CRITERION 2 – TEACHING LEARNING AND EVALUATION

KEY INDICATOR 2.6 – STUDENTS PERFORMANCE AND LEARNING OUTCOMES

Metric No 2.6.1. Programme and course outcomes offered by the institution are stated and displayed on website and communicated to teachers and students.

NPR COLLEGE OF ENGG. & TECHNOLOGY * NATHAM

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DEPARTMENT OF CIVIL ENGINEERING
COURSE OUT COME REGULATION 2017

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	**HS8151 - COMMUNICATIVE ENGLISH**	C101.1	Enhance their reading and technical writing skills in the first year itself	K2
			C101.2	Comfortably read and understand articles in science and Engineering journals and articles in dailies	K2
			C101.3	Get themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
			C101.4	Communicate effectively in short conversations and talks uttered in English	K4
			C101.5	Draft essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4
2	I / I	**MA8151 - ENGINEERING MATHEMATICS - I**	C102.1	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.2	Solve the problems of integrals using different methods of calculus.	K5
			C102.3	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.4	Analyze the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K4
			C102.5	Apply various tools in solving the differential equations to recognize the need for life-long learning.	K3
3	I / I	**PH8151 - ENGINEERING**	C103.1	Analyse the problems in columns and beams and gain the engineering knowledge in properties of matter to formulate.	K4

		PHYSICS	C103.2	Understand the fundamental concepts and applications of waves, lasers and fiber optics to give theoretical approaches to design modern devices.	K2
			C103.3	Interpret the knowledge in thermal properties of materials and can determined expansion joints and heat exchangers in devices.	K3
			C103.4	Understand the fundamental concepts of quantum theory and how modern electron microscope techniques use it to make predictions in the field of physics.	K2
			C103.5	Appreciate the behavior of solids, describe the fundamentals of crystals, their structures, and the various crystal development processes.	K2
4	**I / I**	**CY8151 - ENGINEERING CHEMISTRY**	C104.1	Apply the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge.	K3
			C104.2	Understand the adsorption methods used in the field of water and air pollution purification to assess societal, health, safety and cultural issues in the environmental. .	K2
			C104.3	Know the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy.	K2
			C104.4	Discuss the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K4
			C104.5	Review the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate consideration for the societal and environmental considerations.	K2
5	**I / I**	**GE8151- PROBLEM SOLVING AND PYTHON**	C105.1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	K2
			C105.2	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C105.3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings.	K3
			C105.4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C105.5	Develop python programs for solving computational problems by using modules, files, and python packages	K3

6	**I / I**	**GE8152-ENGINEERING GRAPHICS**	C106.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models	K3
			C106.2	**Apply** the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K2
			C106.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K3
			C106.4	**Practice** the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C106.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K6
7	**I / I**	**GE8161-PROBLEM SOLVING AND PYTHON LAB**	C107.1	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C107.2	Develop Python programs using conditionals, looping, functions, and strings for solving real-time computational problems.	K3
			C107.3	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C107.4	Develop python programs for solving problems by using modules, files, and python packages	K3
			C107.5	Utilize Python packages for developing real-world software applications	K6
8	**I / I**	**BS8161 - PHYSICS AND CHEMISTRY LABORATORY**	C108.1	Manipulate the fundamental concepts like torque, elasticity and bending moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus of the material of the beam by non-uniform bending.	K3
			C108.2	Practice the fundamentals of thermal properties of material of the bad conductor by Lee's disc method.	K3
			C108.3	Understand the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	K2
			C108.4	Dramatize the strength of an acid using pH meter and conductometer for applications in the field of engineering.	K3
			C108.5	Experimenting the estimation of total, permanent and temporary hardness of water for our environment.	K3

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS8251 - TECHNICAL ENGLISH	C109.1	Read and write their technical and area-specific texts in an effortless manner	K3
			C109.2	Listen comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
			C109.3	Speak in an appropriate manner in both formal and informal situations for lifelong learning	K3
			C109.4	Create CVs and draft Job applications in confident manner	K6
			C109.5	Communicate confidently by using all the four skills with their peers and in real life situations	K4
2	I / II	MA8251 - ENGINEERING MATHEMATICS - II	C110.1	Analyze the different types of matrices for solving practical problems.	K4
			C110.2	Apply Gradient, divergence and curl of a vector point function and related identities in engineering field.	K3
			C110.3	Acquire the knowledge to solve the engineering problems in analytic functions	K2
			C110.4	Analyze and apply the different methods to solve complex integration problems.	K4
			C110.5	Create and manage the projects after applying and analyzing the fundamentals of Laplace transforms	K6
3	I / II	PH8201 - PHYSICS FOR CIVIL ENGINEERING	C111.1	Analyze the thermal performance of buildings.	K2
			C111.2	Acquire knowledge on the acoustic properties of buildings.	K1
			C111.3	Understand the various lighting design of buildings.	K2
			C111.4	Knowledge on the properties and performace of engineering matrials	K3

			C111.5	Understand the Hazards of buildings.	K2
4	**I / II**	**BE8251 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**	C112.1	Understand the electrical circuit and their working principles	K2
			C112.2	Identify the electrical components of a machines and their applications	K2
			C112.3	Explain the characteristics of the electrical machines	K2
			C112.4	Identify the digital electronics circuits and their components	K2
			C112.5	Explain the fundamentals of communication systems	K2
5	**I / II**	**GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING**	C113.1	Apply the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	K3
			C113.2	Understand the impact of the professional engineering solutions in societal and environmental contexts for the importance of Public participation in conservation of natural resources.	K2
			C113.3	Discuss the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K2
			C113.4	Learning the concepts from unsustainable to sustainable development and urban problems related to energy , water conservation, rain water harvesting.	K2
			C113.5	Apply the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	K3
6	**I / II**	**GE8292 - ENGINEERING MECHANICS**	C114.1	Iilustrate the vectorial and scalar representation of forces and moments	K2
			C114.2	Analyse the rigid body in equilibrium	K3
			C114.3	Evaluate the properties of surfaces and solids	K4
			C114.4	Calculate dynamic forces exerted in rigid body	K3
			C114.5	Determine the friction and the effects by the laws of friction	K3

7	**I / II**	**GE8261 - ENGINEERING PRACTICES LABORATORY**	C115.1	**Construct** Electrical and Electronic circuits.	K6
			C115.2	**Examine** different types of electronic circuits and components.	K3
			C115.3	**Recognize** electrical safety rules, grounding, general house wiring.	K6
			C115.4	**Explore** soldering practices.	K3
			C115.1	**Construct** Electrical and Electronic circuits.	K6
8	**I / II**	**CE8211 - COMPUTER AIDED BUILDING DRAWING Laboratory**	C116.1	Draft the plan, elevation and sectional views of the buildings, using computer softwares	K3
			C116.2	Draft the plan, elevation and sectional views of the industrial structures using computer softwares	K3
			C116.3	Draft the plan, elevation and sectional views of the framed buildings using computer softwares	K3

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / III	MA8353 - TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	C201.1	Solve First, Second order homogeneous and non homogeneous partial differential equations	K3
			C201.2	Find the Fourier series of a given function satisfying Dirchlet's condition.	K2
			C201.3	Apply Fourier series to solve one dimensional wave, one and two dimensional heat equations.	K3
			C201.4	Determine Fourier transform for a given function and use them to evaluate certain definite Integrals	K2
			C201.5	Determine z transforms of standard functions and use them to solve difference equations	K3
2	II / III	CE8301 - STRENGTH OF MATERIALS I	C202.1	Understand the concepts of stress and strain, principal stresses and principal planes.	K2
			C202.2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.	K4
			C202.3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.	K4
			C202.4	Apply basic equation of torsion in design of circular shafts and helical springs.	K3
			C202.5	Analyze the pin jointed plane and space trusses	K4
3	II / III	CE8302 - FLUID MECHANICS	C203.1	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.	K2
			C203.2	Understand and solve the problems related to equation of motion.	K3
			C203.3	Gain knowledge about dimensional and model analysis.	K3

			C203.4	Learn types of flow and losses of flow in pipes.	K2
			C203.5	Understand and solve the boundary layer problems.	K3
4	**II / III**	**CE8351 - SURVEYING**	C204.1	The use of various surveying instruments and mapping	K2
			C204.2	Measuring Horizontal angle and vertical angle using different instruments	K3
			C204.3	Methods of Leveling and setting Levels with different instruments	K2
			C204.4	Understand the Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth.	K3
			C204.5	Understand the Concept and principle of modern surveying.	K2
5	**II / III**	**CE8391 CONSTRUCTION MATERIALS**	C205.1	Compare the properties of most common and advanced building materials.	K2
			C205.2	Understand the typical and potential applications of lime, cement and aggregates	K2
			C205.3	Know the production of concrete and also the method of placing and making of concrete elements.	K2
			C205.4	Understand the applications of timbers and other materials	K2
			C205.5	Understand the importance of modern material for construction.	K2
6	**II / III**	**GE8392- ENGINEERING GEOLOGY**	C206.1	Explain the importance of geology and compare the geological features with engineering importance.	K2
			C206.2	Explain about the types of various minerals.	K2
			C206.3	Apply knowledge regarding the underline rock formation to get complete idea about igneous, sedimentary and metamorphic rock	K2
			C206.4	Explain about fault, folds, unconformity and joints which are present in the strata of the earth crest,	K2

				by which they can able to compare the particular area with their construction site or engineering projects.	
			C206.5	Apply knowledge related with the dams, tunnels, bridges and reservoir with the help of these they can be able to apply their knowledge for making of their engineering projects	K2
7	**II / III**	**CE8311-CONSTRUCTION MATERIALS LABORATORY**	C207.1	The students will have the required knowledge in the area of testing of construction materials	K4
			C207.2	The students will have the required knowledge in components of construction elements experimentally.	K4
			C207.3	The students will have the required knowledge in the area of testing of concrete	K4
8	**I / II**	**CE8361 - SURVEY LAB**	C208.1	Acquired practical knowledge on handling basic survey instruments including Theodolite, Tacheometry.	K4
			C208.2	Acquired practical knowledge on handling basic survey instruments including Total Station and GPS	K4
			C208.3	Knowledge to carryout Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc.	K4
9	**I / II**	**HS8381 - INTERPERSONAL SKILLS/LISTENING &SPEAKING**	C209.1	Speak effectively on various academic topics and respond to questions.	K2
			C209.2	Converse effectively with the use of conversation starters and discourse markers.	K6
			C209.3	Listen and respond to various academic dialogues and discussions	K2
			C209.4	Participate confidently and appropriately in informal and formal conversations and group discussions.	K6
			C209.5	Use a range of presentation tools like PPT, Videos, and Charts etc. to make an engaging presentation.	K6

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / IV	MA8491- NUMERICAL METHODS	C210.1	Determine the solution of algebraic and transcendental system of linear equations	K3
			C210.2	To interpolate the values of unknown functions using Newton's Formula	K3
			C210.3	Estimate the numerical values of the derivatives and integrals of unknown function.	K3
			C210.4	Solve first and second order initial value problem	K3
			C210.5	Solve Numerically boundary value problem	K3
2	II / IV	CE8401- CONSTRUCTION TECHNIQUES, EQUIPMENTS & PRACTICES.	C211.1	Explain the different construction techniques and structural systems	K2
			C211.2	Understand various techniques and practices on masonry construction, flooring, and roofing.	K2
			C211.3	Plan the requirements for substructure construction.	K3
			C211.4	Choose the methods and techniques requireed for the construction of various types of super structures	K3
			C211.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites	K3
3	II / IV	CE8402 STRENGTH OF MATERIALS II	C212.1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.	K4
			C212.2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.	K4

			C212.3	Examine the load carrying capacity of columns and stresses induced in columns and cylinders.	K4
			C212.4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure	K4
			C212.5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams	K3
4	**II / IV**	**CE8403 APPLIED HYDRAULIC ENGINEERING**	C213.1	Apply their knowledge of fluid mechanics in addressing problems in open channels.	K3
			C213.2	Solve problems in uniform, gradually varied flows in steady state conditions.	K3
			C213.3	Solve problems in uniform, rapidly varied flows in steady state conditions.	K3
			C213.4	Understand the principles, working and application of turbines.	K3
			C213.5	Understand the principles, working and application of pumps.	K3
5	**II / IV**	**CE8404 CONCRETE TECHNOLOGY**	C214.1	Summarize the various requirements of cement, aggregates and water for making concrete	K2
			C214.2	Illustrate the effect of admixtures on properties of concrete	K2
			C214.3	Understand The concept and procedure of mix design as per IS method	K2
			C214.4	Outline the properties of concrete at fresh and hardened state	K2
			C214.5	Explain the importance and application of special concretes.	K2
6	**II / IV**	**CE8491SOIL MECHANICS**	C215.1	Classify the soil and assess the engineering properties, based on index properties.	K2
			C215.2	Understand the stress concepts in soils	K2
			C215.3	Understand and identify the settlement in soils.	K2

			C215.4	Determine the shear strength of soil	K3
			C215.5	Analyze both finite and infinite slopes	K4
7	**II / IV**	**CE8481 STRENGTH OF MATERIALS LABORATORY**	C216.1	Analyze the various stresses on mild steel rod by conducting tension and torsion tests	K4
			C216.2	Identify deflection test of metals and carriage springs	K3
			C216.3	Test for compression strength of wood and helical springs	K4
			C216.4	Compare hardness and impact strength of different metals	K4
8	**II / IV**	**CE8461 APPLIED HYDRAULIC ENGINEERING LABORATORY**	C217.1	Identify the flow in pipes	K3
			C217.2	Examine the frictional losses in pipes	K4
			C217.3	Develop characteristics of pumps	K3
			C217.4	Develop characteristics of turbines	K3
9	**II / IV**	**HS8461 ADVANCED READING AND WRITING LAB**	C218.1	Strengthen the reading skills	K2
			C218.2	Enhance the technical writing skills	K3
			C218.3	Develop proposal writing skills	K6
			C218.4	Write winning job applications.	K2

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	III / V	CE8501DESIGN OF REINFORCED CONCRETE STRUCTURES	C301.1	Understand the various design methodologies for the design of RC elements.	K3
			C301.2	Analyse and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.	K4
			C301.3	Analyse and design the various types of slabs and staircase by limit state method.	K4
			C301.4	Analyse and design columns for axial, uniaxial and biaxial eccentric loadings.	K4
			C301.5	Analyse and design of footing by limit state method.	K4
2	III / V	CE8502 STRUCTURAL ANALYSIS I	C302.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method	K3
			C302.2	Analyse the continuous beams and rigid frames by slope defection method.	K3
			C302.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.	K3
			C302.4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.	K3
			C302.5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.	K3
3	III / V	EN8491 WATER SUPPLY	C303.1	Understand an insight into the structure of drinking water supply systems, including water transport, treatment and distribution	K2

		ENGINEERING	C303.2	Learn about intake structure, pipe materials ,pumps	K2
			C303.3	Gain knowledge in various unit operations and processes in water treatment,	K3
			C303.4	Design the various functional units in water treatment(primary treatment)	K2
			C303.5	Gain knowledge in various unit operations and processes in water treatment,	K3
4	**III / V**	**CE8591 FOUNDATION ENGINEERING**	C304.1	Design the various functional units in water treatment(secondary treatment)	K2
			C304.2	Understand about the water distribution system and analyse the pipe network	K3
			C304.3	Design shallow footings.	K3
			C304.4	Determine the load carrying capacity, settlement of pile foundation.	K3
			C304.5	Determine the earth pressure on retaining walls and analysis for stability.	K3
5	**II / IV**	**GI8013 ADVANCED SURVEYING**	C305.1	Know the astronomical surveying concepts &Various Problems.	K3
			C305.2	Understand the concept of photogrammetric surveying and interpretation	K2
			C305.3	Solve the field problems with Totalstation	K2
			C305.4	Know the GPS surveying and the data processing	K2
			C305.5	Design the route surveys and tunnel alignments	K3
6	**III / V**	**OAI551 ENVIRONMENT AND AGRICULTURE**	C306.1	Understand the environmental concerns in agriculture	K2
			C306.2	Understand the environmental impacts in modernized agriculture	K2

			C306.3	Understand the climate change and water scarcity problems in our environment	K2
			C306.4	Understand the Genenitically modified crops,Ecological diversity in our environment	K2
			C306.5	Understand the emerging issues in global environmetal concerns and alternate culture system	K2
7	**III / V**	**CE8511SOIL MECHANICS Laboratory**	C307.1	Conduct tests to determine both the index and engineering properties of soils	K4
			C307.2	Interpreting the shear strength of all types of soils by conducting lab tests	K4
			C307.3	Conduct tests to determine characterize the soil based on their properties.	K4
8	**III / V**	**CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY**	C308.1	Quantify the pollutant concentration in water and wastewater	K3
			C308.2	Suggest the type of treatment required and amount of dosage required for the treatment	K3
			C308.3	Examine the conditions for the growth of micro-organisms	K4
9	**III / V**	**CE8513 SURVEY CAMP**	C309.1	Applying the concepts of surveying	K3
			C309.2	Applying the practical experience of the realities in the field of Surveying	K3
			C309.3	Applying the concepts complexities involved in the field of Surveying	K3

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	III / VI	CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS	C310.1	Understand the concepts of various design philosophies	K2
			C310.2	Design common bolted and welded connections for steel structures	K3
			C310.3	Design tension members and understand the effect of shear lag.	K3
			C310.4	Understand the design concept of axially loaded columns and column base connections.	K3
			C310.5	Understand specific problems related to the design of laterally restrained and unrestrained steel beams	K3
2	III / VI	CE8602 STRUCTURAL ANALYSIS - II	C311.1	Draw influence lines for statically determinate structures and calculate critical stress resultants.	K3
			C311.2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.	K3
			C311.3	Analyse of three hinged, two hinged and fixed arches.	K4
			C311.4	Analyse the suspension bridges with stiffening girders	K4
			C311.5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.	K3
3	III / VI	CE8603 IRRIGATION ENGINEERING	C312.1	understand the knowledge and skills on crop water requirements.	K2
			C312.2	Understand the methods and management of irrigation.	K2

			C312.3	Gain knowledge on types of Impounding structures	K2
			C312.4	Understand methods of irrigation including canal irrigation.	K2
			C312.5	Get knowledge on water management on optimization of water use.	K2
4	**III / VI**	**CE8604 HIGHWAY ENGINEERING**	C313.1	Understand the planning and aligning of highway.	K2
			C313.2	Understand the Geometric design of highways	K3
			C313.3	Understand the Design flexible and rigid pavements.	K3
			C313.4	Gain the knowledge on Highway construction materials, properties, testing methods	K2
			C313.5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.	K2
5	**III / VI**	**EN8592 WASTE WATER ENGINEERING**	C314.1	estimate sewage generation and design sewer system including sewage pumping stations , the characteristics and composition of sewage, self-purification of streams	K3
			C314.2	perform basic design of the unit operations and processes - primary treatment of sewage that are used in sewage treatment	K3
			C314.3	perform basic design of the unit operations and processe- secondary treatment of sewage that are used in sewage treatment	K3
			C314.4	Understand the standard methods for disposal of sewage	K2
			C314.5	Gain knowledge on sludge treatment and disposal.	K2
6	**III / VI**	**CE8001 GROUND IMPROVEMENT TECHNIQUES**	C315.1	Gain knowledge on methods and selection of ground improvement techniques	K2
			C315.2	Understand dewatering techniques and design for simple cases.	K2

			C315.3	Get knowledge on insitu treatment of cohesionless and cohesive soils	K3
			C315.4	Understand the concept of earth renforcement and design of reinforced earth	K3
			C315.5	Get to know types of grouts and grouting technique.	K3
7	**III / VI**	**CE8611 HIGHWAY ENGINEERING LABORATORY**	C316.1	Identification of the techniques to characterize various pavement materials through relevant tests.	K4
			C316.2	Testing techniques and characteristics of aggregate and bituminous materials	K4
8	**III / VI**	**CE8612 IRRIGATION AND ENVIRONMENTAL DRAWING LAB**	C317.1	Design and draw various units of Municipal water treatment plants	K4
			C317.2	Design and draw various types of a dam structures.	K4
			C317.3	Design and draw various units of sewage treatment plants.	K4
9	**III / VI**	**HS8581 PROFESSIONAL COMMUNICATION**	C318.1	Summarize various skills such as Soft Skills, Hard skills, employability and career Skills and demonstrate values such as Time Management and general awareness of current affairs.	K2
			C318.2	Demonstrate oneself before the audience by making effective presentations on introducing oneself, answering questions and visual presenting.	K3
			C318.3	Demonstrate oneself by participating in group discussions, brainstorming sessions and question sessions. Develop activities to improve GD Skills	K6
			C318.4	Develop interview skills so as to be successful in them.	K6
			C318.5	Develop adequate Soft Skills required for the workplace and long-term career.	K6

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **07**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	IV / VII	CE8701 ESTIMATION , COSTING AND VALUATION ENGINEERING.	C401.1	Estimate the quantities for buildings,	K3
			C401.2	Rate Analysis for all Building works, canals, and Roads and Cost Estimate.	K3
			C401.3	Understand types of specifications, principles for report preparation, tender notices types.	K2
			C401.4	Gain knowledge on types of contracts	K2
			C401.5	Evaluate valuation for building and land.	K3
2	IV / VII	CE8702 RAILWAY AIRPORT, DOCKS AND HARBOUR ENGINEERING	C402.1	Understand the methods of route alignment and design elements in Railway Planning and Constructions.	K2
			C402.2	Understand the Construction techniques and Maintenance of Track laying and Railway stations.	K2
			C402.3	Gain an insight on the planning and site selection of Airport Planning and design.	K3
			C402.4	Analyze and design the elements for orientation of runways and passenger facility systems.	K3
			C402.5	Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.	K2
3	IV / VII	CE8703 STRUCTURAL DESIGN AND DRAWING	C403.1	Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls	K3
			C403.2	Design and draw flat slab as per code provisions	K3
			C403.3	Design and draw reinforced concrete and steel bridges	K3

			C403.4	Design and draw reinforced concrete and steel water tanks	K3
			C403.5	Design and detail the various steel trusses and cantry girders	K3
4	**IV / VII**	**EN8591 MUNICIPAL SOLID WASTE MANAGEMENT**	C404.1	Understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.	K2
			C404.2	Reduction, reuse and recycling of waste.	K2
			C404.3	Plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.	K2
			C404.4	Gain knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.	K2
			C404.5	Design and operation of sanitary landfill.	K2
5	**IV / VII**	**OML751 TESTING OF MATERIALS (AY-2020-2021)**	C405.1	Understand the the standards and advantages of testing	K2
			C405.2	Understand the mechanical testing and the techniques.	K2
			C405.3	Understand and perform the non testructive testing methods.	K2
			C405.4	Understand the macro and micropic testing of materials	K2
			C405.5	Understand the chemical testing of materials	K2
6	**IV / VII**	**CE8711- CREATIVE AND INNOVATIVE PRTOJECT**	C406.1	Solve various design problems related to Civil Engineering while designing the structures.	K3
			C406.2	Solve various design problems related to industrial and residential structures	K3
			C406.3	Solve various design problems related to commercial structures.	K3

7	**IV / VII**	**CE8712 INDUSTRIAL TRAINING**	C407.1	Analyse any challenging practical problems related to civil engineering	K4
			C407.2	Solve the problem from its identification and through literature reviews	K4
			C407.3	Prepare project reports, presentations and to face interviews.	K3
			C407.4	Develop different solution by formulating proper methodology	K5

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **08**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	IV / VIII	CE8018 GEO-ENVIRONMENTAL ENGINEERING	C408.1	Assess the contamination in the soil	K3
			C408.2	Understand the current practice of waste disposal	K2
			C408.3	Prepare the suitable disposal system for particular waste.	K2
			C408.4	Stabilize the waste and utilization of solid waste for soil improvement.	K2
			C408.5	Select suitable remediation methods based on contamination	K3
2	IV / VIII	CE8020 MANINTENANCE, REPAIR AND REHABHILITATION OF STRUCTURES	C409.1	Understand the importance of maintenance and assessment method of distressed structures.	K2
			C409.2	Understand the strength and durability properties ,their effects due to climate and temperature.	K2
			C409.3	Understand recent development in concrete	K2
			C409.4	Understand the techniques for repair rand protection methods	K2
			C409.5	Understand repair, rehabilitation and retrofitting of structures and demolition methods	K2
3	IV / VIII	CE8811 PROJECT WORK	C410.1	Analyse any challenging practical problems related to civil engineering	K4
			C410.2	Solve the problem from its identification and through literature reviews	K4
			C410.3	Prepare project reports, presentations and to face interviews.	K3
			C410.4	Develop different solution by formulating proper methodology	K5

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DEPARTMENT OF CIVIL ENGINEERING
COURSE OUTCOME REGULATION 2021

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS3151 - PROFESSIONAL ENGLISH - I	C101.1	Listen and comprehend complex academic texts	K2
			C101.2	Read and infer the denotative and connotative meanings of technical texts	K2
			C101.3	Write definitions, descriptions, narrations and essays on various topics	K2
			C101.4	Speak fluently and accurately in formal and informal communicative contexts	K2
			C101.5	Express their opinions effectively in both oral and written medium of communication	K3
2	I / I	MA3151 - MATRICES AND CALCULUS	C102.1	Analyze the different types of course matrices for solving practical problems.	K4
			C102.2	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.3	Solve the problems of integrals using different methods of calculus.	K5
			C102.4	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.5	Determine the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K5
3	I / I	PH3151 - ENGINEERING PHYSICS	C103.1	Comprehend the importance of mechanics.	K2
			C103.2	Predict their fundamental knowledge of electromagnetic waves' characteristics.	K2
			C103.3	Build a solid basic understanding of oscillations, optics, and lasers.	K2
			C103.4	Understand the impact of quantum physics.	K2
			C103.5	Appreciate and apply the basic concepts of quantum mechanics to the production of energy bands.	K3

4	**I / I**	**CY3151 - ENGINEERING CHEMISTRY**	C104.1	Learn the indulgent of water quality parameters, boiler troubles and water treatment techniques.	K3
			C104.2	Discuss the basic principles and preparatory methods of nanomaterials and its applications	K2
			C104.3	Know the basic concepts and applications of phase rule and composites.	K2
			C104.4	Understanding of different types of fuels, their preparation, properties and combustion characteristics.	K2
			C104.5	Familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices	K3
5	**I / I**	**GE3151 - PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Develop algorithmic solutions to simple computational problems.	K3
			C105.2	Develop and execute simple Python programs.	K3
			C105.3	Write simple Python programs using conditionals and loops for solving problems.	K3
			C105.4	Decompose a Python program into functions.	K4
			C105.5	Represent compound data using Python lists, tuples, dictionaries etc	K2
			C105.6	Read and write data from/to files in Python programs.	K3
6	**I / I**	**GE3171 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C106.1	Develop algorithmic solutions to simple computational problems	K3
			C106.2	Develop and execute simple Python programs.	K3
			C106.3	Implement programs in Python using conditionals and loops for solving problems.	K3
			C106.4	Deploy functions to decompose a Python program.	K4
			C106.5	Process compound data using Python data structures	K2
			C106.6	Utilize Python packages in developing software applications.	K3
7	**I / I**	**BS3171 - PHYSICS AND CHEMISTRY LABORATORY**	C107.1	Learn the proper use of various kinds of physics laboratory equipment.	K3
			C107.2	Learn how data can be collected, presented and interpreted in a clear and concise manner	K3
			C107.3	Learn problem solving skills related to physics principles and interpretation of experimental	K3
			C107.4	Determine error in experimental measurements and techniques used to minimize such	K3
			C107.5	Make the student as an active participant in each part of all lab exercises.	K3

PROGRAMME: **CIVIL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS3251- PROFESSIONAL ENGLISH - II	C108.1	Compare and contrast products and ideas in technical texts	K2
			C108.2	Identify cause and effects in events, industrial processes through technical texts	K2
			C108.3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format	K2
			C108.4	Report events and the processes of technical and industrial nature	K2
			C108.5	Present their opinions in a planned and logical manner, and draft effective resumes in context of job search	K3
2	I / II	MA3251 - STATISTICS AND NUMERICAL METHODS	C109.1	Apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C109.2	Analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C109.3	Analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C109.4	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C109.5	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
3	I / II	PH3201-PHYSICS FOR CIVIL ENGINEERING	C110.1	Introduce the basics of hezat transfer through different materials, thermal performance of building and various thermal applications	K2
			C110.2	Impart knowledge on the ventilation and air conditioning of buildings	K2
			C110.3	Introduce the concepts of sound insulation and lighting designs	K3
			C110.4	To give introduction to the processing and applications of new engineering material	K3
			C110.5	To create an awareness on natural disasters and safety measures	K3

4	**I / II**	**BE3252 - BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING**	C111.1	Calculate the electric circuit parameters for simple problems	K4
			C111.2	Analyze the concepts of domestics wiring and protective devices	K4
			C111.3	Analyze the working principle and applications of electrical machines	K4
			C111.4	Appraising the characteristics of analog electronic devices	K4
			C111.5	Correlating the types and operating principles of sensors and transducers	K4
5	**I / II**	**GE3251 - ENGINEERING GRAPHICS**	C112.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
			C112.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
			C112.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
			C112.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C112.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
6	**I / II**	**GE3271 - ENGINEERING PRACTICES LABORATORY**	C113.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C113.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work	K2
			C113.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2
			C113.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2
7	**I / II**	**BE3272 -BASIC**	C114.1	Draw the performance characteristics of various DC generators, D.C. Motors and understand the applications of it to power system	K3

		ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY	C114.2	Determine the performance of various A.C. Induction motors and understand the applications of it to power system	K3
			C114.3	Calculate the efficiency and determine the performance of the single phase transformer	K4
			C114.4	Understand the characteristics of LVDT, RTD and Thermistor.	K2
			C114.5	Apply the circuit laws and theorems to simple electrical circuits.	K3

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE OUTCOME REGULATION 2017

PROGRAMME: **COMPUTER SCIENCE AND ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS8151 - COMMUNICATIVE ENGLISH	C101.1	Enhance their reading and technical writing skills in the first year itself	K2
			C101.2	Comfortably read and understand articles in science and Engineering journals and articles in dailies	K2
			C101.3	Get themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
			C101.4	Communicate effectively in short conversations and talks uttered in English	K4
			C101.5	Draft essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4
2	I / I	MA8151 - ENGINEERING MATHEMATICS - I	C102.1	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.2	Solve the problems of integrals using different methods of calculus.	K5
			C102.3	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.4	Analyze the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K4
			C102.5	Apply various tools in solving the differential equations to recognize the need for life-long learning.	K3
3	I / I	PH8151 - ENGINEERING PHYSICS	C103.1	Analyse the problems in columns and beams and gain the engineering	K4

				knowledge in properties of matter to formulate.	
			C103.2	Understand the fundamental concepts and applications of waves, lasers and fiber optics to give theoretical approaches to design modern devices.	K2
			C103.3	Interpret the knowledge in thermal properties of materials and can determined expansion joints and heat exchangers in devices.	K3
			C103.4	Understand the fundamental concepts of quantum theory and how modern electron microscope techniques use it to make predictions in the field of physics.	K2
			C103.5	Appreciate the behavior of solids, describe the fundamentals of crystals, their structures, and the various crystal development processes.	K2
4	**I / I**	**CY8151 - ENGINEERING CHEMISTRY**	C104.1	Apply the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge.	K3
			C104.2	Understand the adsorption methods used in the field of water and air pollution purification to assess societal, health, safety and cultural issues in the environmental. .	K2
			C104.3	Know the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy.	K2
			C104.4	Discuss the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K4
			C104.5	Review the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate consideration for the societal and environmental considerations.	K2

5	**I / I**	**GE8151- PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	K2
			C105.2	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C105.3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings.	K3
			C105.4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C105.5	Develop python programs for solving computational problems by using modules, files, and python packages	K3
6	**I / I**	**GE8152- ENGINEERING GRAPHICS**	C106.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models	K3
			C106.2	**Apply** the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K2
			C106.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K3
			C106.4	**Practice** the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C106.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K6
7	**I / I**	**GE8161- PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C107.1	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C107.2	Develop Python programs using conditionals, looping, functions, and strings for solving real-time computational problems.	K3
			C107.3	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C107.4	Develop python programs for solving problems by using modules, files, and python packages	K3
			C107.5	Utilize Python packages for developing real-world software applications	K6

8	**I / I**	**BS8161 - PHYSICS AND CHEMISTRY LABORATORY**	C108.1	Manipulate the fundamental concepts like torque, elasticity and bending moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus of the material of the beam by non-uniform bending.	K3
			C108.2	Practice the fundamentals of thermal properties of material of the bad conductor by Lee's disc method.	K3
			C108.3	Understand the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	K2
			C108.4	Dramatize the strength of an acid using pH meter and conductometer for applications in the field of engineering.	K3
			C108.5	Experimenting the estimation of total, permanent and temporary hardness of water for our environment.	K3

PROGRAMME:**COMPUTER SCIENCE AND ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	**HS8251 - TECHNICAL ENGLISH**	C109.1	Read and write their technical and area-specific texts in an effortless manner	K3
			C109.2	Listen comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
			C109.3	Speak in an appropriate manner in both formal and informal situations for lifelong learning	K3
			C109.4	Create CVs and draft Job applications in confident manner	K6
			C109.5	Communicate confidently by using all the four skills with their peers and in real life situations	K4
2	I / II	**MA8251 - ENGINEERING MATHEMATICS - II**	C110.1	Analyze the different types of matrices for solving practical problems.	K4
			C110.2	Apply Gradient, divergence and curl of a vector point function and related identities in engineering field.	K3
			C110.3	Acquire the knowledge to solve the engineering problems in analytic functions	K2
			C110.4	Analyze and apply the different methods to solve complex integration problems.	K4
			C110.5	Create and manage the projects after applying and analyzing the fundamentals of Laplace transforms	K6
3	I / II	**PH8252 - PHYSICS FOR INFORMATION SCIENCE**	C111.1	Comprehend the materials for their diverse applications, it is necessary to grasp the energy band structures and the classical and quantum electron theories.	K3
			C111.2	Provide a balanced understanding of diverse semiconductor electronic devices, such as hall devices, ohmic contacts and schottky diodes by explaining the fundamental principles of semiconductor physics.	K2

			C111.3	Interpret the properties, manipulation of magnetic materials used in modern devices such as Magnetic hard disc, GMR sensor and computer data storage.	K3
			C111.4	Understand the fundamental properties of optical materials in optoelectronics is essential to comprehend the theoretical methods for designing modern optoelectronic devices.	K2
			C111.5	Comprehend the fundamentals of quantum structures and the nanoscale manipulation of modern materials in spintronics and carbon electronics.	K2
4	**I / II**	**BE8255 - BASIC ELECTRICAL ELECTRONICS AND MEASUREMENT ENGINEERING**	C112.1	Illustrate the behavior of electric circuits using fundamental laws and techniques	K2
			C112.2	Understand the operation of DC, AC and Special machines	K2
			C112.3	Summarize different energy sources, protective devices and its applications	K2
			C112.4	Outline the characteristics and applications of semiconductor diodes.	K2
			C112.5	Summarize the characteristics and errors of the instruments	K2
5	**I / II**	**GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING**	C113.1	Apply the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	K3
			C113.2	Understand the impact of the professional engineering solutions in societal and environmental contexts for the importance of Public participation in conservation of natural resources.	K2
			C113.3	Discuss the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K2
			C113.4	Learning the concepts from unsustainable to sustainable development and urban	K2

				problems related to energy , water conservation, rain water harvesting.	
			C113.5	Apply the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	K3
6	**I / II**	**CS8251 – PROGRAMMING IN C**	C114.1	Understand the basic concepts of C programming tokens, control statements Input/Output statements, and Preprocessor directives	K2
			C114.2	Develop C Programs using basic programming constructs for solving simple problems	K3
			C114.3	Develop C programs for solving computational problems by using arrays and strings	K3
			C114.4	Develop simple real-time applications in C using functions, arrays, and strings	K3
			C114.5	Develop applications for real time problems in C using pointers and structures	K3
7	**I / II**	**GE8261 - ENGINEERING PRACTICES LABORATORY**	C115.1	**Construct** Electrical and Electronic circuits.	K6
			C115.2	**Examine** different types of electronic circuits and components.	K3
			C115.3	**Recognize** electrical safety rules, grounding, general house wiring.	K6
			C115.4	**Explore** soldering practices.	K3
8	**I / II**	**CS8261 – C PROGRAMMING LABORATORY**	C116.1	Use C programming tokens, control statements, Input/Output statements and Preprocessor directives	K3
			C116.2	Develop C Programs using basic programming constructs	K3
			C116.3	Develop C programs using arrays and strings	K3
			C116.4	Develop simple real-time applications in C using functions, arrays, and strings	K3
			C116.5	Develop applications using pointers and structures	K3

PROGRAMME: **COMPUTER SCIENCE AND ENGINEERING**	DEGREE: **UG**	A.Y: **2019-2020**	SEMESTER: **03**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / III	**MA8351 – DISCRETE MATHEMATICS**	C201.1	Apply the engineering knowledge to solve the logic of a program.	K3
			C201.2	Understand and analyze the structures of problems on mathematical induction and counting principle.	K2
			C201.3	Apply the fundamentals of graph theory using modern tools in computer networking to manage projects	K3
			C201.4	Apply the notion of groups, rings and fields to design and solve the algebraic structures problems.	K3
			C201.5	Acquire the knowledge of engineering in real life phenomena by solving Lattices and Boolean algebra	K3
2	II / III	**CS8351 – DIGITAL PRINCIPLES AND SYSTEM DESIGN**	C202.1	Apply Arithmetic operations in any number system and various techniques to simplify the Boolean functions	K3
			C202.2	Build Combinational & Sequential logic Circuits that perform arithmetic & Shift operations correspondingly	K3
			C202.3	Analyze Combinational & Sequential logic design	K4
			C202.4	Model Memory arrays for the appropriate problem	K4
			C202.5	Develop HDL code for Combinational & Sequential logic circuits	K4
3	II / III	**CS8391 – DATA STRUCTURES**	C203.1	Understand the basic concepts of abstract datatype and implement List ADT for analyzing the real-world problems	K2
			C203.2	Use appropriate linear data structures - stack and queue, and apply its operations for solving complex problems.	K3
			C203.3	Implement the non-linear data structure - tree and heap, and analyze its various applications.	K3

			C203.4	Apply the non-linear graph data structures and compare the different methodologies to analyze its performance.	K4
			C203.5	Analyze and implement various kinds of searching, sorting and hashing techniques.	K4
4	**II / III**	**CS8392 – OBJECT ORIENTED PROGRAMMING**	C204.1	Understand the concept and features of object oriented programming using java programs with classes and objects	K2
			C204.2	Create the java program using inheritance, access specifiers, abstract classes, interfaces and strings	K4
			C204.3	Use of exceptions and its types , input and output stream	K5
			C204.4	Build java applications for multi threading and its life cycle, generic classes and methods and bounded types.	K4
			C204.5	Combine the concept of interactive, graphics programming using swing components such as text fields , text areas, button, check box and menus	K4
5	**II / III**	**EC8395 COMMUNICATION ENGINEERING**	C205.1	Understand the various analog modulation techniques	K2
			C205.2	Deliberate about DPCM, DM, ADPCM and ADM techniques.	K2
			C205.3	Illustrate about digital modulation & Transmission	K2
			C205.4	Compute the error control coding techniques in communication systems	K3
			C205.5	Classify the various multiple access method supporting wireless communication	K2
6	**II / III**	**CS8381 – DATA STRUCTURES LABORATORY**	C206.1	Implement the operations and applications of List, Stack and Queue using array	K4
			C206.2	Implement the operations of List, Stack and Queue using Linked List	K4
			C206.3	Understand and implement the different operations of various Trees.	K4

			C206.4	Implement graph traversal algorithms and techniques	K4
			C206.5	Understand and implement various sorting, searching and hashing algorithms	K4
7	**II / III**	**CS8383 - OBJECT ORIENTED PROGRAMMING LABORATORY**	C207.1	Design and implement java simple application that make use of classes, packages and interfaces	K2
			C207.2	Develop a java application using class and its members and also implement java converter applications.	K4
			C207.3	Apply the java string programs using string operations using array list, abstract classes	K4
			C207.4	Develop a java program to implement user defined exceptions, reading and writing a file	K4
			C207.5	Develop a java program for multi threaded applications and generic function.	K4
8	**I / II**	**CS8382 – DIGITAL SYSTEMS LABORATORY**	C208.1	Apply Boolean simplification techniques to design simplified combinational circuits using basic gates	K2
			C208.2	Design and Implement combinational circuits using MSI devices	K4
			C208.3	Design and implement magnitude comparator, parity checker circuit	K4
			C208.4	Construct sequential circuits like registers and counters	K4
			C208.5	Construct and simulate digital circuit using VHDL software	K4
9	**I / II**	**HS8381 - INTERPERSONAL SKILLS/LISTENING &SPEAKING**	C209.1	Listen and react to English in an appropriate manner	K2
			C209.2	Get themselves actively involved in Group Discussion activities	K3
			C209.3	Feel comfortable in making oral presentations	K2
			C209.4	React well in both formal and informal contexts in professional situations	K4
			C209.5	Persuade their audience by making appropriate expressions	K5

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / IV	MA8402 – PROBABILITY AND QUEUEING THEORY	C210.1	Understand the basic notion of the concepts of probability and have knowledge of standard distributions which can apply to real life phenomenon.	K2
			C210.2	By using the Engineering knowledge of one- and two-dimensional random variables to solve complex problems	K3
			C210.3	Identify and apply the concept of random processes in engineering disciplines.	K3
			C210.4	Analyze and acquire skills in queueing models to manage projects and in multi-disciplinary environments.	K6
			C210.5	Understand and apply the impact of environmental contexts to characterize phenomenon of queueing models	K3
2	II / IV	CS8491 – COMPUTER ARCHITECTURE	C211.1	Describe the basic structures of a computer system,operations and instructions	K2
			C211.2	Understand the various arithmetic operations for computers.	K2
			C211.3	Analyze pipelined control units and the different types of hazards in the Instructions	K3
			C211.4	Interpret the concepts of various parallel processing architectures	K2
			C211.5	Understand the fundamentals of memory and I/O systems comunication	K2
3	II / IV	CS8492 – DATABASE MANAGEMENT SYSTEMS	C212.1	Understand basics of SQL and construct queries using SQL, relational algebra and calculus and apply query processing.	K3
			C212.2	Design and implement schemas using normal forms, address the problems by decomposition, functional dependencies and redundancies.	K3
			C212.3	Analyze and solve various issues of transaction processing, concurrency control and recovery techniques.	K4

			C212.4	Analyze various indexing and hashing strategies to perform query optimization in database systems	K4
			C212.5	Develop a small database project using database tools.	K4
4	**II / IV**	**CS8451 – DESIGN AND ANALYSIS OF ALGORITHMS**	C213.1	Understand the fundamental concepts of algorithmic problem solving, analysis of algorithmic efficiency, and asymptotic notations	K2
			C213.2	Apply the Brute Force method and Divide and Conquer method to solve the algorithmic complex computing problems.	K3
			C213.3	Develop algorithmic solutions for complex problems by applying the concept of dynamic programming and greedy techniques	K3
			C213.4	Understand the concept of the simplex method, maximum flow problem, and stable marriage problem	K2
			C213.5	Analyze the different algorithm design techniques for a given problem based on its time and space complexity.	K4
5	**II / IV**	**CS8493 – OPERATING SYSTEMS**	C214.1	Understand the fundamental concepts about the overall view of computer system and its components.	K2
			C214.2	Analyse and predict solutions/algorithms for the interpretation of data involved during the process scheduling, synchronization and management.	K4
			C214.3	Compare and analyse the concept of various memory management techniques.	K4
			C214.4	Demonstrate knowledge and understand the functionalities of file systems and I/O Systems.	K3
			C214.5	Compare and communicate effectively about the functions of Linux Systems, Mobile OS (iOS and Android)	K4
6	**II / IV**	**CS8494 - SOFTWARE ENGINEERING**	C215.1	Identify the key activities in managing a software project and compare different process models and understand the phases in a software project	K2
			C215.2	Understand the Concepts of requirements engineering process and Requirement Analysis Modeling	K2

			C215.3	Apply systematic procedure for software design using various software design methodologies	K3
			C215.4	Compare and contrast the various testing and maintenance.	K4
			C215.5	Manage project schedule, estimate project cost and effort required.	K4
7	**II / IV**	**CS8481 - DATABASE MANAGEMENT SYSTEMS LABORATORY**	C216.1	Apply MYSQL products for creating tables, views, indexes, sequences and other database objects.	K3
			C216.2	Design and implement simple and complex queries using DDL, DML, DCL and TCL.	K3
			C216.3	Develop Entity-Relationship model from specifications and to perform the transformation of the conceptual model into corresponding logical data structure.	K3
			C216.4	Design applications to test nested and join queries.	K3
			C216.5	Implement PL/SQL blocks, procedures, functions, packages triggers and cursors in databases.	K3
8	**II / IV**	**CS8461 – OPERATING SYSTEMS LABORATORY**	C217.1	Understand the fundamental concepts and design the Various CPU Scheduling algorithms to develop a solution for real world problems.	K3
			C217.2	Implement deadlock avoidance and detection algorithms for the investigation of complex problems.	K3
			C217.3	Apply appropriate techniques to implement Semaphore Concepts, Process and IPC	K3
			C217.4	Analyse the performance of the various page replacement algorithms to get better solution for the problems.	K3
			C217.5	Implement File Organization and File Allocation Strategies to write report and make effective presenations for complex engineering activities	K3
9	**II / IV**	**HS8461 ADVANCED READING AND WRITING LAB**	C218.1	Write technical articles in a confident manner	K3
			C218.2	Create their CV and write cover letter without anyone's help	K6
			C218.3	Read and express their views critically	K2
			C218.4	Exhibit their critical wisdom in varied professional situations	K3
			C218.5	Write confidently by acquiring competency in writing skills and use them in academic situations for ever	K5

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	III / V	**MA8551 – Algebra And Number Theory**	C301.1	Apply the basic notions of groups, rings, fields which will be used to solve related problems.	K3
			C301.2	To identify the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.	K3
			C301.3	To solve accurate and efficient use of advanced algebraic techniques.	K3
			C301.4	To solve the non - trivial problems related to basic concepts applied in engineering field	K3
			C301.5	To apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.	K3
2	III / V	**CS8591 – COMPUTER NETWORKS**	C302.1	Understand the concepts of data communication, protocol layering, functions of OSI layers and familiarize the physical level communication	K2
			C302.2	Identify the link layer addressing and data link layer protocols.such as HDLC, PPP, wired and wireless LANs.	K2
			C302.3	Design the various network layer protocols such as IPV4 , ICMP v4 and unicast, multicast routing protocols and algorithms..	K3
			C302.4	Understand the different transport layer protocols such as UDP, TCP and SCTP characteristics.	K2
			C302.5	Identity with world wide web, HTTP and FTP, Email, Telnet and various application layer protocols	K3
3	III / V	**EC8691 – MICROPROCESSORS AND**	C303.1	Understand the fundamental concepts of 8086 microprocessor architecture, addressing modes & instruction set	K2

		MICROCONTROLLERS	C303.2	Understand the design aspects of I/O and Memory Interfacing circuits	K2
			C303.3	Develop Assembly language program to interface 8086 microprocessor with supporting chips for different applications	K4
			C303.4	Understand the fundamental concepts of 8051 microprocessor architecture, addressing modes & instruction set	K2
			C303.5	Develop Assembly language program to interface 8051 microcontroller with supporting chips for different applications	K4
4	**III / V**	**CS8501 – THEORY OF COMPUTATION**	C304.1	Design different types of automata by understanding the fundamental concepts of automata theory.	K3
			C304.2	Construct regular expression for any automata and find the minimized automata with its equivalent	K3
			C304.3	Design Push down automata for any context free grammar and vise versa	K3
			C304.4	Understand Turing machines and their capability with various Programming Techniques for TM.	K3
			C304.5	Analyze decidability of the problems and complex NP class problems	K4
5	**II / IV**	**CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN**	C305.1	Understand the fundamental concepts of OOAD with object oriented basics such as unified modeling language diagrams and use case diagrams with relations of use cases.	K2
			C305.2	Demonstrate the concepts of static unified modeling language diagrams with the use of domain model and domain model refinement in finding class hierarchies.	K3
			C305.3	Realize the fundamental concepts of dynamic and unified modeling diagrams with the implementation of unified modeling language interaction diagrams, state machine diagrams and collaboration diagrams.	K2

			C305.4	Transform UML based software design into pattern based design using design patterns	K3
			C305.5	Interpret various testing methodologies with the impact of object orientation to develop test cases and test plans.	K2
6	**III / V**	**OIM551 – WORLD-CLASS MANUFACTURING** **BATCH (2018-2022)**	C306.1	Understand the concept of manufacturing strategy for industrial enterprise competitiveness.	K2
			C306.2	Analysis a devaluation of company's opportunities for enhancing competitiveness in the local regional and global context.	K3
			C306.3	Recognize the importance of Customer Focused principles	K4
			C306.4	Identify formulation and implement strategies for manufacturing and therefore enterprise competitiveness	K2
			C306.5	Understand and handling various impediments	K2
7	**III / V**	**EC8681 - MICROPROCESSORS AND MICROCONTROLLERS LABORATORY**	C307.1	Develop the ALP Programs for fixed point arithmetic circuits	K3
			C307.2	Demonstrate the interfacing circuits for different I/Os.	K3
			C307.3	Develop the Assembly Language Program for generating waveforms such as square wave and triangular wave using microprocessors.	K3
			C307.4	Develop the arithmetic and logical programs using 8051 microcontrollers.	K3
			C307.5	Demonstrate the performance in simulator and emulator	K2
8	**III / V**	**CS8582 OBJECT ORIENTED ANALYSIS AND DESIGNLABORATORY**	C308.1	Apply and perform object oriented analysis and design concepts to solve a given problem specifications	K3
			C308.2	Develop and identify basic software requirements mapping in unified modeling language	K3
			C308.3	Improve the software quality using design patterns and to explain the	K5

				rationale behind applying specific design patterns	
			C308.4	Develop and test the compliance of the software system with software requirement specification.	K6
			C308.5	Develop and perform mapping of object oriented design for various software's with code development.	K3
9	**III / V**	**CS8581 - NETWORKS LABORATORY**	C309.1	Study of various network commands such as netstat, ipconfig, nslookup and trace route and HTTP client program to download a web page using TCP Sockets	K2
			C309.2	Design the programs of TCP sockets such as echo client and echo server, chat server, file transfer and simulation od DNS using DNS sockets	K3
			C309.3	Apply simulation tools using ARP/ RARP protocols and study of Network simulator of congestion control algorithms.	K3
			C309.4	To study the TCP/UDP performance, simulation of distance vector, link state routing algorithm.	K4
			C309.5	Apply performance evaluation of routing protocols and simulation of Error correcting codes	K4

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	III / VI	**CS8651 – INTERNET PROGRAMMING**	C310.1	Understand the concepts of different internet technologies, protocols , HTML programs web essentials, illustrate web pages using HTML and cascade style sheets	K2
			C310.2	Apply a client server programming such as java script, DOM, DHTML, JSON.	K4
			C310.3	Using server side programming java servlet, life cycle, Tomcat web server and Compare and contrast dynamic web pages using server side programming	K5
			C310.4	Develop a PHP programs, XML such as XML parser, XSLT, news feed	K4
			C310.5	Build the applications using AJAX and java web services such as WSDL and SOAP concepts	K6
2	III / VI	**CS8691 – ARTIFICIAL INTELLIGENCE**	C311.1	Demonstrate the concepts of AI problems and the search algorithms used in it.	K2
			C311.2	Utilize first order and predicate logic methods for knowledge representation.	K3
			C311.3	Summarize the framework for different Artificial Intelligence approaches to resolving a problem.	K2
			C311.4	Apply various scientific approaches to AI techniques in machine learning**.**	K3
			C311.5	Illustrate the evaluation of the various algorithms on a formalization of the Problem	K2
3	III / VI	**CS8601 – MOBILE COMPUTING**	C312.1	Understand the fundamental concepts of mobile telecommunication systems	K2
			C312.2	Demonstrate the generations of telecommunication systems in wireless networks and learn the basics of mobile telecommunication system	K2
			C312.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network .	K3

			C312.4	Understand the functionality of Mobile TCP and WTA Architecture in Transport and Application layers	K2
			C312.5	Develop a mobile application using android/blackberry/ios/Windows SDK and gain knowledge about different mobile platforms and application development	K3
4	**III / VI**	**CS8602 – COMPILER DESIGN**	C313.1	Understand the various phases of compiler and develop a lexical analyser for a sample language.	K2
			C313.2	Apply the knowledge and design parser for the given grammar to implement syntax analyser with the help of YACC tools.	K3
			C313.3	Identify and formulate the steps and process involved in Intermediate Code Generation.	K3
			C313.4	Understand the concept of storage organizations and design of simple code generator in run time environment.	K4
			C313.5	Apply the knowledge and learn to develop/implement the code optimization techniques.	K6
5	**III / VI**	**CS8603 – DISTRIBUTED SYSTEMS**	C314.1	Elucidate the foundations and issues of distributed systems and understand different models of distributed executions.	K2
			C314.2	Analyze various synchronization issues and global states in distributed systems.	K4
			C314.3	Choose appropriate Distributed mutual exclusion and Deadlock detection algorithms in distributed systems.	K3
			C314.4	Apply various checkpointing, rollback recovery, and consensus and agreement algorithms in distributed systems for complex problems.	K3
			C314.5	Able to relate the features of peer-to-peer and distributed shared memory systems and solve the real time complex problems in distributed system.	K3
6	**III / VI**	**IT8076 - SOFTWARE TESTING**	C315.1	Understand the criteria for test cases.	K2
			C315.2	Design test cases suitable for a software development for different domains	K3
			C315.3	Identify suitable tests to be carried out and document test plans and test case designed	K4

			C315.4	Develop and validate a test plan	K3
			C315.5	Use automatic testing tools in software testing	K3
7	**III / VI**	**CS8661 – INTERNET PROGRAMMING LABORATORY**	C316.1	Build web pages using HTML and cascade style sheets.	K3
			C316.2	Fabricate dynamic web pages with validation using Java Script objects	K5
			C316.3	Contract dynamic web pages using server side scripting.	K4
			C316.4	Make use of Tomcat web server and JSP .	K5
			C316.5	Validate the PHP application and web services.	K4
8	**III / VI**	**CS8662 – MOBILE APPLICATION DEVELOPMENT LABORATORY**	C317.1	Understand the components and structure of mobile application development frameworks for Android and windows OS based mobiles.	K1
			C317.2	Formulate with various mobile application development frameworks and develop mobile applications using Event Listener.	K3
			C317.3	Develop the mobile applications using Databases.	K3
			C317.4	Identify the mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.	K2
			C317.5	Analyze and discover own mobile app for simple needs	K4
9	**III / VI**	**CS8611 – MINI PROJECT**	C318.1	Choose problems with technical importance and societal contribution	K3
			C318.2	Identify and survey the relevant literature for getting exposed to related solutions	K3
			C318.3	Build project plans with feasible requirements	K3
			C318.4	Analyse, design and develop adaptable and reusable solutions	K4
			C318.5	Implement and test solutions to trace against the user requirements	K4
10	**III / VI**	**HS8581 PROFESSIONAL COMMUNICATION**	C319.1	Enhance the employability and career skills in engineering domain	**K3**

			C319.2	Improve professional communication	**K4**
			C319.3	Build confidence in employability skills	**K4**
			C319.4	Face interviews with necessary skills	**K5**
			C319.5	Acquire required skills to excel in their career	**K3**

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	IV / VII	MG8591 – PRINCIPLES OF MANAGEMENT	C401.1	**Discuss** the evolution of management, functions and roles of managers	**K2**
			C401.2	**Explain** the different types of planning process and tools used for planning	**K2**
			C401.3	**Elaborate** different organization structures and functions of human resources manager	**K2**
			C401.4	Illustrate the different theories of motivation and leadership	**K2**
			C401.5	**Describe** the control techniques and the role of technology in management	**K1**
2	IV / VII	CS8792 – CRYPTOGRAPHY AND NETWORK SECURITY	C402.1	Define the fundamental concepts of security policies, services, mechanisms and various encryption techniques.	K2
			C402.2	Formulate and analyse the mathematical concept of symmetric key cryptographic algorithms	K4
			C402.3	Apply and design solutions for the complex engineering problems using the public key cryptographic algorithms	K6
			C402.4	Understand and analyse the impact about the usage modern tools for the message integrity and various authentication mechanisms in terms of safety and security.	K4
			C402.5	Communicate the needs of several security practices and standards of the technological change	K2
3	IV / VII	CS8791 – CLOUD COMPUTING	C403.1	Understand the fundamental concepts, key technologies, strengths and limitations of cloud computing	K1
			C403.2	Identify the evolution of cloud from the existing technologies and learn the key and enabling technologies that help in the development of cloud.	K2
			C403.3	Develop the ability to understand and use the architecture of compute and storage cloud,	K3

				service and delivery models and make use of NIST cloud computing architecture to solve architecture design challenges	
			C403.4	Formulate the core issues of cloud computing such as resource management and security and familiar with the lead players in cloud	K2
			C403.5	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud and appreciate the emergence of cloud as the next generation computing paradigm.	K4
4	**IV / VII**	**OIE751 - ROBOTICS**	C404.1	Summarize the basic concepts of industrial robotics and key components of robotics technologies.	K5
			C404.2	Summarize the robot drive systems, gripper sand various end effectors.	K5
			C404.3	Describe the various sensors and image processing & data reduction method for the control of robots.	K2
			C404.4	Analyze the various kinematics of robots and prepare the robot program.	K4
			C404.5	Explain the implementations of robots in industries and analyzing robot economics.	K2
5	**IV / VII**	**GE8077 – TOTAL QUALITY MANAGEMENT**	C405.1	Outline the Dimensions and Barriers regarding with Quality.	**K2**
			C405.2	Illustrate the TQM Principles.	**K2**
			C405.3	Demonstrate Tools utilization for Quality improvement	**K3**
			C405.4	Understand the various types of Techniques are used to measure Quality.	
			C405.5	Apply various Quality Systems and Auditing on implementation of TQM.	**K2**
6	**IV / VII**	**CS8079 – HUMAN COMPUTER INTERACTION**	C406.1	Designing the fundamental concepts of human computer interface and its components, methodologies	K3
			C406.2	Apply interactive design such as prototypes, software process, life cycle , design rules and evaluation techniques	K3
			C406.3	Use cognitive models, collaboration models, socio organizational issues, hyper text.	K4
			C406.4	Justify the the mobile related HCI and its applications, design, tools and case studies.	K5

			C406.5	Create about web interfaces such as drag and drop, contextual tools.	K4
7	**IV / VII**	**CS8711 – CLOUD COMPUTING LABORATORY**	C407.1	Configure the various virtualization tools such as Virtual Box, VMware workstation	K2
			C407.2	Design and deploy a web application in a PaaS environment	K3
			C407.3	Understand the design and development process involved in creating a cloud based application and learn how to simulate a cloud environment to implement new schedulers.	K2
			C407.4	Install and use a generic cloud environment that can be used as a private cloud and Simulate a cloud scenario using CloudSim and run a scheduling algorithm	K3
			C407.5	Manipulate large data sets in a parallel environment and Install Hadoop single node cluster	K2
8	**IV / VII**	**IT8761 - SECURITY LABORATORY**	C408.1	Identify the problem and develop code for classical Encryption Techniques to get solution for real world problems	K3
			C408.2	Design Solutions and build cryptosystems by applying symmetric and public key encryption algorithms.	K3
			C408.3	Construct code for authentication algorithms that meet specific needs for securing the data in the real world environment	K3
			C408.4	Develop a signature scheme using Digital signature standard for complex engineering activities	K4
			C408.5	Demonstrate the network security system using open source tools in multi disciplinary environments.	K4

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	IV / VIII	GE8076 - PROFESSIONAL ETHICS IN ENGINEERING	C409.1	**Describe** the importance of human values from perspective of engineers.	**K1**
			C409.2	**Explain** different theories on moral development.	**K2**
			C409.3	**Discuss** the codes of ethics for engineers and roles of engineers as experimenters.	**K2**
			C409.4	**Describe** about safety, risk and to recognize the different responsibilities and rights of engineers.	**K2**
			C409.5	**Interpret** the different roles of engineers with regards to present global scenario.	**K4**
2	IV / VIII	CS8078-GREEN COMPUTING	C410.1	Analyze the concepts of technologies that conform to low-power computation	K3
			C410.2	Discuss green (power-efficient) technologies for components of one single computer, such as CPU, memory and disk, and appreciate cutting edge designs for these components	K2
			C410.3	Analyse a variety of technologies applied in building a green system and to identify the various keys	K2
			C410.4	Discuss the various laws, standards and protocols for regulating green IT	K2
			C410.5	Use a range of tools to help monitor and design green systems	K3
3	IV / VIII	CS8811 - PROJECT WORK	C411.1	Identify technically and economically feasible problems of social relevance	K3
			C411.2	Plan and build the project team with assigned responsibilities	K5
			C411.3	Identify and survey the relevant literature for getting exposed to related solutions	K4
			C411.4	Analyse, design and develop adaptable and reusable solutions of minimal complexity by using modern tools	K6
			C411.5	Implement and test solutions to trace against the user requirements	K4
			C411.6	Deploy and support the solutions for better manageability of the solutions and provide scope for improvability	K5

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSE OUT COME REGULATION 2021

PROGRAMME: **COMPUTER SCIENCE AND ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS3151 - PROFESSIONAL ENGLISH - I	C101.1	Listen and comprehend complex academic texts	K2
			C101.2	Read and infer the denotative and connotative meanings of technical texts	K2
			C101.3	Write definitions, descriptions, narrations and essays on various topics	K2
			C101.4	Speak fluently and accurately in formal and informal communicative contexts	K2
			C101.5	Express their opinions effectively in both oral and written medium of communication	K3
2	I / I	MA3151 - MATRICES AND CALCULUS	C102.1	Analyze the different types of course matrices for solving practical problems.	K4
			C102.2	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.3	Solve the problems of integrals using different methods of calculus.	K5
			C102.4	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.5	Determine the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K5
3	I / I	PH3151 - ENGINEERING PHYSICS	C103.1	Comprehend the importance of mechanics.	K2
			C103.2	Predict their fundamental knowledge of electromagnetic waves' characteristics.	K2
			C103.3	Build a solid basic understanding of oscillations, optics, and lasers.	K2

			C103.4	Understand the impact of quantum physics.	K2
			C103.5	Appreciate and apply the basic concepts of quantum mechanics to the production of energy bands.	K3
4	**I / I**	**CY3151 - ENGINEERING CHEMISTRY**	C104.1	Learn the indulgent of water quality parameters, boiler troubles and water treatment techniques.	K3
			C104.2	Discuss the basic principles and preparatory methods of nanomaterials and its applications	K2
			C104.3	Know the basic concepts and applications of phase rule and composites.	K2
			C104.4	Understanding of different types of fuels, their preparation, properties and combustion characteristics.	K2
			C104.5	Familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices	K3
5	**I / I**	**GE3151 - PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Develop algorithmic solutions to simple computational problems.	K3
			C105.2	Develop and execute simple Python programs.	K3
			C105.3	Write simple Python programs using conditionals and loops for solving problems.	K3
			C105.4	Decompose a Python program into functions.	K4
			C105.5	Represent compound data using Python lists, tuples, dictionaries etc	K2
			C105.6	Read and write data from/to files in Python programs.	K3
6	**I / I**	**GE3171 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C106.1	Develop algorithmic solutions to simple computational problems	K3
			C106.2	Develop and execute simple Python programs.	K3
			C106.3	Implement programs in Python using conditionals and loops for solving problems.	K3
			C106.4	Deploy functions to decompose a Python program.	K4
			C106.5	Process compound data using Python data structures	K2

			C106.6	Utilize Python packages in developing software applications.	K3
7	**I / I**	**BS3171 - PHYSICS AND CHEMISTRY LABORATORY**	C107.1	Learn the proper use of various kinds of physics laboratory equipment.	K3
			C107.2	Learn how data can be collected, presented and interpreted in a clear and concise manner	K3
			C107.3	Learn problem solving skills related to physics principles and interpretation of experimental	K3
			C107.4	Determine error in experimental measurements and techniques used to minimize such	K3
			C107.5	Make the student as an active participant in each part of all lab exercises.	K3

PROGRAMME: **COMPUTER SCIENCE AND ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS3251- PROFESSIONAL ENGLISH - II	C108.1	Compare and contrast products and ideas in technical texts	K2
			C108.2	Identify cause and effects in events, industrial processes through technical texts	K2
			C108.3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format	K2
			C108.4	Report events and the processes of technical and industrial nature	K2
			C108.5	Present their opinions in a planned and logical manner, and draft effective resumes in context of job search	K3
2	I / II	MA3251 - STATISTICS AND NUMERICAL METHODS	C109.1	Apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C109.2	Analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C109.3	Analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C109.4	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C109.5	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
3	I / II	PH3256 -PHYSICS FOR INFORMATION SCIENCE	C110.1	To make the students understand the importance in studying electrical properties of materials.	K2
			C110.2	To enable the students to gain knowledge in semiconductor physics	K2
			C110.3	To instill knowledge on magnetic properties of materials.	K3
			C110.4	To establish a sound grasp of knowledge on different optical properties of materials, optical displays and applications	K3
			C110.5	To inculcate an idea of significance of nano structures, quantum confinement, ensuing nano device applications and quantum computing.	K3

4	**I / II**	**BE3251 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**	C111.1	Explain the operation of three phase electrical circuits and power system.	K4
			C111.2	Determine the regulation and efficiency of transformers.	K3
			C111.3	Describe the characteristics of DC Generator and Motor.	K4
			C111.4	Analyze the performance of AC and DC machines.	K4
			C111.5	Apply the concepts of measurements and instruments for real time applications.	K3
5	**I / II**	**GE3251 - ENGINEERING GRAPHICS**	C112.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
			C112.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
			C112.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
			C112.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C112.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
6	**I / II**	**CS3251- PROGRAMMING IN C**	C113.1	Demonstrate knowledge on C Programming constructs	K3
			C113.2	Develop simple applications in C using basic constructs	K3
			C113.3	Design and implement applications using arrays and strings	K3
			C113.4	Develop and implement modular applications in C using functions.	K3
			C113.5	Develop applications in C using structures and pointers	K3
			C113.6	Design applications using sequential and random access file processing	K3
7	**I / II**	**GE3271 - ENGINEERING PRACTICES LABORATORY**	C114.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C114.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work	K2
			C114.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2

			C114.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2
8	**I / II**	**CS3271 - PROGRAMMING IN C LABORATORY**	C115.1	Demonstrate knowledge on C programming constructs.	K3
			C115.2	Develop programs in C using basic constructs.	K3
			C115.3	Develop programs in C using arrays.	K3
			C115.4	Develop simple applications in C using strings, pointers, functions	K3
			C115.5	Develop real world applications in C using structures.	K3
			C115.6	Develop real time applications in C using file processing.	K3

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE OUTCOME REGULATION 2017

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	I/I	HS8151 - Communicative English	C101.1	Enhance their reading and technical writing skills in the first year itself	K2
			C101.2	Comfortably read and understand articles in science and Engineering journals and articles in dailies	K2
			C101.3	Get themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
			C101.4	Communicate effectively in short conversations and talks uttered in English	K4
			C101.5	Draft essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4
2.	I/I	MA8151 - Engineering Mathematics - I	C102.1	To analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems	K4
			C102.2	To solve the problems of integrals using different methods of calculus	K5
			C102.3	To design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables	K6
			C102.4	To analyze the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts	K4
			C102.5	To apply various tools in solving the differential equations to recognize the need for life-long learning	K3

3.	**I/I**	**PH8151 - Engineering Physics**	C103.1	To analyse the problems in columns and beams and gain the engineering knowledge in properties of matter to formulate	K4
			C103.2	To understand the fundamental concepts and applications of waves, lasers and fiber optics to give theoretical approaches to design modern devices	K2
			C103.3	To interpret the knowledge in thermal properties of materials and can determined expansion joints and heat exchangers in devices	K3
			C103.4	To understand the fundamental concepts of quantum theory and how modern electron microscope techniques use it to make predictions in the field of physics	K2
			C103.5	To appreciate the behavior of solids, describe the fundamentals of crystals, their structures, and the various crystal development processes	K2
4.	**I/I**	**CY8151 - Engineering Chemistry**	C104.1	To apply the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge	K3
			C104.2	To understand the adsorption methods used in the field of water and air pollution purification to assess societal, health, safety and cultural issues in the environmental	K2
			C104.3	To know the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy	K2
			C104.4	To discuss the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current social problems by using engineering techniques	K4
			C104.5	To Review the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate	K2

				consideration for the societal and environmental considerations	
5.	**I/I**	**GE8151-Problem Solving and Python**	C105.1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	K2
			C105.2	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C105.3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings	K3
			C105.4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C105.5	Develop python programs for solving computational problems by using modules, files, and python packages	K3
6.	**I/I**	**GE8152-Engineering Graphics**	C106.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models	K4
			C106.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant	K3
			C106.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures	K4
			C106.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C106.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts	K4
7.	**I/I**	**GE8161-Problem Solving and Python Laboratory**	C107.1	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C107.2	Develop Python programs using conditionals, looping, functions, and strings for solving real-time computational problems	K3
			C107.3	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C107.4	Develop python programs for solving problems by using modules, files, and python packages	K3

			C107.5	Utilize Python packages for developing real-world software applications	K6
8.	**I/I**	**Physics and Chemistry Laboratory**	C108.1	To manipulate the fundamental concepts like torque, elasticity and bending moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus of the material of the beam by non-uniform bending	K3
			C108.2	To practice the fundamentals of thermal properties of material of the bad conductor by Lee's disc method	K3
			C108.3	To understand the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	K2
			C108.4	To dramatize the strength of an acid using pH meter and conductometer for applications in the field of engineering	K3
			C108.5	To experimenting the estimation of total, permanent and temporary hardness of water for our environment	K3

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
9.	**I/II**	**HS8251 - Technical English**	C109.1	Read and write their technical and area-specific texts in an effortless manner	K3
			C109.2	Listen comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
			C109.3	Speak in an appropriate manner in both formal and informal situations for lifelong learning	K3
			C109.4	Create CVs and draft Job applications in confident manner	K6
			C109.5	Communicate confidently by using all the four skills with their peers and in real life situations	K4
10.	**I/II**	**MA8251 - Engineering Mathematics - II**	C110.1	To analyze the different types of matrices for solving practical problems	K4
			C110.2	To apply Gradient, divergence and curl of a vector point function and related identities in engineering field	K3
			C110.3	To acquire the knowledge to solve the engineering problems in analytic functions	K2
			C110.4	To analyze and apply the different methods to solve complex integration problems	K4
			C110.5	To create and manage the projects after applying and analyzing the fundamentals of Laplace transforms	K6
			C110.6	To analyze the different types of matrices for solving practical problems	K4
11.	**I/II**	**PH8253 - Physics for Electronics Engineering**	C111.1	To comprehend the materials for their diverse applications, it is necessary to grasp the energy band structures and the classical and quantum electron theories	K3

			C111.2	To provide a balanced understanding of diverse semiconductor electronic devices, such as hall devices, ohmic contacts, schottky diodes, and power transistors, by explaining the fundamental principles of semiconductor physics	K2
			C111.3	To interpret the properties of magnetic and dielectric materials, manipulate them and then analyze them for the purposes for which they are used in modern devices	K3
			C111.4	To understand the fundamental properties of optical materials in optoelectronics is essential to comprehend the theoretical methods for designing modern optoelectronic devices	K2
			C111.5	To comprehend the fundamentals of quantum structures and the nanoscale manipulation of modern materials in spintronics and carbon electronics	K2
12.	**I/II**	**BE8254 - Basic Electrical and Instrumentation Engineering**	C112.1	Draw the performance characteristics of various DC generators, D.C. Motors and understand the applications of it to power system	K3
			C112.2	"Determine the performance of various A.C. Induction motors and understand the	K2
			C112.3	applications of it to power system"	K3
			C112.4	Calculate the efficiency and determine the performance of the single phase transformer	K4
			C112.5	Understand the characteristics of LVDT, RTD and Thermistor.	K2
13.	**I/II**	**EC8251- Circuit Analysis**	C113.1	Understand the basic concepts of circuit elements and fundamental laws applied for circuits	K2
			C113.2	Apply circuit theorems for DC and AC circuits to find the electrical parameters	K3
			C113.3	Understand the concept of resonant theory and coupled circuits	K2

			C113.4	Analyze the transient response of DC and AC Circuits in series and parallel configurations	K4
			C113.5	Construct the two port networks and to verify its properties	K2
14.	**I/II**	**EC8252 - Electronic Devices**	C114.1	Understand the fundamental concepts of semiconductor diode and its operation	K2
			C114.2	Elaborate the construction and operation of transistors with its equivalent circuits	K2
			C114.3	Illustrate the construction and operation of FET and its characteristics	K2
			C114.4	Understand the principle of operation and characteristics of special semiconductor devices	K2
			C114.5	Discuss the operation of various semiconductor photo devices and power electronic devices	K2
15.	**I/II**	**EC8261 - Circuits and Devices Laboratory**	C115.1	Demonstrate VI characteristics of basic electronic devices	K2
			C115.2	Apply network theorems for electrical circuits	K3
			C115.3	Demonstrate the transient analysis and resonance of the RLC circuits	K2
16.	**I/II**	**GE8261 - Engineering Practices Laboratory**	C116.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C116.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work	K2
			C116.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2
			C116.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2019-2020**	SEMESTER: **03**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	**II/III**	**MA8352 - Linear Algebra and Partial Differential Equations**	C201.1	To analyze the fundamental concepts of advanced algebra and their role in modern Mathematics and applied contexts	K3
			C201.2	To apply the accurate and efficient use of advanced algebraic techniques in engineering field	K4
			C201.3	To solve non - trivial problems related to the concepts and by proving simple theorems	K3
			C201.4	Ability to apply the engineering knowledge to manage the projects in transforms and partial differential equations to formulate and solve some of the physical engineering problems	K6
			C201.5	To identify and analyze the partial differential equations using Fourier series analysis in engineering applications	K3
2.	**II/III**	**EC8393 - Fundamentals of Data Structures In C**	C202.1	Understand the fundamentals of basic C programming	K2
			C202.2	Create an application program using functions, Pointers, structures and Unions	K3
			C202.3	Implement linear data structures such as arrays, stacks, queues and linked list operations using C	K3
			C202.4	Implement non-linear data structures Trees and Graphs for an application	K4
			C202.5	Apply various sorting algorithms for an application using C program	K4

3.	**II/III**	**EC8351 - Electronic Circuits- I**	C203.1	Understand the fundamental concepts of biasing of BJT	K2
			C203.2	Design the single stage and multistage BJT amplifiers	K2
			C203.3	Analyze the FET and MOSFET small signal amplifiers	K4
			C203.4	Analyze the frequency response characteristics of FET and MOSFET small signal amplifiers	K4
			C203.5	Illustrate different types of rectifiers and power supplies	K3
4.	**II/III**	**EC8352 - Signals and Systems**	C204.1	Analyze the properties of signals and systems	K4
			C204.2	Apply Fourier Series and Fourier transform in CT signals	K3
			C204.3	Examine LTI CT systems in the Time domain and frequency domain	K4
			C204.4	Apply Z transform and DTFT in DT signals	K3
			C204.5	Analyze LTI DT systems in the Time domain and frequency domain	K4
5.	**II/III**	**EC8392- Digital Electronics**	C205.1	Understand the Boolean laws and formulate the different minimization techniques using Boolean functions	K2
			C205.2	Implement the various combinational circuits using logic gates	K3
			C205.3	Analyze and design the various synchronous sequential circuits using logic gates	K4
			C205.4	Analyze the asynchronous sequential circuits for stability and its hazards.	K4
			C205.5	Apply suitable memory devices and digital integrated circuits for real time applications	K3
6.	**II/III**	**EC8391 - Control Systems Engineering**	C206.1	Identify the various control system components and their representations.	K2
			C206.2	Attain the time response and steady state error of control systems.	K3
			C206.3	Analyze the stability of the system from its frequency response plots	K4
			C206.4	Apply the concepts of Routh Hurwitz, Root Locus and Nyquist stability criterions to analyze the stability of the system.	K4
			C206.5	Analyze the system stability with state space models using state variables	K4
7.	**II/III**	**EC8381- Fundamentals**	C207.1	Write basic C programs using looping, data manipulations, arrays and strings.	K2

		of Data Structures in C Laboratory	C207.2	Develop a C program using functions with argument passing	K3
			C207.3	Create an application using linear and non linear data structures	K4
			C207.4	Implement various sorting algorithms using C program	K4
			C207.5	Create an application using search algorithms and Hashing function	K4
8.	**II/III**	**EC8361 - Analog and Digital Circuits Laboratory**	C208.1	Analyze the rectifiers, filters and regulated power supplies	K4
			C208.2	Demonstrate the working of BJT and JFET amplifiers and to obtain its frequency response	K2
			C208.3	Design a Cascode and Cascade amplifiers	K3
			C208.4	Design a Combinational and Sequential Circuit using Logic Gates & Flip-flop	K3
			C208.5	Simulate the electronic circuits like amplifiers and rectifiers using PSPICE Model	K3
9.	**II/III**	**HS8381 - Interpersonal Skills/Listening &Speaking**	C209.1	Listen and react to English in an appropriate manner	K2
			C209.2	Get themselves actively involved in Group Discussion activities	K3
			C209.3	Feel comfortable in making oral presentations	K2
			C209.4	React well in both formal and informal contexts in professional situations	K4
			C209.5	Persuade their audience by making appropriate expressions	K5

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2019-2020**	SEMESTER: **04**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	**II/IV**	**MA8451- Probability and Random Processes**	C210.1	To Understand the basic notion of the concepts of probability and have knowledge of standard distributions which can apply to real life phenomenon	K2
			C210.2	To apply the Engineering knowledge of one- and two-dimensional random variables	K3
			C210.3	To identify and apply the concept of random processes in engineering field	K3
			C210.4	To interpret and apply the concept of correlation and spectral densities to manage the projects	K3
			C210.5	To analyze various distribution functions and to attain the knowledge to handle the response of random inputs to linear time invariant systems	K5
2.	**II/IV**	**EC8452- Electronic Circuits II**	C211.1	Construct the various feedback amplifiers using BJT	K3
			C211.2	Design low frequency and high frequency oscillators using BJT	K3
			C211.3	Analyze the performance of different types of tuned amplifiers using BJT	K4
			C211.4	Design wave shaping circuits and multivibrators using BJT	K3
			C211.5	Describe power amplifiers and DC-DC converters	K2
3.	**II/IV**	**EC8491 Communication Theory**	C212.1	Understand the implementation of AM in communication systems	K2
			C212.2	Design angle modulated communication systems	K4
			C212.3	Apply the concepts of Random Process to design Communication systems	K3
			C212.4	Analyze the noise performance of AM and FM systems	K4
			C212.5	Apply the concepts of sampling and quantization in communication	K3
4.	**II/IV**	**EC8451 Electromagnetic**	C213.1	Apply the basic concepts of vector algebra that related to electromagnetic model in different Co-ordinate systems	K3

		Fields	C213.2	Understand the applications of electric field, potential, and energy density	K2
			C213.3	Apply the magnetic field, potential, energy density forces, torques and their applications	K4
			C213.4	Categorize the relation between electric and magnetic fields using Maxwell's equations	K4
			C213.5	Understand the various wave propagation techniques in lossless and in lossy media	K2
5.	**II/IV**	**EC8453 Linear Integrated Circuits**	C214.1	Understand the construction and working of Op-amp and also its AC and DC characteristics	K2
			C214.2	Design the circuits using op amp for linear and nonlinear applications	K3
			C214.3	Apply the concepts of analog multiplier and PLL for various applications	K3
			C214.4	Interpret the principle of conversion of ADC and DAC using op-amps	K2
			C214.5	Design various waveform generators and other circuits using different ICs	K3
6.	**II/IV**	**GE8291 Environmental Science and Engineering**	C215.1	To apply the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	K3
			C215.2	To Understand the impact of the professional engineering solutions in societal and environmental contexts for the importance of public participation in conservation of natural resources.	K2
			C215.3	To discuss the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K2
			C215.4	To Learning the concepts from unsustainable to sustainable development and urban problems related to energy, water conservation, rain water harvesting.	K2
			C215.5	To Apply the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	K3
7.	**II/IV**	**EC8461 Circuits Design**	C216.1	Analyze the characteristics of various types of feedback amplifiers	K4

		and Simulation Laboratory	C216.2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using BJT	K3
			C216.3	Simulate oscillators, tuned amplifiers, wave-shaping and multivibrators using SPICE tool	K3
8.	**II/IV**	**EC8462 Linear Integrated Circuits Laboratory**	C217.1	Design oscillators and amplifiers using operational amplifiers	K3
			C217.2	Design filters using Op-amp and perform experiments to obtain frequency response	K3
			C217.3	Analyze the working of PLL and use PLL as frequency multiplier	K4
			C217.4	Design DC power supply using ICs	K3
			C217.5	Analyze the performance of oscillators and multivibrators using SPICE	K4

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2020-2021**	SEMESTER: **05**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	**III/V**	**EC8501 Digital Communication**	C301.1	Compute the information capacity using Huffman and Shannon-fano encoding methods	K3
			C301.2	Understand the implementation of DPCM, DM, ADPCM and ADM techniques	K2
			C301.3	Apply the base band transmission and reception techniques in Digital communication systems	K3
			C301.4	Analyze the noise performance of various digital modulation techniques.	K4
			C301.5	Compute error control coding techniques in digital communication system	K3
2.	**III/V**	**EC8553 Discrete-Time Signal Processing**	C302.1	Understand the fundamental concepts of DFT for the analysis of discrete time signals	K2
			C302.2	Implement the digital Infinite Impulse response Filters and formulate various realizations	K3
			C302.3	Develop the linear phase Finite Impulse Response filters using windowing and frequency sampling techniques	K4
			C302.4	Examine the finite wordlength effects in digital signal processing	K2
			C302.5	Understand the architecture, addressing modes and instruction sets of Digital Signal Processors	K2
3.	**III/V**	**EC8552 Computer Architecture and Organization**	C303.1	Understand the basic organization of modern computer systems	K2
			C303.2	Implement fixed- and floating-point arithmetic operations in computer architecture	K3
			C303.3	Design pipelined control units for implementing parallel processing	K2
			C303.4	Analyze the performance of memory systems and I/O devices	K4
			C303.5	Understand the parallel processing and advanced computer architectures	K2
4.	**III/V**	**EC8551 Communication Networks**	C304.1	Understand the basic building block of Networks and formulate the different Error detection and correction techniques	K2
			C304.2	Relate various media access and internetworking protocols	K2

			C304.3	Apply various routing protocols and algorithms for a given network along with IP addresses	K3
			C304.4	Demonstrate the flow of information in Transport Layer	K2
			C304.5	Study the various Application layer paradigms and the basics of cryptography and network security	K2
5.	**III/V**	**EC8073 Medical Electronics**	C305.1	Understand the human body electro-physiological parameters and recording of bio-potentials	K2
			C305.2	Examine the non-electrical physiological parameters and their measurement	K2
			C305.3	Interpret the various assist devices used in the hospitals viz. pacemakers, defibrillators, dialyzers and ventilators	K2
			C305.4	Utilize physical medicine methods like ultrasonic, shortwave, microwave surgical diathermies, and bio-telemetry principles	K2
			C305.5	Outline about recent trends in medical instrumentation	K2
6.	**III/V**	**OMD551 Basic of Biomedical Instrumentation**	C306.1	Understand the bio potential generation, propagation and types of electrodes	K2
			C306.2	Apply the different electrode placement techniques for various physiological recording	K3
			C306.3	Interpret non-electrical parameters measurement techniques	K3
			C306.4	Apply biochemical measurement techniques for real time systems	K3
			C306.5	Design bio amplifier for various physiological recording	K4
7.	**III/V**	**EC8562 Digital Signal Processing Laboratory**	C307.1	Demonstrate convolution and correlation using MATLAB	K3
			C307.2	Design and Implementation of FIR and IIR Filters using MATLAB	K4
			C307.3	Design and Implementation of FIR and IIR Filters using DSP Processor	K4
8.	**III/V**	**EC8561 Communication Systems Laboratory**	C308.1	Analyze the effects of sampling and TDM	K4
			C308.2	Demonstrate the various analog and digital modulation and demodulation techniques	K3
			C308.3	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system	K3

			C308.4	Simulate Digital Modulation schemes using MATLAB	K3
			C308.5	Simulate Error control coding schemes using MATLAB	K3
9.	**III/V**	**EC8563 Communication Networks Laboratory**	C309.1	Demonstrate communication between two desktop computers	K2
			C309.2	Implement various networking protocols and establish connection between computers	K3
			C309.3	Construct a network using sockets and exchange information	K3
			C309.4	Implement various routing protocols and maintain a secure data transfer	K3
			C309.5	Simulate various types of topologies and understand the differences between them	K3

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2020-2021**	SEMESTER: **06**

S.No.	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	III/VI	EC8691 Microprocessors and Microcontrollers	C310.1	Understand the fundamental concepts of 8086 microprocessor architecture, addressing modes & instruction set	K2
			C310.2	Understand the design aspects of I/O and Memory Interfacing circuits	K2
			C310.3	Develop Assembly language program to interface 8086 microprocessor with supporting chips for different applications	K4
			C310.4	Understand the fundamental concepts of 8051 microprocessor architecture, addressing modes & instruction set	K2
			C310.5	Develop Assembly language program to interface 8051 microcontroller with supporting chips for different applications	K4
2.	III/VI	EC8095 VLSI Design	C311.1	Understand the concepts of digital building blocks using MOS transistor	K2
			C311.2	Design various combinational MOS logic circuits like CPL, DPL	K3
			C311.3	Construct Sequential Circuits and Timing systems	K2
			C311.4	Design arithmetic building blocks and memory subsystem	K3
			C311.5	Implement FPGA design flow and testing	K3
3.	III/VI	EC8652 Wireless Communication	C312.1	Characterize a wireless channel and evolve the system design specifications	K2
			C312.2	Illustrate the multiple access techniques and channel assignment used in cellular architecture	K2
			C312.3	Apply the various digital signaling techniques for the wireless channels and systems	K3
			C312.4	Identify multipath mitigation techniques for the wireless channel and system under consideration	K2
			C312.5	Understand the concept of Multiple Antenna techniques with transmitter and receiver diversity	K2

4.	**III/VI**	**MG8591 Principles of Management**	C313.1	Discuss the evolution of management, functions and roles of managers	K2
			C313.2	Explain the different types of planning process and tools used for planning	K2
			C313.3	Elaborate different organization structures and functions of human resources manager	K2
			C313.4	Illustrate the different theories of motivation and leadership	K2
			C313.5	Describe the control techniques and the role of technology in management	K1
5.	**III/VI**	**EC8651 Transmission Lines and RF Systems**	C314.1	Understand the parameters of basic transmission lines	K2
			C314.2	Understand the parameters of high frequency transmission lines	K2
			C314.3	Analyze impedance matching by stubs using smith charts	K4
			C314.4	Derive the field equations for TE and TM waves	K3
			C314.5	Illustrate RF Active components, Gain and stability considerations	K3
6.	**III/VI**	**EC8004 Wireless Networks**	C315.1	Illustrate the latest 3G/4G networks and its architecture	K3
			C315.2	Examine the suitable network depending on the availability and requirement	K4
			C315.3	Categorize and implement wireless network environment for any application using latest wireless protocols and standards	K4
			C315.4	Implement different type of applications for smart phones and mobile devices with latest network strategies	K3
			C315.5	Apply multiple antenna techniques for capacity/ performance gains and explore other research areas in 5G	K3
7.	**III/VI**	**EC8681 Microprocessors and Microcontrollers Laboratory**	C316.1	Develop the ALP Programs for fixed point arithmetic circuits	K3
			C316.2	Demonstrate the interfacing circuits for different I/Os.	K3
			C316.3	Develop the Assembly Language Program for generating waveforms such as square wave and triangular wave using microprocessors	K3
			C316.4	Develop the arithmetic and logical programs using 8051 microcontrollers	K3
			C316.5	Demonstrate the performance in simulator and emulator	K2

8.	**III/VI**	**EC8661 VLSI Design Laboratory**	C317.1	Develop the HDL code for basic combinational digital integrated circuits	K4
			C317.2	Develop the HDL code for basic sequential digital integrated circuits	K4
			C317.3	Implement the logic modules in FPGA Boards	K3
			C317.4	Synthesize Place and Route the digital IPs	K4
			C317.5	Design, Simulate and extract the layouts of Analog IC Blocks using EDA tools	K4
9.	**III/VI**	**EC8611 Technical Seminar**	C318.1	Identify and formulate the problem	K3
			C318.2	Make effective literature survey for the identified problem	K3
			C318.3	Infer promising new directions of various cutting edge technologies	K4
			C318.4	Inspect skills in preparing detailed report describing the project	K3
			C318.5	Communicate effectively by making an oral presentation before an evaluation committee	K5
10.	**III/VI**	**HS8581 Professional Communication**	C319.1	Enhance the employability and career skills in engineering domain	K3
			C319.2	Improve professional communication	K4
			C319.3	Build confidence in employability skills	K4
			C319.4	Face interviews with necessary skills	K5
			C319.5	Acquire required skills to excel in their career	K3

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **07**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
1.	**IV/VII**	**EC8701 Antennas and Microwave Engineering**	C401.1	Understand the basic principles of antenna and microwave system design.	K2
			C401.2	Apply the knowledge of radiation mechanism to design various antennas	K3
			C401.3	Apply the knowledge of radiation principles of antenna to construct arrays	K3
			C401.4	Understand the fundamental active and passive microwave devices	K2
			C401.5	Design a microwave system for a given specifications	K3
2.	**IV/VII**	**EC8751 Optical Communication**	C402.1	Understand the basic elements of optical fibers, different operating modes and configurations	K2
			C402.2	Analyze the transmission characteristics associated with dispersion and polarization techniques	K4
			C402.3	Identify the characteristics of various fiber optical sources and detectors	K2
			C402.4	Construct the fiber optic receiver systems, measurements and coupling techniques	K4
			C402.5	Understand the optical communication systems and its networks	K2
3.	**IV/VII**	**EC8791 Embedded and Real Time Systems**	C403.1	Outline the concepts of Embedded systems	K3
			C403.2	Analyze the ARM Architecture and Instruction set to understand ARM based MCU with peripherals	K4
			C403.3	Apply the models of programs in embedded programming to analyze the program level performance analysis	K3
			C403.4	Analyze the task assignment and scheduling in the real time system	K4
			C403.5	Enhance the model real time applications using Embedded system concepts	K2
4.	**IV/VII**	**EC8702 Ad hoc and Wireless Sensor Networks**	C404.1	Understand the basics of Adhoc networks and Wireless Sensor Networks	K2
			C404.2	Apply the knowledge to identify the suitable routing algorithm based on the network and userrequirement	K3

			C404.3	Apply the knowledge to identify appropriate physical and MAC layer protocols	K3
			C404.4	Understand the transport layer and security issues possible in Adhoc and sensor networks	K2
			C404.5	Recognize the OS used in Wireless Sensor Networks and build basic modules	K2
5.	**IV/VII**	**EC8092 Advanced Wireless Communication**	C405.1	Comprehend the significance and role of this course in the present contemporary world	K2
			C405.2	Apply the knowledge about the importance of MIMO in today's communication	K3
			C405.3	Illustrate channel impairment mitigation using space-time block and Trellis codes	K3
			C405.4	Apply various methods for improving the data rate of wireless communication system	K3
			C405.5	Analyze advanced MIMO system - layered space time codes, MU-MIMO System and MIMO-OFDM systems	K4
6.	**IV/VII**	**OIC751 Transducer Engineering**	C406.1	Understand how physical quantities are measured and the transducer is classified	K2
			C406.2	Study the parameters of static characteristics and dynamic characteristics	K2
			C406.3	Summarize the operation of resistive transducers	K2
			C406.4	Summarize the operation of inductive and capacitive transducers	K2
			C406.5	Demonstrate the operation of special transducers and sensors	K2
7.	**IV/VII**	**EC8711 Embedded Laboratory**	C407.1	Develop programs in ARM for specific applications	K3
			C407.2	Interface memory, A/D & D/A converters with ARM Systems	K4
			C407.3	Analyze the performance of the interrupt	K4
			C407.4	Develop Program for Interfacing keyboard, display, motor and sensor	K3
			C407.5	Formulate the mini project using Embedded system	K5
8.	**IV/VII**	**EC8761 Advanced Communication Laboratory**	C408.1	Determine the performance of simple analog and digital optical link to analyze its frequency response	K4
			C408.2	Experiment with optical fiber to measure the losses and to analyze the mode characteristics	K4

			C408.3	Model the Wireless Channel for the study of characteristics and performance of Wireless Communication System	K3
			C408.4	Determine the characteristics of active microwave devices	K2
			C408.5	Determine the characteristics of passive microwave devices	K2

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGG**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **08**

S.No	Year/ Sem	Course Name	Course Outcomes (The students will be able to understand the)		Knowledge Level
9.	**IV/VIII**	**EC8076 Professional Ethics in Engineering**	C409.1	Describe the importance of human values from perspective of engineers.	K1
			C409.2	Explain different theories on moral development.	K2
			C409.3	Discuss the codes of ethics for engineers and roles of engineers as experimenters.	K2
			C409.4	Describe about safety, risk and to recognize the different responsibilities and rights of engineers.	K2
			C409.5	Interpret the different roles of engineers with regards to present global scenario.	K4
10.	**IV/VIII**	**EC8094 Satellite Communication**	C410.1	Understand the basics of satellite orbits	K2
			C410.2	Distinguish the satellite segment and earth segment	K2
			C410.3	Analyze the satellite link design	K3
			C410.4	Understand the multiple access techniques and coding methods used in satellite networks	K2
			C410.5	Understand the development of satellites for various applications	K2
11.	**IV/VIII**	**EC8811 Project Work**	C411.1	Conduct a literature survey in the selected domain to identify requirements for the real world problems and propose a methodology	K2
			C411.2	Model the problem at hand and experiment with Hardware/Software skill sets to suit the requirements	K3
			C411.3	Build and demonstrate the project effectively as a team with the attitudes of professional Engineers.	K4
			C411.4	Evaluate the challenges and risks involved in the execution of the project and take appropriate actions to circumvent them	K5
			C411.5	Communicate the results of an engineering project by means of an oral presentation, written reports and practical demonstration of the project outcomes	K6

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
COURSE OUT COME REGULATION 2021

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS3151 - PROFESSIONAL ENGLISH - I	C101.1	Listen and comprehend complex academic texts	K2
			C101.2	Read and infer the denotative and connotative meanings of technical texts	K2
			C101.3	Write definitions, descriptions, narrations and essays on various topics	K2
			C101.4	Speak fluently and accurately in formal and informal communicative contexts	K2
			C101.5	Express their opinions effectively in both oral and written medium of communication	K3
2	I / I	MA3151 - MATRICES AND CALCULUS	C102.1	Analyze the different types of course matrices for solving practical problems.	K4
			C102.2	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.3	Solve the problems of integrals using different methods of calculus.	K5
			C102.4	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.5	Determine the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K5
3	I / I	PH3151 - ENGINEERING PHYSICS	C103.1	Comprehend the importance of mechanics.	K2
			C103.2	Predict their fundamental knowledge of electromagnetic waves' characteristics.	K2
			C103.3	Build a solid basic understanding of oscillations, optics, and lasers.	K2
			C103.4	Understand the impact of quantum physics.	K2

			C103.5	Appreciate and apply the basic concepts of quantum mechanics to the production of energy bands.	K3
4	**I / I**	**CY3151 - ENGINEERING CHEMISTRY**	C104.1	Learn the indulgent of water quality parameters, boiler troubles and water treatment techniques.	K3
			C104.2	Discuss the basic principles and preparatory methods of nanomaterials and its applications	K2
			C104.3	Know the basic concepts and applications of phase rule and composites.	K2
			C104.4	Understanding of different types of fuels, their preparation, properties and combustion characteristics.	K2
			C104.5	Familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices	K3
5	**I / I**	**GE3151 - PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Develop algorithmic solutions to simple computational problems.	K3
			C105.2	Develop and execute simple Python programs.	K3
			C105.3	Write simple Python programs using conditionals and loops for solving problems.	K3
			C105.4	Decompose a Python program into functions.	K4
			C105.5	Represent compound data using Python lists, tuples, dictionaries etc	K2
			C105.6	Read and write data from/to files in Python programs.	K3
6	**I / I**	**GE3171 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C106.1	Develop algorithmic solutions to simple computational problems	K3
			C106.2	Develop and execute simple Python programs.	K3
			C106.3	Implement programs in Python using conditionals and loops for solving problems.	K3
			C106.4	Deploy functions to decompose a Python program.	K4
			C106.5	Process compound data using Python data structures	K2
			C106.6	Utilize Python packages in developing software applications.	K3
7	**I / I**	**BS3171 - PHYSICS AND CHEMISTRY LABORATORY**	C107.1	Learn the proper use of various kinds of physics laboratory equipment.	K3
			C107.2	Learn how data can be collected, presented and interpreted in a clear and concise manner	K3
			C107.3	Learn problem solving skills related to physics principles and interpretation of experimental	K3
			C107.4	Determine error in experimental measurements and techniques used to minimize such	K3
			C107.5	Make the student as an active participant in each part of all lab exercises.	K3

PROGRAMME: **ELECTRONICS AND COMMUNICATION ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS3251- PROFESSIONAL ENGLISH - II	C108.1	Compare and contrast products and ideas in technical texts	K2
			C108.2	Identify cause and effects in events, industrial processes through technical texts	K2
			C108.3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format	K2
			C108.4	Report events and the processes of technical and industrial nature	K2
			C108.5	Present their opinions in a planned and logical manner, and draft effective resumes in context of job search	K3
2	I / II	MA3251 - STATISTICS AND NUMERICAL METHODS	C109.1	Apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C109.2	Analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C109.3	Analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C109.4	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C109.5	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
3	I / II	PH3254 -PHYSICS FOR ELECTRONICS ENGINEERING	C110.1	To make the students to understand the basics of crystallography and its importance in studying materials properties.	K2
			C110.2	To understand the electrical properties of materials including free electron theory, applications of quantum mechanics and magnetic materials.	K2
			C110.3	To instil knowledge on physics of semiconductors, determination of charge carriers and device applications	K3
			C110.4	To establish a sound grasp of knowledge on different optical properties of materials, optical displays and applications	K3

			C110.5	To inculcate an idea of significance of nano structures, quantum confinement and ensuing nano device applications.	K3
4	**I / II**	**BE3254 - ELECTRICAL AND INSTRUMENTATION ENGINEERING**	C111.1	Illustrate the working principle of electrical machines	K4
			C111.2	Analyze the output characterizes of electrical machines	K4
			C111.3	Choose the appropriate electrical machines for various applications	K3
			C111.4	Explain the types and operating principles of measuring instruments	K4
			C111.5	Explain the basic power system structure and protection schemes	K4
5	**I / II**	**GE3251 - ENGINEERING GRAPHICS**	C112.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
			C112.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
			C112.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
			C112.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C112.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
6	**I / II**	**EC3251 -CIRCUIT ANALYSIS**	C113.1	Apply the basic concepts of circuit analysis such as Kirchhoff's laws, mesh current and node voltage method for analysis of DC and AC circuits	K3
			C113.2	Apply suitable network theorems and analyse AC and DC circuits	K3
			C113.3	Analyse steady state response of any combination of R, L and C circuits	K3
			C113.4	Analyse the transient response of any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits	K3
			C113.5	Analyse the coupled circuits and network topologies	K3
7	**I / II**	**GE3271 - ENGINEERING PRACTICES LABORATORY**	C114.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C114.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of	K2

				common household equipments; Make a tray out of metal sheet using sheet metal work	
			C114.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2
			C114.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2
8	**I / II**	**EC3271 -CIRCUITS ANALYSIS LABORATORY**	C115.1	Solve the electrical circuit problems using circuit theorems and laws.	K6
			C115.2	Simulate electrical circuits and to experimentally verify various theorems for circuit designing purposes.	K6
			C115.3	Experiment the frequency response and transients in passive elements	K6
			C115.4	Simulate the resonance circuits for several applications such as designing of tuning circuit, signal processing and voltage magnification.	K6
			C115.5	Perform the simulation of three phase circuits using suitable simulation for both balanced and unbalanced condition	K6

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOME REGULATION 2017

PROGRAMME:ELECTRICAL AND ELECTRONICS ENGINEERING	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	**HS8151 - COMMUNICATIVE ENGLISH**	C101.1	Enhance their reading and technical writing skills in the first year itself	K2
			C101.2	Comfortably read and understand articles in science and Engineering journals and articles in dailies	K2
			C101.3	Get themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
			C101.4	Communicate effectively in short conversations and talks uttered in English	K4
			C101.5	Draft essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4
2	I / I	MA8151 Engineering Mathematics - I	C102.1	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.2	Solve the problems of integrals using different methods of calculus.	K5
			C102.3	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.4	Analyze the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K4
			C102.5	Apply various tools in solving the	K3

				differential equations to recognize the need for life-long learning.	
3	**I / I**	**PH8151 - ENGINEERING PHYSICS**	C103.1	Analyse the problems in columns and beams and gain the engineering knowledge in properties of matter to formulate.	K4
			C103.2	Understand the fundamental concepts and applications of waves, lasers and fiber optics to give theoretical approaches to design modern devices.	K2
			C103.3	Interpret the knowledge in thermal properties of materials and can determined expansion joints and heat exchangers in devices.	K3
			C103.4	Understand the fundamental concepts of quantum theory and how modern electron microscope techniques use it to make predictions in the field of physics.	K2
			C103.5	Appreciate the behavior of solids, describe the fundamentals of crystals, their structures, and the various crystal development processes.	K2
4	**I / I**	**CY8151 - ENGINEERING CHEMISTRY**	C104.1	Apply the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge.	K3
			C104.2	Understand the adsorption methods used in the field of water and air pollution purification to assess societal, health, safety and cultural issues in the environmental. .	K2
			C104.3	Know the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy.	K2
			C104.4	Discuss the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current	K4

				social problems by using engineering techniques.	
			C104.5	Review the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate consideration for the societal and environmental considerations.	K2
5	**I / I**	**GE8151- PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	K2
			C105.2	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C105.3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings.	K3
			C105.4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C105.5	Develop python programs for solving computational problems by using modules, files, and python packages	K3
6	**I / I**	**GE8152- Engineering Graphics**	**C106.1**	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models	K3
			C106.2	**Apply** the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K2
			C106.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K3
			C106.4	**Practice** the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C106.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K6
7	**I / I**	**BS8161 - PHYSICS AND CHEMISTRY**	**C107.1**	Manipulate the fundamental concepts like torque, elasticity and bending	K3

		LABORATORY		moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus of the material of the beam by non-uniform bending.	
			C107.2	Practice the fundamentals of thermal properties of material of the bad conductor by Lee's disc method.	K3
			C107.3	Understand the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	K2
			C107.4	Dramatize the strength of an acid using pH meter and conductometer for applications in the field of engineering.	K3
			C107.5	Experimenting the estimation of total, permanent and temporary hardness of water for our environment,	K3
8	**I / I**	GE8161- Problem Solving and Python Programming Laboratory	C108.1	Develop simple python programs for applying the concepts of datatypes, expressions, and python statements	K3
			C108.2	Develop Python programs using conditionals, looping, functions, and strings for solving real-time computational problems.	K3
			C108.3	Understand the concepts of compound data using Python lists, tuples, and dictionaries	K2
			C108.4	Develop python programs for solving problems by using modules, files, and python packages	K3
			C108.5	Utilize Python packages for developing real-world software applications	K6

PROGRAMME:ELECTRICAL AND ELECTRONICS ENGINEERING	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **02**

S.No	Year / Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**I / II**	HS8251 – Technical English	C109.1	Read and write their technical and area-specific texts in an effortless manner	K3
			C109.2	Listen comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
			C109.3	Speak in an appropriate manner in both formal and informal situations for lifelong learning	K3
			C109.4	Create CVs and draft Job applications in confident manner	K6
			C109.5	Communicate confidently by using all the four skills with their peers and in real life situations	K4
2	**I / II**	MA8251 - **ENGINEERING MATHEMATICS - II**	C110.1	Analyze the different types of matrices for solving practical problems.	K4
			C110.2	Apply Gradient, divergence and curl of a vector point function and related identities in engineering field.	K3
			C110.3	Acquire the knowledge to solve the engineering problems in analytic functions	K2
			C110.4	Analyze and apply the different methods to solve complex integration problems.	K4
			C110.5	Create and manage the projects after applying and analyzing the fundamentals of Laplace transforms	K6
3	**I / II**	PH8253 - Physics for Electronics Engineering	C111.**1**	To comprehend the materials for their diverse applications, it is necessary to grasp the energy band structures and the classical and quantum electron theories.	K3

			C112.2	To provide a balanced understanding of diverse semiconductor electronic devices, such as hall devices, ohmic contacts, schottky diodes, and power transistors, by explaining the fundamental principles of semiconductor physics.	K2
			C112.3	To interpret the properties of magnetic and dielectric materials, manipulate them and then analyze them for the purposes for which they are used in modern devices.	K3
			C112.4	To understand the fundamental properties of optical materials in optoelectronics is essential to comprehend the theoretical methods for designing modern optoelectronic devices.	K2
			C112.5	To comprehend the fundamentals of quantum structures and the nanoscale manipulation of modern materials in spintronics and carbon electronics.	K2
4	**I / II**	BE8252 - Basic Civil and Mechanical Engineering	**C113.1**	Explain the usage of construction material and proper selection of construction materials.	K3
			C113.2	To measure distances and area by surveying	K3
			C113.3	Identify the components used in power plant cycle.	K3
			C113.4	Demonstrate working principles of petrol and diesel engine.	K3
			C113.5	elaborate the components of refrigeration and Air conditioning cycle.	K3
5	**I / II**	EE8251 Circuit Theory	**C114.1**	Apply Kirchhoff's current and voltage laws to simple circuits and Solve complex circuits using Mesh & Nodal Methods.	K3
			C114.2	Apply Network theorems to linear circuits and to solve simple and complex problems.	K3
			C114.3	Analyze the Transient response of RLC circuits under DC and AC excitation using	K4

				Laplace Transform	
			C114.4	Analyze three phase balanced and unbalanced star, delta network	K4
			C114.5	Compute the frequency response of Series and Parallel resonance and analyze tuned circuits.	K2
6	**I / II**	GE8291 Environmental Science and Engineering	**C115.1**	Apply the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations	K3
			C115.2	Understand the impact of the professional engineering solutions in societal and environmental contexts for the importance of Public participation in conservation of natural resources.	K2
			C115.3	Discuss the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K2
			C115.4	Learning the concepts from unsustainable to sustainable development and urban problems related to energy , water conservation, rain water harvesting.	K2
			C115.5	Apply the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	K3
7	**I / II**	**GE8261 - ENGINEERING PRACTICES LABORATORY**	**C116.1**	Fabricate carpentry components and pipe connections including plumbing works.	K2
			C116.2	Use welding equipments to join the structures.	K2
			C116.3	Carry out the basic machining operations	K2
			C116.4	Make the models using sheet metal works	K4
			C116.5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings	K4

			C116.6	Carry out basic home electrical works and appliances	K2
8	**I / II**	**EE8261 ELECTRIC CIRCUITS LABORATORY**	**C117.1**	Solve the electrical circuit problems using circuit theorems and laws.	K3
			C117.2	Simulate electrical circuits and to experimentally verify various theorems for circuit designing purposes.	K4
			C117.3	Experiment the frequency response and transients in passive elements. .	K4
			C117.4	Simulate the resonance circuits for several applications such as designing of tuning circuit, signal processing and voltage magnification.	K4
			C117.5	Perform the simulation of three phase circuits using suitable simulation for both balanced and unbalanced condition	K4

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S.No	Year / Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**II/III**	MA8353 Transforms and Partial Differential Equations	**C201.1**	Understand to solve the given standard partial differential equations.	K2
			C202.2	Identify and analyze the differential equations using Fourier series analysis in engineering applications.	K4
			C202.3	Create using modern techniques of Fourier series to solve one- and two-dimensional heat flow problems and one-dimensional wave equations.	K5
			C202.4	Ability to apply the engineering knowledge to manage the projects in transforms and partial differential equations to formulate and solve some of the physical engineering problems.	K6
			C202.5	Use the effective modern mathematical tools to solve the partial differential equations by using Z transform techniques for discrete time systems.	K3
2	**II/III**	EE8351 Digital Logic Circuits	**C202.1**	Understand the various number systems and study the characteristics of the digital logic family circuits	K2
			C202.2	Apply the Boolean functions, K maps and implementation of combinational logic circuits.	K3
			C202.3	Analyze the various synchronous and asynchronous sequential circuits.	K4
			C202.4	Implement Boolean logic equations with Programmable logic Devices	K3
			C202.5	Develop VHDL code for combinational and Sequential Logic Circuits	K3
3	**II/III**	EE8391 Electromagnetic Theory	C203.1	Apply vector calculus to static electric-magnetic fields in different engineering situations.	K3
			C203.2	Solve electric potential problems in linear, isotropic media for simple geometrics.	K3
			C203.3	Determine voltage gradients for simple charge and current configurations and	K3

				the force between charges and currents.	
			C203.4	Analyze Maxwell's equation in different forms (differential and integral) and apply them to diverse engineering problems.	K2
			C203.5	Examine the phenomena of wave propagation in free space and different media and its interfaces.	K2
4	**II/III**	EE8301 Electrical Machines - I	C204.1	Apply the concepts for the study and analysis of magnetic circuits and their applications.	K2
			C204.2	Explore the operation and performance of single and three phase transformer	K3
			C204.3	Describe the electric and magnetic field interactions in electromechanical devices and machines.	K2
			C204.4	Analyze the working principles, characteristics and performance of DC generator	K2
			C204.5	Explain the knowledge on working principle, characteristics, starting, speed control and performance analysis of DC motor	K3
5	**II/III**	EC8353 Electron Devices and Circuits	C205.1	Explain the structure and operation of basic electronic devices such as diodes.	K2
			C205.2	Illustrate the characteristics of different electronic devices such as transistors and thyristors.	K2
			C205.3	Choose and adapt the required components to construct an amplifier circuit.	K2
			C205.4	Explore the working of multistage, differential and power amplifiers	K2
			C205.5	Perform design and analysis of feedback amplifiers and oscillators.	K2
6	**II/III**	ME8792 Power Plant Engineering	C206.1	Understand the modern coal-based power plant and components used in thermal plant.	K2
			C206.2	Understand the fundamental of various cycles and diesel, gas and combined cycle power plant.	K2

			C206.3	Understand the layout and working of various Nuclear Power Plants	K2
			C206.4	Understand the construction and working of hydroelectric and various non-conventional power plants.	K2
			C206.5	Understand and Analyze energy, economic and environmental issues of power plant.	K4
7	**II/II**	EC8311 Electronics Laboratory	C207.1	Understand the fundamental operation and characteristics of semiconductor devices.	K2
			C207.2	Formulate the basic parameters of semiconductor devices and their limiting factors.	K3
			C207.3	Apply the BJT amplifiers in various configuration techniques.	K3
			C207.4	Design the frequency response characteristics of amplifiers	K4
			C207.5	Design the basic electronic circuits with application to diodes, field-effect transistors and bipolar junction transistors.	K4
8	**II/II**	EE8311 Electrical Machines Laboratory - I	C208.1	Analyze the performance of various D.C. Generators and understand its applications.	K4
			C208.2	Analyze the operation of D.C. Generators and D.C motor on no load and load condition.	K4
			C208.3	Analyze the performance characteristics of various D.C. Motors and understand its applications.	K4
			C208.4	Experimenting the performance of DC motor by conducting suitable tests	K4
			C208.5	Evaluate the voltage regulation and predetermine the performance of the single phase and three phase transformers.	K5

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**II/IV**	MA8491 Numerical Methods	C209.1	Apply the fundamental techniques of solving algebraic and transcendental equations.	K4
			C209.2	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C209.3	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
			C209.4	Identify and apply the modern tools for solving first and second order ordinary differential equations.	K4
			C209.5	Identify the problem and solve the partial and ordinary differential equations with initial and boundary conditions by using modern tools for project management.	K6
2	**II/IV**	EE8401 Electrical Machines - II	C210.1	Explain the concept, principle and performance of salient and non-salient pole synchronous generator.	K4
			C210.2	Describe the concept, principle and performance of synchronous motor.	K2
			C210.3	Illustrate the construction, working principle and performance of three phase induction motor.	K2
			C210.4	Examine various types of starting and speed control methods of three phase induction motor.	K1
			C210.5	Analyze the principle and performance of single phase induction motors and special electrical machines.	K4
3	**II/IV**	EE8402 Transmission and Distribution	C211.1	Design the transmission line parameters for specific performance and estimate the voltage drop.	K4

			C211.2	Design equivalent circuits for the transmission lines based on distance and to calculate the voltage regulation and efficiency for public safety.	K3
			C211.3	Analyze the design of transmission lines insulator rings and to improve the efficiency.	K4
			C211.4	Explain the types of cables and the methods of grading of cables	K4
			C211.5	Describe the distribution systems, substations, groundings, fundamentals of EHVAC, HVDC and FACTS systems.	K4
4	**II/IV**	EE8403 Measurements and Instrumentation	C212.1	Acquire knowledge on basic functional elements of instruments and various types of errors present in measurements.	K2
			C212.2	Explain the various concepts of electrical and electronics instruments.	K4
			C212.3	Compare a suitable measuring instrument used for measuring different electrical quantities.	K4
			C212.4	Explain the operating principles of various storage and display devices.	K4
			C212.5	Explain the operational features of transducer and Data Acquisition System.	K4
5	**II/IV**	EE8451 Linear Integrated Circuits and Applications	C213.1	Acquire knowledge in IC fabrication procedure.	K2
			C213.2	Determine the DC and AC characteristics of op-amps and signal analysis using op-amp	K2
			C213.3	Construct the applications of op-amp based circuits.	K3
			C213.4	Examine the operation of special function IC's.	K1
			C213.5	Explain the operation of application IC's like voltage regulator and switching regulator.	K4
6	**II/IV**	IC8451 Control Systems	C214.1	Apply the transfer function models for analysis of physical system and control system components.	K3
			C214.2	Analyze the time response of various linear systems and steady state errors.	K4
			C214.3	Apply the frequency response of the system in open and closed loop response.	K3
			C214.4	Apply the concepts of system stability to	K4

				analyze performance of closed loop systems.	
			C214.5	Apply the basic concepts of state variable analysis of systems and effect of state feedback of system	K4
7	**II/IV**	EE8411 Electrical Machines Laboratory - II	C215.1	Analyze the regulation of Alternators by EMF, MMF and ZPF Methods	K4
			C215.2	Analyze the Characteristics of synchronous motor using V and inverted V curve	K4
			C215.3	Analyze the separation of losses in Induction Motor	K4
			C215.4	Analyze the efficiency and performance characteristics of single phase induction motor	K4
			C215.5	Analyze the efficiency and performance characteristics of three phase induction motor	K4
8	**II/IV**	EE8461 Linear and Digital Integrated Circuits Laboratory	C216.1	Evaluate the boolean functions and develop adder, subtractor circuits	K5
			C216.2	Analyze the various code converters to understand the importance of code conversion.	K4
			C216.3	Analyze and implement 4-bit Shift Registers	K4
			C216.4	Develop Op-Amp in various application circuits	K3
			C216.5	Formulate the counters using specific counter IC.	K2
9	**II/IV**	EE8412 Technical Seminar	C217.1	Understand the effective and recent advancement presentation on Engineering & technology	K2
			C217.2	Apply and prepare the State-of-art technologies in the present-day technological growths.	K3
			C217.3	Formulate the presentation using the concepts of ordering and determining the central, main and supporting ideas	K2
			C217.4	Present any topic in any recent advancement with good communicative skill Infront of peers and faculty members	K2
			C217.5	Perform well in placement recruitment drive with good technical skills and communication skills	K2

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S.No	Year / Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	III/ V	EE8501 Power System Analysis	C301.1	Classify the power system components such as generator, transformer and transmission lines under steady state operating condition.	K2
			C301.2	Solve the power system using iterative techniques for planning, operation and control of a power system to calculate the steady state power flow.	K3
			C301.3	Determine the short circuit capacity of any power system under symmetrical fault using bus impedance matrix and Thevenin's theorem to calculate fault current.	K5
			C301.4	Apply the concept of symmetrical components and sequence networks to analyze the power system when it is subjected to an unsymmetrical fault.	K3
			C301.5	Explain the power system under steady state and transient condition and to find the stability of the power system using numerical methods.	K3
2	III/ V	EE8551 Microprocessors and Microcontrollers	C302.1	Describe the operation of 8085 microprocessor architecture.	K2
			C302.2	Design and implement programs on 8085 microprocessor	K2
			C302.3	Elaborate the operation of 8051 microcontroller architecture.	K2
			C302.4	Describe the commonly used peripherals and interfacing.	K2
			C302.5	Apply the basic knowledge of microcontroller programming and its different applications.	K3
3	III/ V	EE8552 Power Electronics	C303.1	Describe the types of semiconductor devices and their switching characteristics.	K2

			C303.2	Analyze the various AC to DC converters.	K4
			C303.3	Sketch the fundamental switching topologies of DC-to-DC converters and their applications.	K3
			C303.4	Interpret the modulation and harmonic reduction techniques in DC to AC Converters.	K3
			C303.5	Illustrate the operation of AC voltage controller and to implement cyclo converter design for their applications.	K2
4	**III/ V**	EE8591 Digital Signal Processing	C304.1	Analyze the various types of signal and systems, sampling in time signal.	K4
			C304.2	Apply discrete time Linear Time Invariant systems using Z transform and Discrete Time Fourier Transform.	K3
			C304.3	Apply the concepts of Discrete Fourier Transform and Fast Fourier Transform to solve Problems	K3
			C304.4	Apply Finite impulse response and Infinite impulse response digital filters.	K3
			C304.5	Choose the appropriate type of architecture of digital signal processors.	K3
5	**III/ V**	CS8392 Object Oriented Programming	C305.1	Understand the concept and features of object oriented programming using java programs with classes and objects	K2
			C305.2	Create the java program using inheritance, access specifiers, abstract classes, interfaces and strings	K4
			C305.3	Use of exceptions and its types , input and output stream	K5
			C305.4	Build java applications for multi threading and its life cycle, generic classes and methods and bounded types.	K4
			C305.5	Combine the concept of interactive, graphics programming using swing components such as text fields , text areas, button, check box and menus	K4
6	**III/ V**	EI8073 Basics of Biomedical Instrumentation	C306.1	Learn the different bio potential and its propagation.	K2
			C306.2	Familiarize the different electrode placement for various physiological recording	K3

			C306.3	Design bio amplifier for various physiological recording	K4
			C306.4	Understand various technique non electrical physiological measurements	K2
			C306.5	Understand the different biochemical measurements	K2
7		EE8511 Control and Instrumentation Laboratory	C307.1	Analyze the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system using MATLAB	K4
			C307.2	Analyze the various types of ADC, DAC converters.	K4
			C307.3	Analyze the response of lag, lead and lag-lead compensators.	K4
			C307.4	Analyze the basics of bridge networks and signal conditioning circuits.	K4
			C307.5	Analyze the response and stability of control systems using simulation package.	K4
8	**III/ V**	HS8581 Professional Communication	C308.1	Enhance the employability and career skills in engineering domain	**K3**
			C308.2	Improve professional communication	**K4**
			C308.3	Build confidence in employability skills	**K4**
			C308.4	Face interviews with necessary skills	**K5**
			C308.5	Acquire required skills to excel in their career	**K3**
9	**III/V**	CS8383 Object Oriented Programming Laboratory	C309.1	Design and implement java simple application that make use of classes, packages and interfaces	K2
			C309.2	Develop a java application using class and its members and also implement java converter applications.	K4
			C309.3	Apply the java string programs using string operations using array list, abstract classes	K4
			C309.4	Develop a java program to implement user defined exceptions, reading and writing a file	K4
			C309.5	Develop a java program for multi threaded applications and generic function.	K4

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S.No	Year / Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**III/ VI**	EE8601 Solid State Drives	C310.1	Explain the fundamental of steady state and dynamics of a drive system.	K2
			C310.2	Illustrate the operation of the converter / chopper fed dc drive to solve simple problems	K2
			C310.3	Demonstrate the operation of classical and modern induction motor drives	K3
			C310.4	Analyze the operation and performance of synchronous motor drives.	K4
			C310.5	Design the current and speed controllers for a closed loop solid-state DC motor drive.	K6
2	**III/ VI**	EE8602 Protection and Switchgear	C311.1	Analyze the knowledge on different protective schemes in power system	K4
			C311.2	Explain various electromagnetic relays and its application	K3
			C311.3	Choose the protection scheme for various faults in motor, generator, transformer, bus bar, transmission line	K5
			C311.4	Examine various static relays and numerical relays and its application	K1
			C311.5	Describe concepts and principle of various circuit breakers	K2
3	**III/ VI**	EE8691 Embedded Systems	C315.1	Explain the building blocks of embedded systems.	K4
			C315.2	Analyse the various communications in processors and input/output interfacing.	K4
			C315.3	Apply the embedded development strategies to develop the embedded	K3

				firmware environment.	
			C315.4	Describe the various scheduling techniques in Real Time Operating System.	K1
			C315.5	Apply the concepts of embedded system in application developments within realistic constraints such as economic, environmental and society.	K3
4	**III/ VI**	EE8004 Modern Power Converters	C313.1	Understand the concepts of Switched mode DC power supplies.	K2
			C313.2	Examine the operation of phase Controlled Rectifiers and apply the inverters and essentiality of harmonic control in power electronic circuits.	K3
			C313.3	Apply the AC-AC converters with and without DC link harmonic control in power electronic circuits.	K3
			C313.4	Understand the concepts of ZVS, ZCS, Quasi resonant converters.	K2
			C313.5	Apply the converters for AC-DC conversion and SMPS	K3
5	**III/ VI**	EE8005 Special Electrical Machines	C314.1	Explain the construction, operation and control methods of stepping motors	K4
			C314.2	Describe the operation of various power controllers required for switched reluctance motors	K2
			C314.3	Derive the expressions for magnetic circuit analysis, emf and torque equations of permanent magnet brushless DC motors	K5
			C314.4	Illustrate the construction, operation and performance characteristics of permanent magnet synchronous motors	K2
			C314.5	Choose a special machine for a particular application.	K3
6	**III/ VI**	EE8661 Power Electronics and Drives Laboratory	C315.1	Demonstrate the gate pulse generation using various configurations	**K3**
			C315.2	Explain the characteristics of various switches.	**K3**

			C315.3	Illustrate the operation and performance parameters of DC – AC, DC – DC converter circuits.	**K3**
			C315.4	Interpret the performance of AC – DC, AC – AC converter circuits.	**K3**
			C315.5	Simulate various power electronic converter circuits.	**K6**
7	**III/ VI**	EE8681 Microprocessors and Microcontrollers Laboratory	C316.1	Apply the arithmetic operations, logic operations and sorting using 8085 microprocessors.	K3
			C316.2	Analyze the program for ADC, DAC conversion, finding the maximum and minimum numbers in a series.	K4
			C316.3	Analyze the operations of peripheral interfacing with 8085 microprocessor	K4
			C316.4	Apply the arithmetic, logic operations and branching operation using 8051 microcontroller	K3
			C316.5	Apply the program for peripheral interfacing with 8051 microcontroller.	K3
8		EE8611 Mini Project	C317.1	Apply the fundamental knowledge within the technical area to a given problem, analyze previous researcher's work.	K3
			C317.2	Analyze the engineering solutions to complex problems and conduct experiments.	K4
			C317.3	Apply appropriate technology tools for communication, teamwork, conclusion support and attitudes of a professional engineer.	K3
			C317.4	understand with team members in a qualified manner, to ensure a collective project environment and also apply a strong working knowledge of ethics.	K3
			C317.5	Document and present one's own work for a given target group with good oral and written presentation skills and also recognize the need for life-long learning by undergoing the project work	K3

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S.No	Year / Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**IV/ VII**	EE8701 High Voltage Engineering	C401.1	Identify the source, effects and protection methods of over voltages in power system.	K2
			C401.2	Describe the breakdown mechanism in different dielectrics.	K2
			C401.3	Explain the different methods of overvoltage generation.	K2
			C401.4	Explore the various overvoltage measurement methods	K2
			C401.5	Apply the concepts of high voltage testing principles to power apparatus.	K2
2	**IV/ VII**	EE8702 Power System Operation and Control	C402.1	Illustrate the basic concepts of power system operation and control.	K2
			C402.2	Construct the power-frequency controller to single area and two area systems.	K3
			C402.3	Employ the suitable control actions to maintain the voltage profile against various loads.	K2
			C402.4	Schedule the generators in power system economically by unit commitment economic dispatch.	K4
			C402.5	Apply the concept of computer control of power system.	K3
3	**IV/ VII**	EE8703 Renewable Energy Systems	C403.1	Explain the importance and limitations of renewable energies using present Indian and International energy scenario.	K4
			C403.2	Describe the working of different types of wind pow integration issues.	K2
			C403.3	Discuss the solar energy harnessing methods along with types, characteristics and applications.	K2

			C403.4	Analyze the energy conversion process and the environmental effects on biomass energy, geo thermal energy and hydro power generating power plants.	K4
			C403.5	Examine the working of several renewable energy systems such as tidal energy, ocean thermal energy, hydrogen production and storage, Energy storage systems and hybrid systems.	K3
4	**IV/ VII**	Testing of Materials	C404.1	Classify and Compare the different types of testing	K4
			C404.2	Summarize the mechanical testing and the techniques.	K2
			C404.3	Generalize and compare the non-destructive testing methods.	K2
			C404.4	Differentiate the macro and microscopic testing of materials	K4
			C404.5	Correlate the types of Thermal testing and contrast the chemical testing of materials	K4
5	**IV/ VII**	EI8075 Fibre Optics and laser Instrumentations	C405.1	Explain the principle, transmission, dispersion and attenuation characteristics of optical fibers.	K2
			C405.2	Describe the selection of the appropriate optical fiber sensors for industrial application.	K2
			C405.3	Classify the different types of lasers and discuss their principle, fundamental characteristics and properties.	K2
			C405.4	Apply laser theory for the selection of lasers for specific Industrial applications.	K2
			C405.5	Discuss the principle of holography and the use of lasers in Medical applications.	K2
6	**IV/ VII**	EE8010 Power System Transients	C406.1	Interpret the importance of transients and its effect on power system.	K2
			C406.2	Inferr the overvoltage due to switching transients.	K2
			C406.3	Gather the importance of lighting transients and its interaction with power system.	K2

			C406.4	Exemplify the traveling waves concepts in transmission line.	K2
			C406.5	Understand the integrated power system using qualitative application of EMTP for transient computation.	K2
7	**IV/ VII**	EE8711 Power System Simulation Laboratory	C407.1	Analyze the appropriate program for transmission line parameters and its performance	K4
			C407.2	Formulate the bus admittance and impedance matrices and derive the solution for electrical network problems	K5
			C407.3	Analyze the fault analysis for a given power system under symmetrical and unsymmetrical fault.	K4
			C407.4	Analyze the stability of the power system by simulation using appropriate techniques	K4
			C407.5	Formulate a suitable program to solve economic dispatch problem and load frequency dynamics of interconnected power system.	K5
8	**IV/ VII**	EE8712 Renewable Energy Systems Laboratory	C408.1	Analyze the concept of renewable energy resources and technologies.	K4
			C408.2	Analyze the characteristics of solar PV and wind energy system	K4
			C408.3	Evaluate the performance of micro wind generation and Hybrid systems.	K5
			C408.4	Analyze the simulation technique in solar PV system, wind and hybrid energy systems.	K4
			C408.5	Analyze the importance of intelligent controllers for hybrid energy generation systems.	K4

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S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	**IV/VIII**	EE8015 Electric Energy Generation, Utilization and Conservation	C409.1	Understand the fundamental of various lighting sources and illumination.	K2
			C409.2	Understand the concepts of refrigeration system, its applications.	K2
			C409.3	Understand the various types of electric heating and welding system.	K2
			C409.4	Understand the requirement, mechanics and control for traction system.	K2
			C409.5	Apply the concept of electric connection for house, domestic purpose, UPS, industrial and substations.	K3
2	**IV/VIII**	EE8019 Smart Grid	C410.1	Understand the basic concepts of smart grid and latest developments.	K2
			C410.2	Understand the several characteristics of the smart grid such as technologies, components, architectures and applications	K2
			C410.3	Understand the appropriate knowledge about various smart meters and advanced metering infrastructure.	K2
			C410.4	Apply the knowledge of power quality management in Smart Grids	K3
			C410.5	Apply more understanding on LAN, WAN and Cloud Computing for Smart Grid applications	K3
3	**IV/VIII**	EE8811 Project Work	C411.1	Develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same.	K6
			C411.2	Analyze a new method to solve the related problems	K4
			C411.3	Apply the fundamental engineering knowledge & skills to solving the prob	K3
			C411.4	Agree and work as a team to come to a common conclusion	K5
			C411.5	Design engineering solutions to complex problems in a systematic approach	K6

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
COURSE OUT COME REGULATION 2021

PROGRAMME: **ELECTRICAL AND ELECTRONICS ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS3151 - PROFESSIONAL ENGLISH - I	C101.1	Listen and comprehend complex academic texts	K2
			C101.2	Read and infer the denotative and connotative meanings of technical texts	K2
			C101.3	Write definitions, descriptions, narrations and essays on various topics	K2
			C101.4	Speak fluently and accurately in formal and informal communicative contexts	K2
			C101.5	Express their opinions effectively in both oral and written medium of communication	K3
2	I / I	MA3151 - MATRICES AND CALCULUS	C102.1	Analyze the different types of course matrices for solving practical problems.	K4
			C102.2	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.3	Solve the problems of integrals using different methods of calculus.	K5
			C102.4	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.5	Determine the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K5
3	I / I	PH3151 - ENGINEERING PHYSICS	C103.1	Comprehend the importance of mechanics.	K2
			C103.2	Predict their fundamental knowledge of electromagnetic waves' characteristics.	K2
			C103.3	Build a solid basic understanding of oscillations, optics, and lasers.	K2

			C103.4	Understand the impact of quantum physics.	K2
			C103.5	Appreciate and apply the basic concepts of quantum mechanics to the production of energy bands.	K3
4	**I / I**	**CY3151 - ENGINEERING CHEMISTRY**	C104.1	Learn the indulgent of water quality parameters, boiler troubles and water treatment techniques.	K3
			C104.2	Discuss the basic principles and preparatory methods of nanomaterials and its applications	K2
			C104.3	Know the basic concepts and applications of phase rule and composites.	K2
			C104.4	Understanding of different types of fuels, their preparation, properties and combustion characteristics.	K2
			C104.5	Familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices	K3
5	**I / I**	**GE3151 - PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Develop algorithmic solutions to simple computational problems.	K3
			C105.2	Develop and execute simple Python programs.	K3
			C105.3	Write simple Python programs using conditionals and loops for solving problems.	K3
			C105.4	Decompose a Python program into functions.	K4
			C105.5	Represent compound data using Python lists, tuples, dictionaries etc	K2
			C105.6	Read and write data from/to files in Python programs.	K3
6	**I / I**	**GE3171 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C106.1	Develop algorithmic solutions to simple computational problems	K3
			C106.2	Develop and execute simple Python programs.	K3
			C106.3	Implement programs in Python using conditionals and loops for solving problems.	K3
			C106.4	Deploy functions to decompose a Python program.	K4
			C106.5	Process compound data using Python data structures	K2

			C106.6	Utilize Python packages in developing software applications.	K3
7	I / I	**BS3171 - PHYSICS AND CHEMISTRY LABORATORY**	C107.1	Learn the proper use of various kinds of physics laboratory equipment.	K3
			C107.2	Learn how data can be collected, presented and interpreted in a clear and concise manner	K3
			C107.3	Learn problem solving skills related to physics principles and interpretation of experimental	K3
			C107.4	Determine error in experimental measurements and techniques used to minimize such	K3
			C107.5	Make the student as an active participant in each part of all lab exercises.	K3

PROGRAMME: **ELECTRICAL AND ELECTRONICS ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS3251- PROFESSIONAL ENGLISH - II	C108.1	Compare and contrast products and ideas in technical texts	K2
			C108.2	Identify cause and effects in events, industrial processes through technical texts	K2
			C108.3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format	K2
			C108.4	Report events and the processes of technical and industrial nature	K2
			C108.5	Present their opinions in a planned and logical manner, and draft effective resumes in context of job search	K3
2	I / II	MA3251 - STATISTICS AND NUMERICAL METHODS	C109.1	Apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C109.2	Analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C109.3	Analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C109.4	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C109.5	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
3	I / II	PH3202-PHYSICS FOR ELECTRICAL ENGINEERING	C110.1	To make the students to understand the basics of dielectric materials and insulation.	K2
			C110.2	To understand the electrical properties of materials including free electron theory, applications of quantum mechanics and magnetic materials.	K2
			C110.3	To instil knowledge on physics of semiconductors, determination of charge carriers and device applications	K3
			C110.4	To establish a sound grasp of knowledge on different optical properties of materials, optical displays and applications	K3
			C110.5	To inculcate an idea of significance of nano structures, quantum confinement and ensuing nano device applications.	K3

4	**I / II**	**BE3255 - BASIC CIVIL AND MECHANICAL ENGINEERING**	C111.1	Understanding profession of Civil and Mechanical engineering.	K2
			C111.2	Summarise the planning of building, infrastructure and working of Machineries.	K2
			C111.3	Apply the knowledge gained in respective discipline	K4
			C111.4	Illustrate the ideas of Civil and Mechanical Engineering applications	K3
			C111.5	Appraise the material, Structures, machines and energy	K3
5	**I / II**	**GE3251 - ENGINEERING GRAPHICS**	C112.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
			C112.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
			C112.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
			C112.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C112.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
6	**I / II**	**EE3251 -ELECTRIC CIRCUIT ANALYSIS**	C113.1	Breaking down circuit's behavior using circuit laws	K4
			C113.2	Apply mesh analysis/ nodal analysis / network theorems to determine behavior of the given DC and AC circuit	K3
			C113.3	Calculate the transient response of first order and second order systems to step and sinusoidal input	K4
			C113.4	Calculate the power, line/ phase voltage and currents of the given three phase circuit	K4
			C113.5	Estimate the frequency response of series and parallel RLC circuits, behavior of magnetically coupled circuits.	K4
7	**I / II**	**GE3271 - ENGINEERING PRACTICES LABORATORY**	C114.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C114.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work	K2

			C114.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2
			C114.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2
8	**I / II**	**EE3271 -ELECTRIC CIRCUITS LABORATORY**	C115.1	Solve the electrical circuit problems using circuit theorems and laws.	K6
			C115.2	Simulate electrical circuits and to experimentally verify various theorems for circuit designing purposes.	K6
			C115.3	Experiment the frequency response and transients in passive elements	K6
			C115.4	Simulate the resonance circuits for several applications such as designing of tuning circuit, signal processing and voltage magnification.	K6
			C115.5	Perform the simulation of three phase circuits using suitable simulation for both balanced and unbalanced condition	K6

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DEPARTMENT OF MECHANICAL ENGINEERING
COURSE OUT COME REGULATION 2017

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	I / I	HS8151 - Communicative English	C101.1	Enhance their reading and technical writing skills in the first year itself	K2
			C101.2	Comfortably read and understand articles in science and Engineering journals and articles in dailies	K2
			C101.3	Get themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
			C101.4	Communicate effectively in short conversations and talks uttered in English	K4
			C101.5	Draft essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4
2	I / I	MA8151 - Engineering Mathematics - I	C102.1	To analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.2	To solve the problems of integrals using different methods of calculus.	K5
			C102.3	To design and develop the problems of integration to compute multiple integrals, in addition to change of order and change of variables.	K6
			C102.4	To analyze the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K4
			C102.5	To apply various tools in solving the differential equations to recognize the need for life-long learning.	K3
3	I / I	PH8151 - Engineering	C103.1	To analyse the problems in columns and beams and gain the engineering knowledge in properties of matter to formulate.	K4

		Physics	C103.2	To understand the fundamental concepts and applications of waves, lasers and fiber optics to give theoretical approaches to design modern devices.	**K2**
			C103.3	To interpret the knowledge in thermal properties of materials and can determined expansion joints and heat exchangers in devices.	**K3**
			C103.4	To understand the fundamental concepts of quantum theory and how modern electron microscope techniques use it to make predictions in physics.	**K2**
			C103.5	To appreciate the behavior of solids, describe the fundamentals of crystals, their structures, and the various crystal development processes.	**K2**
4	**I / I**	**CY8151 - Engineering Chemistry**	C104.1	To apply the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge.	**K3**
			C104.2	To understand the adsorption methods used in the field of water and air pollution purification to assess societal issues in the environmental. .	**K2**
			C104.3	To know the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy.	**K2**
			C104.4	To discuss the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	**K4**
			C104.5	To Review the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate consideration	**K2**
5	**I / I**	**GE8151- Problem Solving And Python**	C105.1	Understand the concepts of computational thinking and algorithmic problem-solving techniques	**K2**
			C105.2	Develop simple python programs for applying the concepts of data types, expressions, and python statements	**K3**
			C105.3	Develop Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings.	**K3**
			C105.4	Understand the concepts of compound data using Python lists, tuples, and dictionaries	**K2**

			C105.5	Develop python programs for solving computational problems by using modules, files, and python packages	**K3**
6	**I / I**	**GE8152-ENGINEERING GRAPHICS**	C106.1	Construct the engineering Curves, perform freehand sketching of basic geometrical constructions and multiple views of objects.	**K3**
			C106.2	Understand the projection of points, Lines and Plane Surface	**K2**
			C106.3	Sketch the projection of solids	**K3**
			C106.4	Prepare the sectioning and develop the solids	**K3**
			C106.5	Develop and project isometric and perspective projections of simple solids.	**K6**
7	**I / I**	**GE8161-Problem Solving And Python Lab**	C107.1	Develop simple python programs for applying the concepts of data types, expressions, and python statements	**K3**
			C107.2	Develop Python programs using conditionals, looping, functions, and strings for solving real-time computational problems.	**K3**
			C107.3	Understand the concepts of compound data using Python lists, tuples, and dictionaries	**K2**
			C107.4	Develop python programs for solving problems by using modules, files, and python packages	**K3**
			C107.5	Utilize Python packages for developing real-world software applications	**K6**
8	**I / I**	**BS8161 - Physics And Chemistry Laboratory**	C108.1	To manipulate the fundamental concepts like torque, elasticity and bending moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus.	**K3**
			C108.2	To practice the fundamentals of thermal properties of material of the bad conductor by Lee's disc method.	**K3**
			C108.3	To understand the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	**K3**
			C108.4	To dramatize the strength of an acid using pH meter and conductometer for applications in the field of engineering.	**K2**
			C108.5	To experimenting the estimation of total, permanent and temporary hardness of water for our environme	**K3**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2018-2019**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	I / II	HS8251 - Technical English	C109.1	Read and write their technical and area-specific texts in an effortless manner	K3
			C109.2	Listen comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
			C109.3	Speak in an appropriate manner in both formal and informal situations for lifelong learning	K3
			C109.4	Create CVs and draft Job applications in confident manner	K6
			C109.5	Communicate confidently by using all the four skills with their peers and in real life situations	K4
2	I / II	MA8251 Engineering Mathematics - II	C110.1	To analyze the different types of matrices for solving practical problems.	K4
			C110.2	To apply Gradient, divergence and curl of a vector point function and related identities in engineering field.	K3
			C110.3	To acquire the knowledge to solve the engineering problems in analytic functions	K2
			C110.4	To analyze and apply the different methods to solve complex integration problems.	K4
			C110.5	To create and manage the projects after applying and analyzing the fundamentals of Laplace transforms	K6
3	I / II	PH8251 – Material Science	C111.1	To inferring the fundamental knowledge in phase diagrams and explain its application in the field of materials science and engineering.	K2
			C111.2	To interpret the fundamentals of the Fe-Fe3C phase diagram, diverse microstructures, and alloys for engineering designs.	K3
			C111.3	To understand the fundamental mechanical properties of materials and their methods of measurement.	K2

			C111.4	To interpret the properties of magnetic and dielectric materials, manipulate them and then analyze them for the purposes for which they are used in modern devices.	**K3**
			C111.5	To comprehend the basics of ceramics, composites and nano materials to design modern devices,	**K2**
4	**I / II**	**BE8251 - Basic Electrical And Electronics Engineering**	C112.1	Understand the electrical circuit and their working principles	**K2**
			C112.2	Identify the electrical components of a machines and their applications	**K2**
			C112.3	Explain the characteristics of the electrical machines	**K2**
			C112.4	Identify the digital electronics circuits and their components	**K2**
			C112.5	Explain the fundamentals of communication systems	**K2**
5	**I / II**	**GE8291- Environmental Science And Engineering**	C113.1	To apply the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	**K3**
			C113.2	To Understand the impact of the professional engineering solutions in societal and environmental contexts for the importance of Public participation in conservation of natural resources.	**K2**
			C113.3	To discuss the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	**K2**
			C113.4	To Learning the concepts from unsustainable to sustainable development and urban problems related to energy , water conservation, rain water harvesting.	**K2**
			C113.5	To Apply the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in	**K3**

				diverse teams, and in multidisciplinary settings.	
6	**I / II**	**GE8292 - Engineering Mechanics**	C114.1	Illustrate the vectorial and scalar representation of forces and moments	**K3**
			C114.2	Analyse the rigid body in equilibrium	**K3**
			C114.3	Evaluate the properties of surfaces and solids	**K3**
			C114.4	Calculate dynamic forces exerted in rigid body	**K3**
			C114.5	Determine the friction and the effects by the laws of friction	**K3**
7	**I / II**	**GE8261 - Engineering Practices Laboratory**	C115(L).1	Construct carpentry components and pipe connections including plumbing works.	**K3**
			C115(L).2	Use welding equipment's to join the structures.	**K3**
			C115(L).3	Carry out the basic machining operations.	**K2**
			C115(L).4	Create the models using sheet metal works.	**K6**
			C115(L).5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings	**K3**
			C115(L).6	Create Electrical and Electronics circuits.	**K6**
			C115(L).7	Design the simple electrical circuits based on the applications.	**K6**
			C115(L).8	Solder the electrical and electronic devices and components in the PCB.	**K6**
			C115(L).9	Explain the functioning of electrical and electronic circuits.	**K4**
8	**I / II**	**BE8261 – Basic Electrical, Electronics and Instrumentation Laboratory**	C116(L).1	Ability to determine the speed characteristic of different electrical machines	**K5**
			C116(L).2	Ability to determine efficiency and regulation of single phase transformer	**K5**
			C116(L).3	Ability to design simple circuits involving diodes and transistors	**K6**
			C116(L).4	Ability to know the characteristics of measuring instruments	
			C116(L).5	Ability to use operational amplifiers	**K3**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2019-2020**	SEMESTER: **03**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	II / III	MA8353 - Transforms And Partial Differential Equations	C201.1	To understand to solve the given standard partial differential equations.	K2
			C201.2	To identify and analyze the differential equations using Fourier series analysis in engineering applications.	K4
			C201.3	To create using modern techniques of Fourier series to solve one- and two-dimensional heat flow problems and one-dimensional wave equations.	K5
			C201.4	Ability to apply the engineering knowledge to manage the projects in transforms and partial differential equations to formulate and solve some of the physical engineering problems.	K6
			C201.5	To use the effective modern mathematical tools to solve the partial differential equations by using Z transform techniques for discrete time systems.	K3
2	II / III	ME8391 Engineering Thermodynamics	C202.1	Apply the first law of thermodynamics to calculate the property changes in closed and open engineering systems.	K3
			C202.2	Apply the second law of thermodynamics to calculate entropy and availability in open and closed systems.	K3
			C202.3	Use the property tables to identify the properties of pure substances and apply Rankine cycle to steam power plant.	K2
			C202.4	Derive thermodynamic relations of ideal and real gases	K4
			C202.5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes.	K4
3	II / III	CE8394 Fluid	C203.1	Describe the fluid properties and its flow characteristics	K2

		Mechanics and Machinery	C203.2	Calculate major and minor losses associated with pipe flow in piping networks	**K4**
			C203.3	Predict the nature of physical quantities.	**K3**
			C203.4	Analyse the performance of pumps.	**K4**
			C203.5	Analyse the performance of turbines.	**K4**
4	**II / III**	**ME8351 Manufacturing Technology-I**	C204.1	Differentiate the metal casting processes, associated defects, merits and demerits	**K2**
			C204.2	Compare different metal joining processes.	**K4**
			C204.3	Summarize various hot working and cold working methods of metals.	**K2**
			C204.4	Analyze the various sheet metal making processes.	**K4**
			C204.5	Select the suitable moulding technique for manufacturing of plastics components	**K4**
5	**II / III**	**Electrical Drives and Controls**	C205.1	Illustrate heating and cooling curves with factors influencing the choice of electrical drives.	**K2**
			C205.2	Explain different types of electrical machines and their performances.	**K2**
			C205.3	Employ various starting methods in electrical motors.	**K2**
			C205.4	Apply various methods adopted in conventional and solid state speed control of DC drives.	**K2**
			C205.5	Use various methods adopted in conventional and solid state speed control of AC drives.	**K4**
6	**II / III**	**ME8361 Manufacturing Technology Laboratory – I**	C206 (L).1	Demonstrate the safety precautions exercised in the mechanical workshop.	**K2**
			C206 (L).2	Make the work piece as per given shape and size using Lathe.	**K2**
			C206 (L).3	Join two metals using arc welding.	**K2**
			C206 (L).4	Use sheet metal fabrication tools and make simple tray and funnel.	**K2**
			C206 (L).5	Use different moulding tools, patterns and prepare sand moulds.	**K2**
7	**II / III**	**ME8381**	C207(L).1	Follow the drawing standards, Fits and Tolerances	**K2**

		Computer Aided Machine Drawing	C207(L).2	Re-create part drawings, sectional views and assembly drawings as per standards	**K2**
			C207(L).3	Describe Indian Standards on drawing practices and standard components	**K2**
			C207(L).4	Sketch drawings of machine components	**K3**
			C207(L).5	Construct drawings both manually and using standard CAD packages	**K2**
8	**II / III**	**EE8361 Electrical Engineering Laboratory**	C208(L).1	Determine the load characteristics of DC motors and Generators.	**K3**
			C208(L).2	Draw the equivalent circuit of transformer.	**K4**
			C208(L).3	Predetermine the voltage regulation of an alternator.	**K3**
			C208(L).4	Sketch the characteristics of three phase synchronous and induction motors.	**K3**
			C208(L).5	Differentiate various types of D.C. and A.C. motor starters.	**K4**
9	**II / III**	**HS8381 Interpersonal Skills / Listening & Speaking**	C209(L).1	Listen and react to English in an appropriate manner	**K2**
			C209(L).2	Get themselves actively involved in Group Discussion activities	**K3**
			C209(L).3	Feel comfortable in making oral presentations	**K2**
			C209(L).4	React well in both formal and informal contexts in professional situations	**K4**
			C209(L).5	Persuade their audience by making appropriate expressions	**K5**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2019-2020**	SEMESTER: **04**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	II / IV	MA8452 Statistics and Numerical Methods	C210.1	To apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C210.2	To analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C210.3	To analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C210.4	To apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C210.5	To apply the engineering knowledge to solve the differentiation and integration problems.	K3
2	II / IV	ME8492 Kinematics of Machinery	C211.1	Explain the principles of kinematic pairs of planar mechanisms.	K2
			C211.2	Compute velocity and acceleration in planar mechanisms.	K2
			C211.3	Apply various motion principles to draw cam profiles.	K3
			C211.4	Compute the gear terminology suitable for given application.	K2
			C211.5	Discuss the effect of various types of friction in power transmission.	K2
3	II / IV	ME8451 Manufacturing Technology-II	C212.1	Understand the mechanism of material removal processes.	K2
			C212.2	Describe the constructional and operational features of centre lathe and other special purpose lathes.	K2
			C212.3	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines. .	K2
			C212.4	Differentiate the types of grinding and other super finishing processes apart from gear manufacturing processes.	K4

			C212.5	Summarize numerical control of machine tools and write a part program.	**K5**
4	**II / IV**	**ME8491 Engineering Metallurgy**	C213.1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.	**K2**
			C213.2	Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.	**K2**
			C213.3	Clarify the effect of alloying elements on ferrous and non-ferrous metals	**K2**
			C213.4	Summarize the properties and applications of non-metallic materials.	**K2**
			C213.5	Explain the testing of mechanical properties.	**K4**
5	**II / IV**	**CE8395 Strength of Materials for Mechanical Engineers**	C214.1	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.	**K2**
			C214.2	Apply basic equation of simple torsion in designing of shafts and helical spring	**K3**
			C214.3	Calculate the slope and deflection in beams using different methods.	**K3**
			C214.4	Analyze and design thin and thick shells for the applied internal and external pressures	**K2**
			C214.5	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.	**K2**
6	**II / IV**	**ME8493 Thermal Engineering – I**	C215.1	Apply thermodynamic concepts of different air standard cycles and solve problems.	**K3**
			C215.2	Solve problems in single stage and multistage air compressors.	**K3**
			C215.3	Explain the functioning and features of I.C. engines, components and auxiliaries.	**K3**
			C215.4	Calculate performance parameters of I.C. Engines.	**K3**
			C215.5	Explain the flow in Gas turbines and solve problems.	**K2**
7	**II / IV**	**ME8462**	C216(L).1	Design different parts of mechanical equipment's	**K3**

		Manufacturing Technology Laboratory – II	C216(L).2	Apply skills in various designing and manufacturing industries	**K3**
			C216(L).3	Create 2D and 3D models using modeling software's	**K6**
			C216(L).4	Make appropriate selection of CAD functionality to use as tools in the design process	**K6**
			C216(L).5	Communicate effectively the geometry and intent of design features	**K3**
8	**II / IV**	**CE8381 Strength of Materials and Fluid Mechanics and Machinery Laboratory**	C217(L).1	Perform different destructive testing and Compare Characteristics of material	**K4**
			C217(L).2	Utilize appropriate materials in design considering engineering properties, sustainability, cost and weight	**K3**
			C217(L).3	Perform engineering work in accordance with ethical and economic constraints related to the design of structures and machine parts	**K3**
			C217(L).4	Analyze and design structural members subjected to tension, compression, torsion, bending and combined stresses using the fundamental concepts of stress, strain and elastic behavior of materials	**K4**
			C217(L).5	Measure the discharge of fluid flow in a pipe by using different flow measurement devices	**K5**
			C217(L).6	Calculate the energy losses of friction in a pipe flow for various flow conditions	**K3**
			C217(L).7	Perform the characteristics of positive displacement and dynamic pumps	**K6**
			C217(L).8	Determine the efficiency of impulse and reaction turbine in various load conditions	**K3**
9	**II / IV**	**HS8461 Advanced Reading and Writing**	C218(L).1	Write technical articles in a confident manner	**K3**
			C218(L).2	Create their CV and write cover letter without anyone's help	**K6**
			C218(L).3	Read and express their views critically	**K2**
			C218(L).4	Exhibit their critical wisdom in varied professional situations	**K3**
			C218(L).5	Write confidently by acquiring competency in writing skills and use them in academic situations for ever	**K5**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2020-2021**	SEMESTER: **05**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	III / V	ME8595 Thermal Engineering II	C301.1	Solve problems in Steam Nozzle	K3
			C301.2	Explain the functioning and features of different types of Boilers and auxiliaries and Calculate performance parameters.	K3
			C301.3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.	K2
			C301.4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers	K3
			C301.5	Solve problems using refrigerant table / charts and psychometric charts	K4
2	III / V	ME8593 - Design of Machine Elements	C302.1	Explain the influence of steady and variable stresses in machine component design.	K2
			C302.2	Apply the concepts of design to shafts, keys and couplings.	K3
			C302.3	Apply the concepts of design to temporary and permanent joints.	K3
			C302.4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.	K3
			C302.5	Apply the concepts of design to bearings.	K3
3	III / V	ME8504 - Metrology and Measurements	C303.1	Describe the concepts of measurements to apply in various metrological Instruments.	K2
			C303.2	Outline the principles of linear and angular measurement tools used for industrial applications.	K3
			C303.3	Explain the procedure for conducting computer aided inspection.	K2
			C303.4	Demonstrate the techniques of form measurement used for industrial components.	K2

			C303.5	Discuss various measuring techniques of mechanical properties in industrial Applications.	**K2**
4	**III / V**	**ME8594 - Dynamics of Machines**	C304.1	Discuss the forces required by various machine components to overcome inertia.	**K2**
			C304.2	Compute the unbalanced forces on reciprocating and rotating masses.	**K2**
			C304.3	Distinguish the types of vibration and its effect on the system.	**K2**
			C304.4	Associate the system response an exposure to various forced vibrations.	**K2**
			C304.5	Explain the control mechanisms of governor and gyroscope with their applications.	**K2**
5	**II / V**	**OAT551 Automotive System**	C305.1	Recognize the various parts of the automotive engines and their functions and materials , discuss the engine auxiliary systems	**K1**
			C305.2	Recognize the various types of automotive chassis , Explain the Steering system	**K1**
			C305.3	Distinguish the working of different types of Transmission system	**K2**
			C305.4	Explain the Suspension systems, Brake system	**K2**
			C305.5	Predict possible alternate sources of energy for IC Engines and engine emission controls	**K3**
6	**III / V**	**ME8511 Kinematics and Dynamics Laboratory**	C306.1	Explain the gear ratios of various types of gear trains	**K2**
			C306.2	Distinguish the significance of the reciprocating and rotating mass systems.	**K2**
			C306.3	Discuss the kinematic working models of various mechanisms and cam profile.	**K2**
			C306.4	Compute the parameters of vibration in the rotor systems & the critical speed of shafts	**K2**
			C306.5	Compute the gyroscopic couple in gyroscope and centrifugal force in various governors	**K2**
7	**III / V**	**ME8512 Thermal Engineering Laboratory**	C307(L).1	Conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials.	**K2**
			C307(L).2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.	**K2**

			C307(L).3	Conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.	**K5**
			C307(L).4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.	**K2**
			C307(L).5	Conduct tests to evaluate the performance of refrigeration and air conditioning test rigs.	**K4**
8	**III / V**	**ME8512 Metrology and Measurements Laboratory**	C308(L).1	Measure the gear tooth dimensions, angle using sine bar, straightness and	**K2**
			C308(L).2	Conduct test for flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.	**K5**
			C308(L).3	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.	**K5**
			C308(L).4	Measure the components precisely using non-contact (optical) measurement system.	**K3**
			C308(L).5	Demonstrate the functions of Coordinate measuring machine and surface roughness tester for measuring complex profiles.	**K2**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2020-2021**	SEMESTER: **06**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	III / VI	ME8601 - Design of Transmission Systems	C309.1	Apply the concepts of design to belts, chains and rope drives.	K3
			C309.2	Apply the concepts of design to spur, helical gears.	K4
			C309.3	Apply the concepts of design to worm and bevel gears	K4
			C309.4	Apply the concepts of design to gear boxes.	K4
			C309.5	Apply the concepts of design to cams, brakes and clutches.	K3
2	III / VI	ME8691 - Computer Aided Design and Manufacturing	C310.1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics	K2
			C310.2	Explain the fundamentals of parametric curves, surfaces and Solids	K2
			C310.3	Summarize the different types of Standard systems used in CAD	K2
			C310.4	Apply NC & CNC programming concepts to develop part program for Lathe & Milling Machines	K2
			C310.5	Summarize the different types of techniques used in Cellular Manufacturing and FMS	K4
3	III / VI	ME8693 - Heat and Mass Transfer	C311.1	Explain the mechanism of steady and unsteady conductive heat transfer	K3
			C311.2	Compare convective heat transfer in natural and forced convection	K4
			C311.3	Estimate the heat transfer coefficient involved in boiling and condensation using appropriate correlations	K4
			C311.4	Summarize the concept of radiation in black body, grey body, Shield and Gases	K5

			C311.5	Explain the basic concepts of mass transfer and latest trends in heat transfer	**K4**
4	**III / VI**	**ME8692 - Finite Element Analysis**	C312.1	Summarize the basics of finite element formulation.	**K2**
			C312.2	Apply finite element formulations to solve one dimensional Problem.	**K3**
			C312.3	Apply finite element formulations to solve two dimensional scalar Problems	**K3**
			C312.4	Apply finite element method to solve two dimensional Vector problems.	**K4**
			C312.5	Apply finite element method to solve problems on iso parametric element and dynamic Problems.	**K2**
5	**III / VI**	**ME8694 - Hydraulics and Pneumatics**	C313.1	Explain the Fluid power and compare operations of different types of pumps.	**K4**
			C313.2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves.	**K2**
			C313.3	Classify the different types of Hydraulic circuits and systems	**K4**
			C313.4	Evaluate the working of different pneumatic circuits and systems	**K4**
			C313.5	Express various trouble shooting methods and Design circuits for applications of hydraulic and pneumatic systems.	**K6**
6	**III / VI**	**PR8592 Welding Technology**	C314.1	Understand the construction and working principles of gas and arc welding process.	**K3**
			C314.2	Understand the construction and working principles of resistance welding process.	**K2**
			C314.3	Understand the construction and working principles of various solid states welding process.	**K2**
			C314.4	Understand the construction and working principles of various special welding processes.	**K3**
			C314.5	Understand the concepts on weld joint design, weld ability and testing of weld elements.	**K2**
7	**III / VI**	**ME8681 CAD CAM Lab**	C315(L). 1	Design different parts of mechanical equipment's.	**K4**
			C315(L).	Apply skills in various designing and manufacturing industries	**K2**

			2		
			C315(L).3	Create 2D and 3D models using modeling software's.	**K6**
			C315(L).4	Make appropriate selection of CAD functionality to use as tools in the design process.	**K4**
			C315(L).5	Explain effectively the geometry and intent of design features.	**K3**
8	**III / VI**	**ME8682 Design and Fabrication Project**	C316(P).1	Design the machine element or the mechanical product.	**K6**
			C316(P).2	Select suitable materials the machine or the mechanical product	**K5**
			C316(P).3	Fabricate the machine element or the mechanical product.	**K6**
			C316(P).4	Demonstrate the working model of the machine element or the mechanical product	**K2**
			C316(P).5	Justify the suitability for the machine or product to file patent	**K5**
9	**III / VI**	**HS8581 Professional Communication**	C 317(L).1	Enhance the employability and career skills in engineering domain	**K3**
			C 317(L).2	Improve professional communication	**K4**
			C 317(L).3	Build confidence in employability skills	**K4**
			C 317(L).4	Face interviews with necessary skills	**K5**
			C 317(L).5	Acquire required skills to excel in their career	**K3**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **07**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	IV / VII	ME6701 Power Plant Engineering	C401.1	Describe the layout, construction and working of the components of a thermal power plant	K2
			C401.2	Outline the layout, construction and working of the components of a Diesel, Gas and Combined cycle power plants	K2
			C401.3	Illustrate the layout, construction and working of the components of nuclear power plant	K2
			C401.4	Outline the layout, construction and working of the components of a Renewable energy power plants	K2
			C401.5	Explain about energy, economic and environmental issues of power plant	K2
2	IV / VII	ME8793 Process Planning and Cost Estimation	C405.1	Recall the steps involved in process planning	K1
			C405.2	Summarize the procedure and parameters required for process planning activities	K2
			C405.3	Explain the importance of costing and estimation procedures	K4
			C405.4	Estimate the cost for various shops	K5
			C405.5	Estimate the machining time required for drilling, boring, milling, planning and grinding etc.	K5
3	IV / VII	ME6702 Mechatronics	C402.1	Explain about various sensors and its working principles	K4
			C402.2	Design the microprocessor of 8085 and 8051	K4
			C402.3	Identify the program and the microcontroller	K3
			C402.4	Know about the functions, working and selection of PLC	K2
			C402.5	Design the mechatronic system with electrical and electronic circuits	K4

4	**IV / VII**	**OIE751 ROBOTICS**	C403.1	Explain the concepts of industrial robots, classification, specifications and coordinate systems. Also summarize the need and application of robots in different sectors	**K2**
			C403.2	Illustrate the different types of robot drive systems as well as robot end effectors.	**K2**
			C403.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.	**K2**
			C403.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.	**K2**
			C403.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.	**K3**
5	**IV / VII**	**ME8073 Unconventional Machining Process.**	C404.1	Explain the need for unconventional machining processes and its classification	**K2**
			C404.2	Compare various thermal energy and electrical energy based unconventional machining processes.	**K2**
			C404.3	Summarize various chemical and electro-chemical energy based unconventional machining processes.	**K2**
			C404.4	Explain various nano abrasives based unconventional machining processes.	**K2**
			C404.5	Distinguish various recent trends based unconventional machining processes.	K2
6	**IV / VII**	**ME 8097 Non Destructive Testing and Evaluations**	C405.1	Discuss the concept of NDT and materials	K3
			C405.2	Explain the various processes involved in surface NDE	K4
			C405.3	Describe the role of eddy current and thermography testing in NDT	K4
			C405.4	Compare the principles of ultrasonic and acoustic testing	K3
			C405.5	Explain the influence of radiography testing in NDT	K2
7	**IV / VII**	**ME6711 Simulation and**	C406(L).1	Demonstrate the engineering design problem that involves interaction between heat, stress and to generate the model using a proper element type,	**K2**

		Analysis Laboratory		and then solve the problem	
			C406(L).2	Discretize, apply load and constrains for the given model	**K3**
			C406(L).3	Display the results such as Von Mises stress, displacement, temperature, pressure, and velocity etc. obtained from analysis	**K2**
			C406(L).4	Model, analyse and simulate experiments under real time environment and evaluate the performance	**K4**
			C406(L).5	Demonstrate the use of MATLAB software for multi-physic type of problems	**K2**
8	**IV / VII**	**ME8781 Mechatronics Laboratory**	C407(L).1	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.	**K2**
			C407(L).2	Describe the functioning of control systems with the help of PLC and microcontrollers.	**K1**
			C407(L).3	Design various hydraulic, pneumatic and Electro-pneumatic circuits	**K6**
			C407(L).4	Demonstrate the functions of 8085 microprocessor, 8051 microcontroller and their interface	**K2**
			C407(L).5	Select suitable actuators, sensors and integrate them for suitable applications	**K2**
9	**IV / VII**	**ME6713 Comprehension**	C408(L).1	Comprehend any given problem related to mechanical engineering field.	**K2**
			C408(L).2	Apply knowledge of mathematics, science, and mechanical engineering.	**K2**
			C408(L).3	Solve the problems in the field for thermal sciences	**K4**
			C408(L).4	Develop the knowledge in field for manufacturing technology.	**K6**
			C408(L).5	Utilize the skills learned in the design domain	**K2**

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **08**

S.No	Year/ Sem	Course Name	Course Outcomes (The students should be able to)		Knowledge Level
1	IV / VIII	MG6851 PRINCIPLES OF MANAGEMENT	C409.1	**Discuss** the evolution of management, functions and roles of managers	K2
			C409.2	**Explain** the different types of planning process and tools used for planning	K2
			C409.3	**Elaborate** different organization structures and functions of human Resources manager	K2
			C409.4	**Illustrate** the different theories of motivation and leadership	K2
			C409.5	**Describe** the control techniques and the role of technology in management	K1
2	IV / VIII	IE6605 Production Planning and Control	C413.1	Enumerate the activities involved in the Production Planning and Control function	K1
			C413.2	Explain the significance and applications of work study techniques	K2
			C413.3	Describe the process planning activities with reference to production control	K2
			C413.4	Discuss the concepts of production scheduling	K2
			C413.1	Enumerate the activities involved in the Production Planning and Control function	K1
3	IV / VIII	ME8811(P)- Project Work	C417(P).1	Identify a problem in the emerging field of mechanical engineering systems as a team.	K2
			C417(P).2	Review the literature for the problem identified.	K2
			C417(P).3	Develop suitable solution methodology.	K6
			C417(P).4	Execute the fabrication and experimental work.	K6
			C417(P).5	Analyse the data and interpret the results obtained.	K4

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DEPARTMENT OF MECHANICAL ENGINEERING
COURSE OUT COME REGULATION 2021

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	HS3151 - PROFESSIONAL ENGLISH - I	C101.1	Listen and comprehend complex academic texts	K2
			C101.2	Read and infer the denotative and connotative meanings of technical texts	K2
			C101.3	Write definitions, descriptions, narrations and essays on various topics	K2
			C101.4	Speak fluently and accurately in formal and informal communicative contexts	K2
			C101.5	Express their opinions effectively in both oral and written medium of communication	K3
2	I / I	MA3151 - MATRICES AND CALCULUS	C102.1	Analyze the different types of course matrices for solving practical problems.	K4
			C102.2	Analyze and apply the Engineering knowledge in differentiation to solve maxima and minima problems.	K4
			C102.3	Solve the problems of integrals using different methods of calculus.	K5
			C102.4	Design and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K6
			C102.5	Determine the problems of integrals by using various methods of integration, such as substitution, partial fractions and integration by parts.	K5
3	I / I	PH3151 - ENGINEERING PHYSICS	C103.1	Comprehend the importance of mechanics.	K2
			C103.2	Predict their fundamental knowledge of electromagnetic waves' characteristics.	K2
			C103.3	Build a solid basic understanding of oscillations, optics, and lasers.	K2
			C103.4	Understand the impact of quantum physics.	K2
			C103.5	Appreciate and apply the basic concepts of quantum mechanics to the production of energy bands.	K3

4	**I / I**	**CY3151 - ENGINEERING CHEMISTRY**	C104.1	Learn the indulgent of water quality parameters, boiler troubles and water treatment techniques.	K3
			C104.2	Discuss the basic principles and preparatory methods of nanomaterials and its applications	K2
			C104.3	Know the basic concepts and applications of phase rule and composites.	K2
			C104.4	Understanding of different types of fuels, their preparation, properties and combustion characteristics.	K2
			C104.5	Familiarize the students with the operating principles, working processes and applications of energy conversion and storage devices	K3
5	**I / I**	**GE3151 - PROBLEM SOLVING AND PYTHON PROGRAMMING**	C105.1	Develop algorithmic solutions to simple computational problems.	K3
			C105.2	Develop and execute simple Python programs.	K3
			C105.3	Write simple Python programs using conditionals and loops for solving problems.	K3
			C105.4	Decompose a Python program into functions.	K4
			C105.5	Represent compound data using Python lists, tuples, dictionaries etc	K2
			C105.6	Read and write data from/to files in Python programs.	K3
6	**I / I**	**GE3171 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	C106.1	Develop algorithmic solutions to simple computational problems	K3
			C106.2	Develop and execute simple Python programs.	K3
			C106.3	Implement programs in Python using conditionals and loops for solving problems.	K3
			C106.4	Deploy functions to decompose a Python program.	K4
			C106.5	Process compound data using Python data structures	K2
			C106.6	Utilize Python packages in developing software applications.	K3
7	**I / I**	**BS3171 - PHYSICS AND CHEMISTRY LABORATORY**	C107.1	Learn the proper use of various kinds of physics laboratory equipment.	K3
			C107.2	Learn how data can be collected, presented and interpreted in a clear and concise manner	K3
			C107.3	Learn problem solving skills related to physics principles and interpretation of experimental	K3
			C107.4	Determine error in experimental measurements and techniques used to minimize such	K3
			C107.5	Make the student as an active participant in each part of all lab exercises.	K3

PROGRAMME: **MECHANICAL ENGINEERING**	DEGREE: **UG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	HS3251- PROFESSIONAL ENGLISH - II	C108.1	Compare and contrast products and ideas in technical texts	K2
			C108.2	Identify cause and effects in events, industrial processes through technical texts	K2
			C108.3	Analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format	K2
			C108.4	Report events and the processes of technical and industrial nature	K2
			C108.5	Present their opinions in a planned and logical manner, and draft effective resumes in context of job search	K3
2	I / II	MA3251 - STATISTICS AND NUMERICAL METHODS	C109.1	Apply the concept of testing of hypothesis for small and large samples to manage projects.	K3
			C109.2	Analyze the basic concepts of classifications of design of experiments to real life problems.	K4
			C109.3	Analyze the basic concepts and techniques of solving algebraic and transcendental equations.	K4
			C109.4	Apply the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K3
			C109.5	Apply the engineering knowledge to solve the differentiation and integration problems.	K3
3	I / II	PH3251- MATERIALS SCIENCE	C110.1	Make the students to understand the basics of crystallography and its importance in studying materials properties.	K2
			C110.2	Make the students to understand the basics of crystallography and its importance in studying materials properties.	K2
			C110.3	Instil knowledge on physics of semiconductors, determination of charge carriers and device applications	K3
			C110.4	Establish a sound grasp of knowledge on different optical properties of materials, optical displays and applications	K3
			C110.5	Inculcate an idea of significance of nano structures,	K3

				quantum confinement and ensuing nano device applications.	
4	**I / II**	**BE3251 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**	C111.1	Explain the operation of three phase electrical circuits and power system.	K4
			C111.2	Determine the regulation and efficiency of transformers.	K3
			C111.3	Describe the characteristics of DC Generator and Motor.	K4
			C111.4	Analyze the performance of AC and DC machines.	K4
			C111.5	Apply the concepts of measurements and instruments for real time applications.	K3
5	**I / II**	**GE3251 - ENGINEERING GRAPHICS**	C112.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
			C112.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
			C112.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
			C112.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
			C112.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
6	**I / II**	**GE3271 - ENGINEERING PRACTICES LABORATORY**	C113.1	Analyze the pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work	K2
			C113.2	Weld various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work	K2
			C113.3	Apply the Knowledge of electrical wiring in common household electrical wire work	K2
			C113.4	Demonstrate the soldering and testing of simple electronic circuits and assembling and testing of simple electronic components on PCB	K2
			C114.1	Draw the performance characteristics of various DC generators, D.C. Motors and understand the applications of it to power system	K3

7	**I / II**	**BE3271-BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY**	C114.2	Determine the performance of various A.C. Induction motors and understand the applications of it to power system	K3
			C114.3	Calculate the efficiency and determine the performance of the single phase transformer	K4
			C114.4	Understand the characteristics of LVDT, RTD and Thermistor.	K2
			C114.5	Apply the circuit laws and theorems to simple electrical circuits.	K3

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DEPARTMENT OF CIVIL ENGINEERING

M.E – STRUCTURAL ENGINEERING

COURSE OUT COME - REGULATION - 2017

PROGRAMME:**STRUCTURAL ENGINEERING**	DEGREE: P**G**	A.Y: **2018-19**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	MA5151 - ADVANCED MATHEMATICAL METHODS	C101.1	Application of Laplace and Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations.	K3
			C101.2	Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines.	K2
			C101.3	Construction of conformal mappings between various domains and use of conformal mapping in studying problems in physics and engineering particularly to fluid flow and heat flow problems.	K3
			C101.4	Applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors.	K4
			C101.5	Competently use tensor analysis as a tool in the field of applied sciences and related fields.	K3
2	I / I	ST5101- ADVANCED CONCRETE STRUCTURES	C102.1	Design concepts of various concrete structures and structural elements by limit state design	K4
			C102.2	Design of the limit state design of RCC beams and columns	K4
			C102.3	Design special structures such as Deep beams, Corbels, Deep beams, and Grid floors	K4
			C102.4	Make the students confident to design the flat slab as per Indian standard, yield line theory and strip method.	K4
			C102.5	Design the beams based on limit analysis and detail the beams, columns and joints for ductility.	K4

3	**I / I**	**ST5102 - DYNAMICS OF STRUCTURS**	C103.1	Concept of free and forced vibration analysis of different systems.	K3
			C103.2	Design of structures subjected to dynamic responses of two degree of freedom and understand their application in building system.	K4
			C103.3	Design of structures subjected to dynamic responses of three degree of freedom and understand their application in building system.	K4
			C103.4	Mathematical model of dynamic response continuous system	K4
			C103.5	Analyse of multiple degree of freedom system for dynamic response	K4
4	**I / I**	**ST5103 - THEORY OF ELASTICITY AND PLASTICITY**	C104.1	Concept of elastic analysis of plane stresses problems	K3
			C104.2	Concept of elastic analysis of plane strains problems	K3
			C104.3	Analyse the concept of shear stress and starin in non circular sections	K4
			C104.4	Design of the baems on elastic foundations.	K4
			C104.5	Knowledge in various theories of failures and plasticity.	K4
5	**I / I**	**ST5001- MAINTENANCE AND REHABILITATION OF STRUCTURES**	C105.1	Explain and suggest maintenance and repair strategies	K2
			C105.2	Apply the concept of durability due to various climatie conditions	K3
			C105.3	explain the suitable materials and techniques for repair	K2
			C105.4	choose various retrofitting and rehabilitation techniques	K3
			C105.5	select the suitable strengthening the techniques for structures	K3
6	**I / I**	**ST5002- PREFABRICATED STRUCTURES**	C106.1	principles of prefabrication, Modular co-ordination, Standardization	K2
			C106.2	explain the behaviour of long wall, cross-wall large panel buildings, one way and two way prefabricated slabs, Framed buildings with partial and curtain walls	K2
			C106.3	summarize the beahaviour of floors, stairs amd roofs	K2

			C106.4	illustrate the behaviour of joints in walls and design of shear walls	K2
			C106.5	understand the design concepts of prefabricated industrial buildings and shell roofs	K2

PROGRAMME:**STRUCTURAL ENGINEERING**	DEGREE: **PG**	A.Y: **2018-19**	SEMESTER: **02**

S.No	**Year/ Sem**	**Course Name**	**Course Outcomes (Student can able to understand)**		**Knowledge Level**
1	**I / II**	**ST5201 - ADVANCED STEEL STRUCTURES**	C107.1	Analyse and design the purlin,Louver rails, Gable column and Gable wind girder, guesseted base	K4
			C107.2	Analyse and design the different types od connection in steel members	K4
			C107.3	Analyse and design the industrial buildings	K4
			C107.4	Analyse and design the members buy plastic analysis	K4
			C107.5	Analyse and design the light gauge steel structures	K4
2	**I / II**	**ST5202 - STABILITY OF STRUCTURES**	C108.1	Apply and design the various buckling mechanism in columns	K3
			C108.2	Apply and design the various buckling mechanism in beam-column connections	K3
			C108.3	Apply the torsion and lateral buckling in structural members	K3
			C108.4	Apply and design buckling based calculations in plates	K3
			C108.5	Explain the types and functions of inelastic buckling	K2
3	**I / II**	**ST5203 - EXPERIMENTAL TECHNIQUES**	C109.1	Understand the principles of strain measuring devices	K2
			C109.2	Explain the principles of vibration and wind flow measurig devices	K2
			C109.3	understand the concept of distress management and structural health monitoring.	K2

			C109.4	Summarize the non destructive testing methods of structures	K2
			C109.5	Illustrate the needs and application of model analysis	K2
4	**I / II**	**ST5204 - FINITE ELEMENT ANALYSIS OF STRUCTURES**	C110.1	understand the basic concepts of FEM, types of elements	K2
			C110.2	analyse one dimensional problems and co-ordinate systems	K3
			C110.3	analyse two dimensional problems and higher order elements	K3
			C110.4	understand the concept of mesh generataion, techniques and error evaluation	K2
			C110.5	illustrate the software application of finite element anlaysis	K2
5	**I / II**	**ST5008 INDUSTRIAL STRUCTURES**	C111.1	planning and functional requirement of industrial structures	K2
			C111.2	design the various structural members in Steel and RCC lijke Gantry Girder, Crane Girders , Corbels and Nibs ,Staircase.	K4
			C111.3	design the powerplant structures like cooling towers ,bunkers and silos	K4
			C111.4	analyse and design of transmission line towers	K4
			C111.5	design of foundation for Towers, Chimneys and Cooling Towers	K4
6	**I / II**	**ST5009 - PRE STRESSED CONCRETE**	C112.1	understand principles, types of prestressing and method of analysis	K3
			C112.2	analyse and design the flexural members.	K4
			C112.3	analyse and design the continuous beams	K4
			C112.4	analyse and design the tension and compression members	K4

			C112.5	analyse and design the composite members	K4
7	**I / II**	**T5211 - ADVANCED STRUCTURAL ENGINEERING LABORATORY**	C113.1	cast and test RC beams for strength and deformation behaviour.	K5
			C113.2	test dynamic testing on steel beams, static cyclic load testing of RC frames	K5
			C113.3	conduct non-destruction testing on concrete.	K5
8	**I / II**	**ST5212 - PRACTICAL TRAINING I**	C114.1	Develop field work so as to have a firsthand knowledge of practical problems related to Structural Engineering in carrying out engineering tasks.	K5
			C114.2	develop skills in facing and solving the field problems.	K5

PROGRAMME:**STRUCTURAL ENGINEERING**	DEGREE: **PG**	A.Y: **2019-2020**	SEMESTER: **03**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / III	ST5301- EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES	C201.1	Concept of free and forced vibration analysis of different systems.	K3
			C201.2	Design of structures subjected to dynamic responses of two degree of freedom and understand their application in building system.	K4
			C201.3	Design of structures subjected to dynamic responses of three degree of freedom and understand their application in building system.	K4
			C201.4	Mathematical model of dynamic response continuous system	K4
			C201.5	Analyse of multiple degree of freedom system for dynamic response	K4
2	II / III	ST5014- DESIGN OF STEEL COMPOSITE STRUCTURES	C202.1	concept of concrete composite construction, serviciability and construction issues.	K2
			C202.2	Design of connections in composite structures	K4
			C202.3	design of composite members and trusses.	K4
			C202.4	behaviour of composite box girder bridges	K4
			C202.5	seismic behaviour of composite structures.	K4
3	II / III	ST5015 - DESIGN OF	C203.1	analyse and design the short span RC bridges	K4

		BRIDGES	C203.2	apply the design principles recommended by IS for long span RC bridges	K4
			C203.3	analyse and design prestressed concrete bridges.	K4
			C203.4	analyse and design the steel bridges	K4
			C203.5	analyse and design the bearing and foundations	K4
4	**II / III**	**ST5311 - PRACTICAL TRAINING II**	C204.1	Develop field work so as to have a firsthand knowledge of practical problems related to Structural Engineering in carrying out engineering tasks.	K5
			C204.2	develop skills in facing and solving the field problems.	K5
5	**II / III**	**ST5312- SEMINAR**	C205.1	to face an audience and to tackle any problem during group discussion in the Interviews.	K3
			C205.2	to acquire writing abilities for seminars and conferences.	K3
			C205.3	to work on a specific technical topic in Structural Engineering and acquire the skills of written and oral presentation.	K3
6	**II / III**	**ST5313 - PROJECT WORK PHASE I**	C206.1	To identify a specific problem for the current need of the society in structural Engineering	K2
			C206.2	To develop the methodology to solve the identified practical problem in structural Engineering	K5
			C206.3	To prepare project reports and to face reviews and viva-voce examination.	K6

PROGRAMME:**STRUCTURAL ENGINEERING**	DEGREE: P**G**	A.Y: **2019-2020**	SEMESTER: **04**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / IV	ST5411- PRACTICAL TRAINING III	C207.1	Develop field work so as to have a firsthand knowledge of practical problems related to Structural Engineering in carrying out engineering tasks.	K5
			C207.2	develop skills in facing and solving the field problems.	K5
2	II / IV	ST5412- PROJECT WORK PHASE II	C208.1	Solve the identified problem based on the formulated methodology.	K5
			C208.2	Develop skills to analyze and discuss the test results, and make conclusions	K6

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DEPARTMENT OF CIVIL ENGINEERING
M.E – STRUCTURAL ENGINEERING
COURSE OUT COME - REGULATION - 2021

PROGRAMME: **STRUCTURAL ENGINEERING**	DEGREE: **PG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	MA4153 - ADVANCED MATHEMATICAL METHODS	C101.1	Application of Laplace and Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations.	K3
			C101.2	Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines.	K2
			C101.3	Construction of conformal mappings between various domains and use of conformal mapping in studying problems in physics and engineering particularly to fluid flow and heat flow problems.	K3
			C101.4	Applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors.	K4
			C101.5	Competently use tensor analysis as a tool in the field of applied sciences and related fields.	K3
2	I / I	ST4101- THEORY OF ELASTICITY AND PLASTICITY	C102.1	Concept of elastic analysis of plane stresses problems	K3
			C102.2	Concept of elastic analysis of plane strains problems	K3
			C102.3	Analyse the concept of shear stress and starin in non circular sections	K4
			C102.4	Design of the baems on elastic foundations.	K4
			C102.5	Knowledge in various theories of failures and plasticity.	K4
3	I / I	ST4102 - STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING	C103.1	Concept of free and forced vibration analysis of different systems.	K3
			C103.2	Design of structures subjected to dynamic responses of two degree of freedom and understand their application in building system.	K4
			C103.3	Design of structures subjected to dynamic responses of three degree of freedom and	K4

				understand their application in building system.	
			C103.4	Mathematical model of dynamic response continuous system	K4
			C103.5	Analyse of multiple degree of freedom system for dynamic response	K4
4	**I / I**	**RM4151 - RESEARCH METHODOLOGY AND IPR**	C104.1	Explain the functions of the literature review in research.	K2
			C10.2	Explain various research designs and their characteristics	K2
			C104.3	Explain the details of sampling designs, easurement and scaling techniques and also different methods of data collections.	K2
			C104.4	Explain various forms of the intellectual property, its relevance and business impact in the changing global business environment.	K2
			C104.5	Discuss leading International Instruments concerning Intellectual Property Rights	K2
5	**I / I**	**ST4004- PREFABRICATED STRUCTURES**	C105.1	principles of prefabrication, Modular co-ordination, Standardization	K2
			C105.2	explain the behaviour of long wall, cross-wall large panel buildings, one way and two way prefabricated slabs, Framed buildings with partial and curtain walls	K2
			C105.3	summarize the beahaviour of floors, stairs amd roofs	K2
			C105.4	illustrate the behaviour of joints in walls and design of shear walls	K2
			C105.5	understand the design concepts of prefabricated industrial buildings and shell roofs	K2
6	**I / I**	**ST4161- ADVANCED CONSTRUCTION ENGINEERING AND EXPERIMENTAL TECHNIQUES LABORATORY**	C106.1	Test the concrete in a non-destructive manner using rebound hammer	K3
			C106.2	Observe the effect of mineral and chemical admixture in concrete	K3
			C106.3	Apply the analytical techniques and graphical analysis to interpret the experimental data	K3
			C106.4	Gain practical knowledge of non-destructive testing	K3
			C106.5	Learn to calibrate and use proving rings and LVDTs	K3
6	**I / I**	**ST4111- TECHNICAL**	C107.1	Identify the latest developments in the field of Structural Engineering	K2

		SEMINAR	C107.2	Acquire technical writing abilities for seminars, conferences and journal publications	K2
			C107.3	Use modern tools to present the technical details	K2
			C107.4	Conduct brainstorming sessions on technical concepts	K2
			C107.5	Gain insight on upcoming trends in Structural Engineering	K2

PROGRAMME:**STRUCTURAL ENGINEERING**	DEGREE: P**G**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	ST4201 - ADVANCED STEEL STRUCTURES	C108.1	Analyse and design the purlin,Louver rails, Gable column and Gable wind girder, guesseted base	K4
			C108.2	Analyse and design the different types od connection in steel members	K4
			C108.3	Analyse and design the industrial buildings	K4
			C108.4	Analyse and design the members buy plastic analysis	K4
			C108.5	Analyse and design the light gauge steel structures	K4
2	I / II	ST4202- ADVANCED CONCRETE STRUCTURES	C109.1	Design concepts of various concrete structures and structural elements by limit state design	K4
			C109.2	Design of the limit state design of RCC beams and columns	K4
			C109.3	Design special structures such as Deep beams, Corbels, Deep beams, and Grid floors	K4
			C109.4	Make the students confident to design the flat slab as per Indian standard, yield line theory and strip method.	K4
			C109.5	Design the beams based on limit analysis and detail the beams, columns and joints for ductility.	K4
3	I / II	ST5204 - FINITE ELEMENT ANALYSIS OF STRUCTURES	C110.1	understand the basic concepts of FEM, types of elements	K2
			C110.2	analyse one dimensional problems and co-ordinate systems	K3
			C110.3	analyse two dimensional problems and higher order elements	K3
			C110.4	understand the concept of mesh generataion, techniques and error evaluation	K2
			C110.5	illustrate the software application of finite element anlaysis	K2
4	I / II	CN4071- ADVANCED CONCRETE TECHNOLOGY	C111.1	Develop knowledge on various materials needed for concrete manufacture	K4
			C111.2	Apply the rules to do mix designs for concrete by various methods	K3

			C111.3	Develop the methods of manufacturing of concrete	K4
			C111.4	Explain about various special concrete	K2
			C111.5	Explain various tests on fresh and hardened concrete	K2
5	**I / II**	**ST4073- MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES**	C112.1	Explain the importance of maintenance assessment and repair strategies	K2
			C112.2	Acquire knowledge of strength and durability properties and their effects due to climate and temperature.	K2
			C112.3	Gain knowledge of recent developments in repair	K2
			C112.4	Explain the techniques for repair and protection methods	K2
			C112.5	Explain the repair, rehabilitation and retrofitting of structures and demolition methods.	K2
6	**I / II**	**ST4211- NUMERICAL AND FINITE ELEMENT ANALYSIS LABORATORY**	C113.1	Thorough knowledge to handle FE software	
			C113.2	Dynamic analysis of frames	
			C113.3	Analysis of thin and thick plates	
			C113.4	Stability Analysis	
			C113.5	Learn to use MATLAB and import MATLAB codes for FE modelling	
7	**I / II**	**ST4212- STRUCTURAL DESIGN STUDIO**	C114.1	planning and functional requirement of industrial structures	K2
			C114.2	design the various structural members in Steel and RCC lijke Gantry Girder, Crane Girders , Corbels and Nibs ,Staircase.	K4
			C114.3	design the powerplant structures like cooling towers ,bunkers and silos	K4
			C114.4	analyse and design of transmission line towers	K4
			C114.5	design of foundation for Towers, Chimneys and Cooling Towers	K4

DEPARTMENT OF MANAGEMENT STUDIES
COURSE OUTCOME REGULATION 2017

PROGRAMME: **Master of Business Administration**	DEGREE: **PG**	A.Y: **2020-2021**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	**BA5101 - Economic Analysis for Business**	CO101.1	Understand business economic principles, opportunities and risk and uncertainty	K2
			CO102.2	.Learn Forecasting Demand and Supply in the business environment	K6
			CO103.3	Study Market Structure and Pricing output decisions	K6
			CO104.4	Learn and apply pricing strategies	K2
			CO105.5	Illustrate the impact of information systems in society. Define Information Security Control and Quality Assurance	K2
2	I / I	**BA5102 - Principles of Management**	CO102.1	Identify and communicate the purpose and functions of management;D	K2
			CO102.2	Demonstrate an understanding of the impact of globalisation on management and the role cultural factors play in the workplace.	K2
			CO102.3	Discuss methods of employee compensation and their impact on employee motivation;	K2
			CO102.4	Illustrate the components of business strategy; 8. Explain how to develop and achieve organisational goals and objectives;	K2
			CO102.5	Apply the concepts of decision making in a business situation; and . Understand the role of technology in the future of management.	K3

3	**I / I**	**BA5103 - Accounting for Management**	CO1O3.1	Explain the basic concept of financial accounting, cost accounting and management accounting.	K1
			CO1O3.2	Apply the tools from accounting and cost accounting this would facilitate the decision making	K4
			CO1O3.3	Prepare simple final account for sole trader	K3
			CO1O3.4	Apply the concepts of inventory costs, EOQ and inventory control in arriving at decisions related to inventory.	K3
			CO1O3.5	Explain the Standard Costing and Solve problems on material and Price Variances.	K4
4	**I / I**	**BA5104 - Legal Aspects of Business**	CO1O4.1	Differentiate between an Agreement and Contract .	
			CO1O4.2	Explain the importance Contract in Business Environment and Rights of Parties.	K4
			CO1O4.3	Explain the importance Creation of Agency.	K2
			CO1O4.4	Analyse the principle of international business and strategies adopted by firms to expand globally	K4
			CO1O4.5	Prepare different negotiable instruments like Bills of Exchange, Promissory Note and Cheque .	K2
5	**I / I**	**BA5105 - Organizational Behaviour**	CO1O5.1	Develop Right Attitude, Components of attitude, Relationship between behavior and	K6

				attitude	
			CO1O5.2	Define, explain and illustrate a range of organisational behaviour theories	K3
			CO1O5.3	Analyse the behaviour of individuals and groups in organisations in terms of organisational behaviour theories.	K6
			CO1O5.4	Apply organisational behaviour concepts, models and theories to real life management situations through case analysis;	K3
			CO1O5.5	Demonstrate a critical understanding of organisational behaviour theories and current empirical research associated with the topics covered in this course; and, communicate effectively in oral and written forms about organisational behaviour theories and their application using appropriate concepts, logic and rhetorical conventions.	K4
6	**I / I**	**BA5106 - Statistics for Management**	CO1O6.1	To facilitate objective solutions in business decision. Understand the Conceptual overview of Statistics.	K4
			CO1O6.2	Critically evaluate the underlying assumptions of analysis tools.	K3
			CO1O6.3	. Understand and critically discuss the issues surrounding sampling and significance.	K4
			CO1O6.4	Discuss critically the uses and limitations of statistical analysis.Students know about parametric test.	K3

			CO1O6.5	Solve a range of problems using the techniques covered.	K4
7	**I / I**	**BA5107 - Total Quality Management**	CO1O7.1	Understand the importance of total quality management and its Principles and Practices	K1
			CO1O7.2	Learns Continuous process Improvement through benchmarking	K3
			CO1O7.3	Knowledge the Tools and Techniques for Quality management System	K4
			CO1O7.4	Understand Quality by Design through Total Productive Maintenance	K4
			CO1O7.5	Apply various Management Tools for Quality Management in India	K5
8	**I / I**	**BA5111 - Spoken and Written Communication**	CO1O8.1	Understand the importance of Communication in Business	K3
			CO1O8.2	Learn to develop writing skills and presentation	K6
			CO1O8.3	Know to write business proposals and letters	K3
			CO1O8.4	Learn Oral and Employment Communication	K6
			CO1O8.5	Understand Contemporary Aspects in Communication and Communication in Information Technology	K3

PROGRAMME: **Master of Business Administration**	DEGREE: **PG**	A.Y: **2020-2021**	SEMESTER: **02**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / II	**BA5201 –Applied Operations Research**	CO2O8.1	Understand the origin and application of Operation Research	K3
			CO2O8.2	Learn Linear Programming Method and Transportation Problem	K5
			CO2O8.3	Gain knowledge in Decision Theory and Network Analysis for taking decisions for business	K4
			CO2O8.4	Gain knowledge in Decision Theory and Network Analysis for taking decisions for business	K2
			CO2O8.5	Gain knowledge in Decision Theory and Network Analysis for taking decisions for business	K5
2	I / II	**BA5202 – Business Research Method**	CO202.1	Explain Business Research, Business Intelligence, Research	K2
			CO202.2	Explain the Concept & Features of a good research design	K5
			CO202.3	Elaborate Exploratory Research Design, Descriptive Research Designs and Experimental Design.	K1
			CO202.4	Elaborate Concept of Measurement and Levels of measurement	K2
			CO202.5	Explain about data analysis, Graphical Representation of Data and Bivariate Analysis.	K2

3	**I / II**	**BA5203 – Financial Management**	CO203.1	Explain the basic concept of financial management	K3
			CO203.2	Apply the tools from financial management this would facilitate the decision making	K2
			CO203.3	develop analytical skills this would facilitate the decision making in business situations .	K6
			CO203.4	Explain and use of financial analysis techniques i.e. Fund Flow, Cash Flow.	K4
			CO203.5	Knowledge the Current Assets Management and Corporate Restructuring .	K3
4	**I / II**	**BA5204 – Human Resource Management**	CO204.1	Explain the importance of human resources and their effective management in organizations.	K1
			CO204.2	Demonstrate a basic understanding of different tools used in forecasting and planning	K4
			CO204.3	Describe the meanings of terminology and tools used in managing employees effectively.	K3
			CO204.4	Record governmental regulations affecting employees and employers	K6
			CO204.5	Analyze the key issues related to administering the human elements such as motivation.	K3
5	**I / II**	**BA5205 – Information Management**	CO205.1	Describe the role of information technology and information systems in business.	K1
			CO205.2	Record the current issues of information technology and relate	K6

				those issues to the firm.	
			CO205.3	Reproduce a working knowledge of concepts and terminology related to information technology.	K3
			CO205.4	Appraise the knowledge previously acquired of Microsoft Office.Analyze how information technology impacts a firm.	K3
			CO205.5	Illustrate the impact of information systems in society. Define Information Security Control and Quality Assurance	K2
6	**I / II**	**BA5206 – Operations Management**	CO206.1	Learn basic Concepts and Strategic of Operations management .	K4
			CO206.2	Knowledge of Product process, design and analysis .Prepare Process Flow Diagrams	K3
			CO206.3	Evaluate the Plant Location & Plant Layout .Elaborate process of Site Selection for Services	K4
			CO206.4	Learn Types, Job Shop and Machines of Scheduling .Elaborate Inventory Management in Services	K5
			CO206.5	Understand Planning, Integration and scrap Materials Management	K4
7	**I / II**	**BA5207 – Marketing Management**	CO207.1	Learn concepts of marketing management and marketing environment and strategies,	K2
			CO207.2	Analyze Marketing Opportunities, Customer Value and Marketing Mix.	K4
			CO207.3	Design a customer driven strategies in	K6

				Market segmentation.	
			CO207.4	Evaluate Distribution Decisions, Promotion & Communication Strategies	K3
			CO207.5	Evaluate Pricing Decisions & Personal Communication	K4
8	**I / II**	**BA5211 – Data Analysis and Business Modelling**	CO211.1	Understand the Importance of Data for Business Analytics .	K5
			CO211.2	Know the Descriptive Statistical Measures in Data Analytics	
			CO211.3	Apply Predictive Analytics tools .Describe the greedy paradigm and explain when an algorithmic design situation calls for it.	K5
			CO211.4	Learn Data Mining process .Analyze randomized algorithms.	
			CO211.5	Knowledge data simulation to solve the business problems	K2

PROGRAMME: **Master of Business Administration**	DEGREE: **PG**	A.Y: **2021-2022**	SEMESTER: **03**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / III	**BA5301 - International Business Management**	CO301.1	Understand the importance and Opportunities and Challenges of International Business.	K2
			CO301.2	.Conduct, evaluate and present market research to support an organization's international business decision-making.	K2
			CO301.3	Knowledge the International Business and Economic Integration	K3
			CO301.4	Understand the Strategy and Structure of International Business	K3
			CO301.5	Learn International Business Operations .	K6
2	II / III	**BA5302 - Strategic Management**	CO302.1	Learn Fundamentals of Management Accounting, Cost analysis and Control .analyse strategic macro environmental issues;	K4
			CO302.2	Know Costing for Specific Industries	K3
			CO302.3	Understand Application of Marginal Costing . analyse industry factors, and identify their impact on profitability and strategic positioning;	K3
			CO302.4	Know business Marginal Costing, planning and activities ,assess organisational performance	K4

			CO302.5	Knowledge of Budget and Budgetary controls. identify strategic capabilities and gaps	K4
3	**II / III**	**BA5311 - Summer Internship**	CO311.1	Understand Management functions and Organizational structure	K3
			CO311.2	Learn organizational dynamics in terms of organizational behaviour, culture, climate .	K2
			CO311.3	Knowledge Functional domain.Develop work habits and attitudes necessary for job success.	K3
			CO311.4	Know Processes and systems.Build a record of work experience. Acquire employment contacts leading directly to a full-time job following graduation from college.	K2
			CO311.5	External and internal environment impact on the organization. dentify, write down, and carry out performance objectives	K2
4	**II / III**	**BA5014 - Entrepreneurship Development**	CO014.1	Understand the concept and mindset of the entrepreneurs .	K2
			CO014.2	Understand the entrepreneurs Personality, journey and Entrepreneurial competencies,	K3
			CO014.3	Knows techniques for generating ideas and Launching Entrepreneurial Ventures.	K6
			CO014.4	Learn Legal challenges of Entrepreneurship.	K2
			CO014.5	Evaluate Strategies for building entrepreneurship	K3

5	**II / III**	**BA5015 - Industrial Relations and Labour Welfare**	CO015.1	Understand the concept and need of Customer Relationship Management	K6
			CO015.2	Learn building customer relations	K6
			CO015.3	Learn building customer relations	K2
			CO015.4	Understand Customer Relationship Management structures	K6
			CO015.5	Customer Relationship Management Planning and Implementation	K6
6	**II / III**	**BA5019 - Strategic Human Resource Management**	CO019.1	Apply critical thinking skills in analysing theoretical and applied perspectives of strategic HRM and ER	K1
			CO019.2	Analyse problems and develop managerial solutions to employment relations problems at both national and workplace level.	K6
			CO019.3	Demonstrate the application of problem solving and evaluation skills in HRM and ER through exercises and case study work	K4
			CO019.4	Communicate knowledge of SHRM and employment relations in both written and verbal formats reactive to both audience and purpose.	K4
			CO019.5	Investigate and communicate the professional values of HRM including the ethical problems inherent in HRM and ER professional roles	K3

7	**II / III**	**BA5008 – Banking Financial Services Management**	CO008.1	Describe the dimensions of performance and risk relevant to financial firms	K2
			CO008.2	Calculate contemporary measures of financial measures of performance and risk.	K2
			CO008.3	Design hedging strategies to manage market risks	K3
			CO008.4	Evaluate the economic environment and the impact of governmental economic policies	K3
			CO008.5	Describe the impact that financial innovation, advances in technology	K3
8	**II / III**	**BA5011 - Merchant Banking and Financial Services**	CO011.1	Understand the concept of Indian Financial system and Regulatory and Promotional Institutions	K2
			CO011.2	Know Banking and Non Banking financial Institutions. Understand the various financial services and their future	K1
			CO011.3	Knowledge of Financial and Securities Markets .determine the most suitable financial serviceFactoring	K2
			CO011.4	Learn the Asset /Fund Based Financial Services .To enable the students get familiarized with Mutual Funds.	K6
			CO011.5	Learn the Fee-based / Advisory services . An in-depth insight into the Various Financial Services	K5
9	**II / III**	**BA5031 - International**	CO031.1	Understand the major models of international trade and compare and	K4

		Trade Finance		contrast them .	
			CO031.2	Analyse the linkages between trade, labour and capital movements,	K4
			CO031.3	Identify and critically examine policy implications of the linkages between trade, labour and capital movements and the international fragmentation of production	K4
			CO031.4	Apply equilibrium models to analyse the economic effects of policy interventions including tariffs, quotas, export subsidies, antidumping duties, countervailing duties	K3
			CO031.5	Critically analyse these policy interventions in terms of their costs and benefits, including their implications for economic wellbeing, performance and competitiveness	K4

10	**II / III**	**BA5004 - Brand Management**	CO004.1	Create identification and brand awareness . It plays a vital role in capturing the customers mind with the brand name.	K4
			CO004.2	Guarantee a certain level of quality, quantity, and satisfaction of a product or service.	K6
			CO004.3	Help in the promotion of the product. It gives an image of an experienced, huge and reliable business.	K6
			CO004.4	Shoppers treat brands as a guide to quality, the price of the product,	K5

				service,	
			CO004.5	It deals with determining the brand, positioning the brand and delivering the brand.	K4
11	**II / III**	**BA5005 - Retail Marketing**	CO005.1	Introduction to Retailing.Describe retailing, the entities involved, and the impact of decisions on a retail business.	K1
			CO005.2	Explain the concept of strategic planning within the retail management decision process.	K3
			CO005.3	Compare and contrast single channel, multi-channel, and omnichannel retailing.	K5
			CO005.4	Explain the consumer decision-making proces.Identify the various models of buying processes	K4
			CO005.5	Summarize the main factors used to describe customers.	K3

12	**II / III**	**BA5006 - Services Marketing**	CO006.1	1. Demonstrate an extended understanding of the similarities and differences in service -based and physical product based marketing activities	K1
			CO006.2	Develop and justify marketing planning and control systems appropriate to service -based activities	K3
			CO006.3	Demonstrate integrative knowledge of marketing issues associated with service productivity	K5
			CO006.4	Develop blueprint for the services sector and develop a better appreciation of the necessary	K4
			CO006.5	Recognise the challenges faced in services delivery as outlined in the services gap model	K3

PROGRAMME: **Master of Business Administration**	DEGREE: **PG**	A.Y: **2021-2022**	SEMESTER: **04**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	II / IV	BA5411 – Project Work	CO411	Establish the thesis is of sufficiently high standard to merit the award of the degree for which it is submitted	K2
			CO412	Investigate the awareness of original work sits in relation to the wider research field	K4
			CO413	Understand the writing, justification and defending aspects in response to the examiners' questions	K3
			CO414	Learns the results from the work comprehensively through presentation	K6
			CO415	Presenting work in a conference or publish the work in a peer reviewed journal	K5

DEPARTMENT OF MANAGEMENT STUDIES
COURSE OUTCOME REGULATION 2021

PROGRAMME: Master of Business Administration	DEGREE: **PG**	A.Y: **2021-2022**	SEMESTER: **01**

S.No	Year/ Sem	Course Name	Course Outcomes (Student can able to understand)		Knowledge Level
1	I / I	BA4101 - Statistics For Management	CO1O1.1	To facilitate objective solutions in business decision making.	K2
			CO1O1.2	To understand and solve business problems.	K6
			CO1O1.3	To apply statistical techniques to data sets, and correctly interpret the results.	K6
			CO1O1.4	To develop skill-set that is in demand in both the research and business environments.	K4
			CO1O1.5	To enable the students to apply the statistical techniques in a work setting.	K5
2	I / I	BA4102 Management Concepts and Organizational Behaviour	CO1O2.1	Understanding of various management concepts and skills required in the business world	K2
			CO1O2.2	In-depth knowledge of various functions of management in a real time management context	K2
			CO1O2.3	Understanding of the complexities associated with management of individual behavior in the organizations	K4
			CO1O2.4	Develop the skillset to have manage group behaviour in Organizations	K2
			CO1O2.5	Insights about the current trends in managing organizational behaviour	K3
3	I / I	BA4103 Managerial Economics	CO1O3.1	To introduce the concepts of scarcity and efficiency;	K1

			CO1O3.2	To explain principles of microeconomics relevant to managing an organization	K4
			CO1O3.3	To describe principles of macroeconomics	K3
			CO1O3.4	To have the understanding of economic environment of business.	K3
			CO1O3.5	To study about the policies that regulate economic variables	K4
4	**I / I**	**BA5104 - Accounting for Management**	CO1O4.1	A thorough grounding of financial accounting concepts	K1
			CO1O4.2	Preparation of financial statement analysis	K4
			CO1O4.3	Understand the management and cost accounting techniques	K2
			CO1O4.4	Apply the management and cost accounting techniques for decision making	K4
			CO1O4.5	Assess the accountancy standards of practices in India	K2
5	**I / I**	**BA4105 Legal Aspects of Business**		Understand the fundamental legal principles in developing various contracts and commercial laws in the business world	
			CO1O5.2	Identify the common forms of business associations and elements of Corporate Governance	K3
			CO1O5.3	Develop insights regarding the laws related to industrial environment	K6
			CO1O5.4	Ability to understand the fundamentals of corporate tax and GST	K3
			CO1O5.5	Understand the role of consumer rights and cyber laws in the modern business environment	K4

6	**I / I**	**BA4106 Information Management**	CO1O6.1	Learn the basics of data and information system.	K4
			CO1O6.2	Understand the system development methodologies.	K3
			CO1O6.3	Understand database management system and its types.	K4
			CO1O6.4	Learn the various technologies in information system and its security.	K3
			CO1O6.5	Gains knowledge on effective applications of information systems in business.	K4
7	**I / I**	**BA4111 Indian Ethos**	CO1O11.1	The learners are able to apply the basic concepts of Indian ethos and value systems at work.	K1
			CO1O11.2	The learners can handle issues of business ethics and offer solutions in ethical perspectives	K3
			CO1O11.3	The learners are professionally efficient and skillful in value systems and culture	K4
			CO1O11.4	The learners are capable in ethically manage business towards well-being of the society.	K4
			CO1O011.5	The learners can be socially effective in undertaking business responsibilities	K5
8	**I / I**	**Business Communication (Laboratory)**	CO1O12.1	Develop good managerial communication skills	K4
			CO1O12.2	Ability to excel in different forms of written communication required in a business context	K6
			CO1O12.3	Develop good presentation skills	K3
			CO1O12.4	In-depth understanding of interview skills	K6
			CO1O12.5	Ability to prepare Business reports	K3

PROGRAMME: Master of Business Administration	DEGREE: **PG**	A.Y: **2021-2022**	SEMESTER: **02**

S.No	**Year/ Sem**	**Course Name**	**Course Outcomes (Student can able to understand)**		**Knowledge Level**
1	**I / II**	**BA4201 Quantitative Techniques for Decision Making**	CO2O1.1	Linear programming in product mix decisions	K3
			CO2O1.2	Transportation and assignment in logistics and job allocation scenarios	K5
			CO2O1.3	Game theory and heuristics of decision making in real time decisions	K4
			CO2O1.4	Inventory management and replacement models in manufacturing context	K4
			CO2O1.5	Queuing and simulation in real time scenario optimisation	K5
2	**I / II**	**BA4202 Financial Management**	CO202.1	Identify the concepts of financial decision of an organisation	K2
			CO202.2	Recognize the time value of money	K5
			CO202.3	Learn the capital budgeting and cost of capital techniques	K1
			CO202.4	Understand how to decide the decision of capital structure and distribution of dividend	K2
			CO202.5	Assess the short-term and long-term sources of finance	K2
3	**I / II**	**BA4203 Human Resource Management**	CO203.1	Students would have gained knowledge on the various aspects of HRM	K3
			CO203.2	Students will gain knowledge needed for success as a human resources professional.	K3
			CO203.3	Students will develop the skills needed for a successful HR manager	K6

			CO203.4	Students would be prepared to implement the concepts learned in the workplace.	K4
			CO203.5	Students would be aware of the emerging concepts in the field of HRM	K2
4	**I / II**	**BA5204 – BA4204 Operations Management**	CO204.1	Understanding of the evolution of operations management practices and world class manufacturing processes	K1
			CO204.2	Knowledge about capacity planning, strategic sourcing and procurement in organizations	K4
			CO204.3	Enhances the understanding of product development and design process	K3
			CO204.4	Ability to forecast demand and overcome bottlenecks	K5
			CO204.5	Provides insight to Quality management tools and practices	K4
5	**I / II**	**BA5205 -Business Research Methods**	CO205.1	Students will understand and appreciate scientific inquiry	K1
			CO205.2	Students would know to write research proposals	K6
			CO205.3	The students would be able to undertake a systematic outlook towards business situations for the purpose of objective decision making and the method of conducting scientific inquiry to solve organizational problems	K3
			CO205.4	Students would be able to analyze data and find solutions to the problems.	K3
			CO205.5	Students could prepare research reports	K2
6	**I / II**	**BA4206 Business Analytics**	CO206.1	Ability to understand the role of Business Analytics in decision making	K2
			CO206.2	Ability to identify the appropriate tool for the analytics scenario	K3

			CO206.3	Ability to apply the descriptive analytics tools and generate solutions	K5
			CO206.4	Understanding of Predictive Analytics and applications	K2
			CO206.5	Knowledge of Prescriptive Analytics and demonstrating business process improvement	K2
7	**I / II**	**BA4207 Marketing Management**	CO207.1	Applied knowledge of contemporary marketing theories to the demands of business and management practice.	K1
			CO207.2	Enhanced knowledge of marketing strategies for consumer and industrial marketing	K4
			CO207.3	Deep understanding of choice of marketing mix elements and managing integrated marketing channels	K1
			CO207.4	Ability to analyze the nature of consumer buying behaviour	K5
			CO207.5	Understanding of the marketing research and new trends in the arena of marketing	K5
8	**I / II**	**BA4211 Business Ethics**	CO211.1	The learners can handle issues of business ethics and offer solutions ethical perspectives	K2
			CO211.2	The learners are able to apply the basic concepts of Indian ethos and value systems at work.	K5
			CO211.3	The learners can handle issues of business ethics and offer solutions in ethical perspectives	K3
			CO211.4	The learners are professionally efficient and skillful in value systems and culture	K5
			CO211.5	The learners are capable in ethically manage business towards well-being of the society.	K2
			CO211.6	The learners can be socially effective in undertaking business responsibilities.	K3

9	I / II	BA4212 Data Analysis and Modeling (Laboratory)	CO212.1	The learners can handle issues of business ethics and offer solutions ethical perspectives	K2
			CO212.2	The learners are able to apply the basic concepts of Indian ethos and value systems at work.	K5
			CO212.3	The learners can handle issues of business ethics and offer solutions in ethical perspectives	K3
			CO212.4	The learners are professionally efficient and skilful in value systems and culture	K5
			CO212.5	The learners are capable in ethically manage business towards wellbeing of the society.	K2
			CO212.6	The learners can be socially effective in undertaking business responsibilities.	K4

NPR COLLEGE OF ENGG. & TECHNOLOGY ★ NATHAM

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