitive Knowledge Level: Apply)
				CO3	Identify machine dependent features of system software (Cognitive Knowledge Level: Apply)
				CO4	Identify machine independent features of system software. (Cognitive Knowledge Level: Understand)
				CO5	Design algorithms for system softwares and analyze the effect of data structures. (Cognitive Knowledge Level: Apply) and understand the features of device drivers and editing & debugging tools.(Cognitive Knowledge Level: Understand)
		CST 307	MICROPROCESSORS AND MICROCONTROLLERS	CO1	Illustrate the architecture, modes of operation and addressing modes of microprocessors (Cognitive knowledge: Understand)
				CO2	Develop 8086 assembly language programs. (Cognitive Knowledge Level: Apply)
				CO3	Demonstrate interrupts, its handling and programming in 8086. (Cognitive Knowledge Level: Apply))
				CO4	Illustrate how different peripherals (8255,8254,8257) and memory are interfaced with microprocessors. (Cognitive Knowledge Level: Understand)
				CO5	Outline features of microcontrollers and develop low level programs. (Cognitive Knowledge Level: Understand)
	S5			CO1	Demonstrate Traditional and Agile Software Development approaches (Cognitive Knowledge Level: Apply)

		CST 309	MANAGEMENT OF SOFTWARE SYSTEMS	CO2	Prepare Software Requirement Specification and Software Design for a given problem. (Cognitive Knowledge Level: Apply)
				CO3	Justify the significance of design patterns and licensing terms in software development, prepare testing, maintenance and DevOps strategies for a project. (Cognitive Knowledge Level: Apply)
				CO4	Make use of software project management concepts while planning, estimation, scheduling, tracking and change management of a project, with a traditional/agile framework. (Cognitive Knowledge Level: Apply)
				CO5	Utilize SQA practices, Process Improvement techniques and Technology advancements in cloud based software models and containers & microservices. (Cognitive Knowledge Level: Apply)
		MCN 301	DISASTER MANAGEMENT	CO1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle (Cognitive knowledge level: Understand).
				CO2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment (Cognitive knowledge level: Understand).
				CO3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk (Cognitive knowledge level: Understand).
				CO4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community (Cognitive knowledge level: Apply)
				CO5	Explain the various legislations and best practices for disaster management and risk reduction at national and international level (Cognitive knowledge level: Understand).
		CSL 331	SYSTEM SOFTWARE AND MICROPROCESSORS LAB	CO1	Develop and execute programs to interface stepper motor, 8255, 8279 and digital to analog converters with 8086 trainer kit (Cognitive Knowledge Level: Apply)
				CO2	Implement and execute different scheduling and paging algorithms in OS (Cognitive Knowledge Level: Apply)
				CO3	Design and implement assemblers, Loaders and macroprocessors. (Cognitive Knowledge Level: Apply)
				CO4	Implement FIR low pass filter.
				CO5	Implement real time LTI systems with block convolution and FFT
				CO1	Design database schema for a given real world problem-domain using standard design and modeling approaches. (Cognitive Knowledge Level: Apply)
				CO2	Construct queries using SQL for database creation, interaction, modification, and updation. (Cognitive Knowledge Level: Apply)

		CSL 333	DATABASE MANAGEMENT SYSTEMS LAB	CO3	Design and implement triggers and cursors. (Cognitive Knowledge Level: Apply)
				CO4	Implement procedures, functions, and control structures using PL/SQL. (Cognitive Knowledge Level: Apply)
				CO5	Perform CRUD operations in NoSQL Databases. (Cognitive Knowledge Level: Apply) and database applications using front-end tools and back-end DBMS. (Cognitive Knowledge Level: Create)
		CST 302	COMPILER DESIGN	CO1	Explain the phases in compilation process(lexical analysis, syntax analysis, semantic analysis, intermediate code generation, code optimization and code generation) and model a lexical analyzer (Cognitive Knowledge Level: Apply)
				CO2	Model language syntax using Context Free Grammar and develop parse tree representation using leftmost and rightmost derivations (Cognitive Knowledge Level: Apply)
				CO3	Compare different types of parsers(Bottom-up and Top-down) and construct parser for a given grammar (Cognitive Knowledge Level: Apply)
				CO4	Build Syntax Directed Translation for a context free grammar, compare various storage allocation strategies and classify intermediate representations (Cognitive Knowledge Level: Apply)
				CO5	Illustrate code optimization and code generation techniques in compilation (Cognitive Knowledge Level: Apply)
		CST 304	COMPUTER GRAPHICS AND IMAGE PROCESSING	CO1	Describe the working principles of graphics devices(Cognitive Knowledge level: Understand)
				CO2	Illustrate line drawing, circle drawing and polygon filling algorithms(Cognitive Knowledge level: Apply)
				CO3	Demonstrate geometric representations, transformations on 2D & 3D objects, clipping algorithms and projection algorithms(Cognitive Knowledge level: Apply)
				CO4	Summarize visible surface detection methods(Cognitive Knowledge level: Understand)
				CO5	Summarize the concepts of digital image representation, processing and demonstrate pixel relationships(Cognitive Knowledge level: Apply) and solve image enhancement and segmentation problems using spatial domain techniques(Cognitive Knowledge level: Apply)
				CO2	Derive recurrence equations and solve it using Iteration, Recurrence Tree, Substitution and Master's Method to compute time complexity of algorithms. (Cognitive Level: Apply)
				CO3	Illustrate Graph traversal algorithms & applications and Advanced Data structures like AVL trees and Disjoint set operations. (Cognitive Level: Apply)

		CST 306	ALGORITHM ANALYSIS AND DESIGN	CO4	Demonstrate Divide-and-conquer, Greedy Strategy, Dynamic programming, Branch-and Bound and Backtracking algorithm design techniques (Cognitive Level: Apply)
				CO5	Classify a problem as computationally tractable or intractable, and discuss strategies to address intractability (Cognitive Level: Understand) and identify the suitable design strategy to solve a given problem. (Cognitive Level: Analyze)
				CO6	Understand encoding and decoding of convolution and LDPC codes
	S6	CST 308	COMPREHENSIVE COURSE WORK	CO1	Comprehend the concepts of discrete mathematical structures (Cognitive Knowledge Level: Understand)
				CO2	Comprehend the concepts and applications of data structures (Cognitive Knowledge Level: Understand)
				CO3	Comprehend the concepts, functions and algorithms in Operating System (Cognitive Knowledge Level: Understand))
				CO4	Comprehend the organization and architecture of computer systems (Cognitive Knowledge Level: Understand)
				CO5	Comprehend the fundamental principles of database design and manipulation (Cognitive Knowledge Level: Understand) and comprehend the concepts in formal languages and automata theory Cognitive Knowledge Level: Understand)
		CSL 332	NETWORKING LAB	CO1	Use network related commands and configuration files in Linux Operating System. (Cognitive Knowledge Level: Understand).
				CO2	Develop network application programs and protocols. (Cognitive Knowledge Level: Apply)
				CO3	Analyze network traffic using network monitoring tools. (Cognitive Knowledge Level: Apply)
				CO4	Design and setup a network and configure different network protocols. (Cognitive Knowledge Level: Apply)
				CO5	Develop simulation of fundamental network concepts using a network simulator. (Cognitive Knowledge Level: Apply)
		CSD 334	MINI PROJECT	CO1	Identify technically and economically feasible problems (Cognitive Knowledge Level: Apply)
				CO2	Identify and survey the relevant literature for getting exposed to related solutions and get familiarized with software development processes (Cognitive Knowledge Level: Apply)
				CO3	Perform requirement analysis, identify design methodologies and develop adaptable & reusable solutions of minimal complexity by using modern tools & advanced programming techniques (Cognitive Knowledge Level: Apply)

				CO4	Prepare technical report and deliver presentation (Cognitive Knowledge Level: Apply)
				CO5	Apply engineering and management principles to achieve the goal of the project (Cognitive Knowledge Level: Apply)
		HUT 300	INDUSTRIAL ECONOMICS AND FOREIGN TRADE	CO1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
				CO2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production. (Cognitive knowledge level: Apply)
				CO3	Determine the functional requirement of a firm under various competitive conditions. (Cognitive knowledge level: Analyse)
				CO4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
				CO5	Determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)
		CST 372	DATA AND COMPUTER COMMUNICATION	CO1	Identify the characteristics of signals for analog and digital transmissions (Cognitive knowledge: Apply)
				CO2	Identify the issues in data transmission (Cognitive knowledge: Apply)
				CO3	Select transmission media based on characteristics and propagation modes (Cognitive knowledge: Apply)
				CO4	Choose appropriate signal encoding techniques for a given scenario (Cognitive knowledge: Apply)
				CO5	Illustrate multiplexing and spread spectrum technologies (Cognitive knowledge: Apply) and error detection, correction and switching techniques in data communication (Cognitive knowledge: Apply)
		CST401	ARTIFICIAL INTELLIGENCE	CO1	Explain the fundamental concepts of intelligent systems and their architecture. (Cognitive Knowledge Level: Understanding)
				CO2	Illustrate uninformed and informed search techniques for problem solving in intelligent systems. (Cognitive Knowledge Level: Understanding)
				CO3	Solve Constraint Satisfaction Problems using search techniques. (Cognitive Knowledge Level: Apply)
				CO4	Represent AI domain knowledge using logic systems and use inference techniques for reasoning in intelligent systems. (Cognitive Knowledge Level: Apply)
				CO5	Illustrate different types of learning techniques used in intelligent systems (Cognitive Knowledge Level: Understand)

S7	CST423	CLOUD COMPUTING	CO1	Explain the various cloud computing models and services. (Cognitive Knowledge Level: Understand)
			CO2	Demonstrate the significance of implementing virtualization techniques. (Cognitive Knowledge Level: Understand)
			CO3	Explain different cloud enabling technologies and compare private cloud platforms (Cognitive Knowledge Level: Understand)
			CO4	Apply appropriate cloud programming methods to solve big data problems. (Cognitive Knowledge Level: Apply)
			CO5	Describe the need for security mechanisms in cloud (Cognitive Knowledge Level: Understand) and compare the different popular cloud computing platforms (Cognitive Knowledge Level: Understand)
	CST433	SECURITY IN COMPUTING	CO1	Identify the security services provided against different types of security attacks. (Cognitive Knowledge Level: Understand)
			CO2	Illustrate classical encryption techniques for information hiding. (Cognitive Knowledge Level: Apply)
			CO3	Illustrate symmetric/asymmetric key cryptosystems for secure communication. (Cognitive Knowledge Level: Apply)
			CO4	Explain message integrity and authentication methods in a secure communication scenario. (Cognitive Knowledge Level: Understand)
			CO5	Interpret public/secret key distribution techniques for secure communication. (Cognitive Knowledge Level: Understand)and identify the effects of intruders, malicious software and distributed denial of service attacks on system security. (Cognitive Knowledge Level: Understand).
	CSL411	COMPILER LAB	CO1	Implement lexical analyzer using the tool LEX. (Cognitive Knowledge Level: Apply)
			CO2	Implement Syntax analyzer using the tool YACC. (Cognitive Knowledge Level: Apply)
			CO3	Design NFA and DFA for a problem and write programs to perform operations on it. (Cognitive Knowledge Level: Apply)
			CO4	Design and Implement Top-Down parsers. (Cognitive Knowledge Level: Apply)
			CO5	Design and Implement Bottom-Up parsers. (Cognitive Knowledge Level: Apply) and implement intermediate code for expressions. (Cognitive Knowledge Level: Apply)
			CO1	Identify academic documents from the literature which are related to her/his areas of interest (Cognitive knowledge level: Apply).
			CO2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest (Cognitive knowledge level: Analyze).

		CSQ413	SEMINAR	CO3	Prepare a presentation about an academic document (Cognitive knowledge level: Create).
				CO4	Give a presentation about an academic document (Cognitive knowledge level: Apply).
				CO5	Prepare a technical report (Cognitive knowledge level:Create).
		ECD 415	PROJECT PHASE 1	CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
				CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze) and organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply)
		CET 415	ENVIRONMENTAL IMPACT ASSESSMENT	CO1	Explain the need for minimizing the environmental impacts of developmental activities(Cognitive knowledge level: Understanding,Remembering).
				CO2	Outline environmental legislation & clearance procedure in the country (Cognitive knowledge level: Understanding,Remembering).
				CO3	Apply various methodologies for assessing the environmental impacts of any developmental activity(Cognitive knowledge level: Understanding,Remembering).
				CO4	Conduct an environmental audit(Cognitive knowledge level: Understanding,Remembering).
				CO5	Prepare an environmental impact assessment report(Cognitive knowledge level: Understanding,Remembering).
		CST402	DISTRIBUTED COMPUTING	CO1	Summarize various aspects of distributed computation model and logical time. (Cognitive Knowledge Level: Understand)
				CO2	Illustrate election algorithm, global snapshot algorithm and termination detection algorithm. (Cognitive Knowledge Level: Apply)
				CO3	Compare token based, non-token based and quorum based mutual exclusion algorithms. (Cognitive Knowledge Level: Understand)
				CO4	Recognize the significance of deadlock detection and shared memory in distributed systems. (Cognitive Knowledge Level: Understand)
				CO5	Explain the concepts of failure recovery and consensus. (Cognitive Knowledge Level: Understand) and illustrate distributed file system architectures. (Cognitive Knowledge Level: Understand)
				CO1	Explain the criteria for evaluating programming languages and compare Imperative, Functional and Logic programming languages (Cognitive Knowledge Level: Understand)
				CO2	Illustrate the characteristics of data types and variables (Cognitive Knowledge Level: Apply)

		CST 424	PROGRAMMING PARADIGMS	CO3	Comprehend how control flow structures and subprograms help in developing the structure of a program to solve a computational problem (Cognitive Knowledge Level: Apply)
				CO4	Explain the characteristics of Object-Oriented Programming Languages (Cognitive Knowledge Level: Understand)
				CO5	Compare concurrency constructs in different programming languages (Cognitive Knowledge Level: Understand)
		CST434	NETWORK SECURITY PROTOCOLS	CO1	Explain authentication protocols, X.509 authentication service and Public Key Infrastructure (PKI).(Cognitive Knowledge Level: Understand)
				CO2	Identify the security mechanisms in E mail security services. (Cognitive Knowledge Level: Understand)
				CO3	Summarize the network and transport layer security services provided in a secure communication scenario. (Cognitive Knowledge Level: Apply)
				CO4	Describe real time communication security and application layer security protocols. (Cognitive Knowledge Level: Apply)
				CO5	Explain the concepts of firewalls and wireless network security. (Cognitive Knowledge Level: Understand)
		CST466	DATA MINING	CO1	Employ the key process of data mining and data warehousing concepts in application domains. (Cognitive Knowledge Level: Understand)
				CO2	Make use of appropriate preprocessing techniques to convert raw data into suitable format for practical data mining tasks (Cognitive Knowledge Level: Apply)
				CO3	Illustrate the use of classification and clustering algorithms in various application domains (Cognitive Knowledge Level: Apply)
				CO4	Comprehend the use of association rule mining techniques. (Cognitive Knowledge Level: Apply)
				CO5	Explain advanced data mining concepts and their applications in emerging domains (Cognitive Knowledge Level: Understand)
		CST476	MOBILE COMPUTING	CO1	Describe the various technology trends for next generation cellular wireless networks and use the spreading concept on data transmission (Cognitive knowledge: Apply)
				CO2	Summarize the architecture of various wireless LAN technologies (Cognitive knowledge: Understand)
				CO3	Identify the functionalities of mobile network layer and transport layer (Cognitive knowledge: Understand)
				CO4	Explain the features of Wireless Application Protocol (Cognitive knowledge: Understand) and interpret the security issues in mobile computing and next generation technologies (Cognitive knowledge: Understand)

				CO5	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply).
		CST448	INTERNET OF THINGS	CO1	Outline the fundamentals of IoT and its underlying physical and logical architecture(Cognitive Knowledge Level: Understand)
				CO2	Explain the hardware architectures for IoT (Cognitive Knowledge Level : Understand)
				CO3	Outline the Network architectures for IoT(Cognitive Knowledge Level : Understand)
				CO4	Implement data analytics on the IoT platforms (Cognitive Knowledge Level : Apply)
				CO5	Appreciate the security considerations in IoT (Cognitive Knowledge Level : Understand) and implement IoT applications using the available hardware and software.
		ECD 416	PROJECT PHASE II	CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: Apply).
				CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).
				CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).
				CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
				CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze) and organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply).

HOD

Dr. LEENA A. V.
PRINCIPAL
SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR
KANNUR