DEPARTMENT OF ELECTRICAL AND ELECTRONICS AND ENGINEERING

COURSE OUTCOMES

2016-2020 BATCH

SEMESTER 1

Course code & Course Name: MA101 CALCULUS

COs	DESCRIPTION
CO1	the student will be able to check convergence of infinite series
CO2	the student will be able to find maxima and minima of functions two variables
CO3	the student will be able to find area and volume using multiple integrals
CO4	the student will be able to apply calculus of vector valued functions in physical applications
CO5	the student will be able to visualize graph and surfaces using software or otherwise.

Course code & Course Name:CY100 ENGINEERING CHEMISTRY

COs	DESCRIPTION
CO1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CO2	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution .Design economically and new methods of synthesis nano materials.
CO3	Have the knowledge of converting solar energy into most needy electrical.
CO4	Apply their knowledge for protection of different metals from corrosion. To prevents the monuments from getting corroded.
CO5	Recent trends in electrochemical energy storage devices.
CO6	Learn how to use different spectroscopy techniques for analysis purpose of simple molecules.

Course code & Course Name: BE100 ENGINEERING MECHANICS

COs	DESCRIPTION
CO1	Students will be able to apply and demonstrate the concepts of mechanics to practical engineering problems.
CO2	Students will be able to determine the properties of planes and solids.
CO3	Students will be able to apply fundamental concepts of dynamics to practical problems.

Course code & Course Name:BE10104 INTRODUCTION TO ELECTRONICS ENGINEERING

COs	DESCRIPTION
CO1	Students can identify the active and passive components.
CO2	Students can design and setup simple circuits using diodes and transistors.
CO3	Students are able to understand the characteristics of diodes and transistors.
CO4	Voltages and currents can be measured and monitored using electronic measuring instruments

Course code & Course Name: BE103 INTRODUCTION TO SUSTAINABLE ENGINEERING

COs	DESCRIPTION
CO1	Able to appreciate and explain the different types of environmental pollution problems and their sustainable solutions
CO2	To be aware of problem related to global environmental issues
CO3	Able to apply the concepts of sustainability in their respective area of specialization
CO4	To understand the need of waste disposal and management

Course code & Course Name:CE100 BASICS OF CIVIL ENGINEERING

COs	DESCRIPTION
CO1	The students will be able to illustrate the fundamental aspects of civil engineering
CO2	The students should able to plan a building
CO3	Students will be able to explain about surveying for making horizontal and vertical measurements. They will able to illustrate the uses of various building materials and construction of different components of a building
CO4	They will be able to illustrate the uses of various building materials and construction of different components of a building.

Course code & Course Name: CY110 ENGINEERING CHEMISTRY LAB

COs	DESCRIPTION
CO1	To equip the students to apply the knowledge of Chemistry and take up Chemistry related topics as parts of their project works during higher semester of the course.
CO2	To impart sound knowledge in the different fields of theoretical chemistry so as to apply it to the problems in engineering field.
CO3	To develop abilities and skills that are relevant to the study and practice of Chemistry.
CO4	To familiarize the students with different application oriented topics like new generation engineering material different instrumental methods etc

CO5	To enable the students to acquire the knowledge in the concepts of chemistry for engineering applications.
	Course code & Course Name: CE110 CIVIL ENGINEERING WORKSHOP
COs	**DESCRIPTION**
CO1	The ability to practice civil engineering using up-to-date techniques, skills, and tools as a result of life-long learning ability to design and conduct experiments
CO2	An ability to design a system or component to satisfy stated or code requirements of Civil Engineering.
CO3	The students will be able to illustrate the fundamental aspects of civil engineering
CO4	The students should able to plan a building
	Course code & Course Name: EC110 ELECTRONICS ENGINEERING WORKSHOP
COs	**DESCRIPTION**
CO1	Students can identify the active and passive electronic components.
CO2	Students get hands on assembling, dismantling and repairing systems.
CO3	Drawing of electronic circuit diagrams using BIS/ IEEE symbols
CO4	Testing of electronic components (Resistor, Capacitor, Diode)
CO5	Assembling of electronic circuit / system on general purpose PCB

SEMESTER 2

Course code & Course Name: MA102 DIFFERENTIAL EQUATIONS

COs	DESCRIPTION
CO1	Distinguish between linear, partial and ordinary differential equations. State the basic existence theorem for 1st order ODE's and use the theorem to determine a solution interval
CO2	Recognize and solve a non homogeneous differential equation. Find particular solutions to initial value problems.
CO3	Find the Fourier series representation of a function of one variable.
CO4	Knowledge in the Technic, methodology of solving Partial Differential Equations.
CO5	At the end of the course students will have acquired basic knowledge of differential equations and methods of solving them and their use in analyzing typical mechanical or electrical systems.

Course code & Course Name: PH100 ENGINEERING PHYSICS

COs	DESCRIPTION
CO1	Solve for the solutions and describe the behavior of a damped and driven harmonic oscillator in both time and frequency domains.
CO2	Define and explain the propagation of light in conducting and non-conducting media.
CO3	Define and explain the physics governing laser behaviour and light matter interaction ting and non-conducting media.
CO4	Apply wave optics and diffraction theory to a range of problems
CO5	Explain and calculate the physical effects of acoustic reflections, absorption, scattering, diffusion, diffraction, and propagation losses
CO6	Use advanced theoretical, numerical, and experimental techniques to model and analyze acoustical elements in musical instruments, the human voice, room acoustics, and audio

Course code & Course Name:BE110 ENGINEERING GRAPHICS

COs	DESCRIPTION
CO1	the student would have accomplished Fundamental Engineering Drawing Standards.
CO2	the student would have accomplished Dimensioning and preparation of neat drawings and drawing sheets.
CO3	the student would have accomplished Interpretation of engineering drawings
CO4	the student would have accomplished The features of CAD software

Course code & Course Name: BE102 DESIGN & ENGINEERING

COs	DESCRIPTION
CO1	To appreciate different elements involved in design and to apply them when they called for.

CO2	Aware of product centered and user centered aspects that makes in the design process.
CO3	To be aware of different stages in design process and results of incorporating other fields with engineering stream
CO4	Understand different stages in manufacturing of a designed product

Course code & Course Name: ME100 BASICS OF MECHANICAL ENGINEERING

COs	**DESCRIPTION**
CO1	After the completion of this course, students will get necessary foundation for a complete understanding of energy and other related engineering systems
CO2	It also provides students a feel for how thermal sciences are applied in engineering practice.
CO3	Understand the laws of thermodynamics and their significance
CO4	Apply the principles of thermodynamic for the analysis of thermal systems
CO5	Recognize the relations exhibited in thermodynamics.

Course code & Course Name: EE100 BASICS OF ELECTRICAL ENGINEERING

COs	**DESCRIPTION**
CO1	Gain preliminary knowledge in basic concepts of Electrical Engineering
CO2	Discuss the working of various dc and ac machines
CO3	To predict the behavior of any electrical and magnetic circuits.
CO4	To identify the type of electrical machine used for that particular application.
CO5	To wire any circuit depending upon the requirement
CO6	Understand working principle of various analogue electrical measuring instruments.

Course code & Course Name: ME110 MECHANICAL ENGINEERING WORKSHOP

COs	**DESCRIPTION**
CO1	Knowledge achieved to explain the various manufacturing process in the basic mechanical engineering workshop sections smithy, carpentry, assembling, welding etc.
CO2	Identify the various hand tools used in the basic mechanical engineering workshop sections-smithy, carpentry, assembling, welding etc.
CO3	Able to choose different measuring devises according to the work.
CO4	Ability to name and summarize the operations of various machine tools like lathe, milling, drilling and shaping machines.
CO5	Knowledge achieved to disassemble and assemble the machine like IC engines
CO6	Skill achieved to construct models by using basic mechanical workshop sections like welding, moulding, smithy, carpentry etc.

Course code & Course Name: EE110 ELECTRICAL ENGINEERING WORKSHOP

COs	DESCRIPTION
CO1	Draw and practice simple house wiring and testing methods
CO2	Develop practical workshop skills in the students.
CO3	Grasp the applications of workshop equipment, wiring accessories etc
CO4	Physical realization of the range of discrete and integrated semiconductor devices
CO5	Knowledge of protective devices in electric circuits like fuse, ELCB, MCB etc.
	Course code & Course Name: PH110 ENGINEERING PHYSICS LAB
COs	**DESCRIPTION**
CO1	An ability to apply knowledge of mathematics, science, and engineering
CO2	An ability to design and conduct experiments, as well as to analyze and interpret data.
CO3	An ability to identify, formulate, and solve engineering problems
CO4	Understanding of professional and ethical Responsibility
CO5	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
CO6	A recognition of the need for, and an ability to engage in life-long learning

SEMESTER 3

Course code & Course Name: MA201 LINEAR ALGEBRA & COMPLEX ANALYSIS

COs	DESCRIPTION
CO1	students will be able to solve any given system of linear equations
CO2	students will be find the Eigen values of a matrix and how to diagonalize a matrix
CO3	students will be able to identify analytic functions and Harmonic functions.
CO4	students will be able to evaluate real definite Integrals as application of Residue Theorem
CO5	students will be able to identify conformal mappings
CO6	students will be able to find regions that are mapped under certain Transformations

Course code & Course Name:EE201 CIRCUITS AND NETWORKS

COs	DESCRIPTION
CO1	Ability to solve any DC and AC circuits
CO2	Ability to apply graph theory in solving networks
CO3	Ability to apply Laplace Transform to find transient response
CO4	Ability to synthesize networks

Course code & Course Name: EE203 ANALOG ELECTRONICS CIRCUITS

COs	DESCRIPTION
CO1	1. Design biasing scheme for transistor circuit amplifier(OPAMP) for specific applications including waveform generation.
CO2	2. Model BJT and FET amplifier circuits
CO3	3. Choose a power amplifier with appropriate specifications for electronic circuit applications
CO4	4. Design & analyse oscillator circuits using BJT
CO5	5. Choose Operational amplifier(OPAMP) for specific applications including waveform generation.
CO6	6. Design & implement analog circuits using OPAMP

Course code & Course Name: EE205 DC MACHINES AND TRANSFORMERS

COs	DESCRIPTION
CO1	1. identify dc generator types, and appreciate their performance
CO2	2. describe the principle of operation of a dc motor and select appropriate motor types for different applications.
CO3	3. analyse the performance of different types of dc motors
CO4	4. describe the principle of operation of single phase transformers

CO5	5. analyse the performance of single phase transformers
CO6	6. familiarize with the principle of operation and performance of three phase transformers
Course code & Course Name:EE207 COMPUTER PROGRAMMING	
COs	**DESCRIPTION**
CO1	1. Ability to design programs using C language
CO2	2. Ability to develop simple programs using Python
	Course code & Course Name: HS200 BUSINESS ECONOMICS
COs	**DESCRIPTION**
CO1	A student who has undergone this course would be able to make investment decisions based on capital budgeting methods in alignment with microeconomic and macroeconomic theories.
CO2	A student who has undergone this course would be able to analyse the profitability of the firm, economy of operation, determination of price under various market situations with good grasp on the effect of trade cycles in business
CO3	A student who has undergone this course would gain knowledge on Monetary theory, measures by RBI in controlling interest rate and emerging concepts like Bit Coin
CO4	A student who has undergone this course would gain knowledge of elementary accounting concepts used for preparing balance sheet and interpretation of balance sheet
	Course code & Course Name: EE233 PROGRAMMING LAB
COs	**DESCRIPTION**
CO1	1. Ability to design programs using C language
CO2	2. Ability to develop simple programs using Python
	Course code & Course Name: EE231 ELECTRONIC CIRCUITS LAB
COs	**DESCRIPTION**
CO1	The student should be able to design and implement various electronic circuits using BJTs and OPAMPs.

SEMESTER 4

Course code & Course Name: MA204 PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS

COs	DESCRIPTION
CO1	Students would have become familiar with quantifying and analysing random phenomena using various models of probability distributions and random processes.
CO2	They would also have learned the concepts of autocorrelation and power spectral density which are useful in the analysis of random signals.
CO3	Some of the fundamental numerical methods learned in the course would help them to solve a variety of mathematical problems by the use of computers when analytical methods fail or are difficult.

Course code & Course Name:EE202 Synchronous and Induction Machines

COs	DESCRIPTION
CO1	1. identify alternator types, and appreciate their performance
CO2	2. determine the voltage regulation and analyse the performance of alternators
CO3	3. describe the principle of operation of synchronous motor and different applications.
CO4	4. describe the principle of operation of 3-phase induction motors and select appropriate motor types for different applications.
CO5	5. analyse the performance of 3-phase induction motors
CO6	6. familiarize with principle of operation and application of 1 -phase induction motors.

Course code & Course Name: EE204 Digital Electronics and Logic Design

COs	DESCRIPTION
CO1	Familiar with various number systems and Boolean algebra
CO2	design and analyse any digital logic gate circuits and Flip flop based systems.
CO3	Familiar with combinational circuits
CO4	gain the capability of implementing various counters,
CO5	describe the operation of ADC and DAC circuits
CO6	acquire basic knowledge on VHDL

Course code & Course Name: EE206 MATERIAL SCIENCE

COs	DESCRIPTION
CO1	Describe the characteristics of conducting and semiconducting materials
CO2	Classify magnetic materials and describe different laws related to them
CO3	Classify and describe different insulators and to explain the behavior of dielectrics in static and alternating fields

CO4	Describe the mechanisms of breakdown in solids, liquids and gases
CO5	Classify and describe Solar energy materials and superconducting materials
CO6	Gain knowledge in the modern techniques for material studies

Course code & Course Name: EE208 MEASUREMENTS AND INSTRUMENTATION

COs	**DESCRIPTION**
CO1	Compare different types of instruments-their working principles, advantages and disadvantages.
CO2	2. Explain the operating principles of various ammeters, voltmeters and ohm meters
CO3	3. Describe wattmeter and energy meters
CO4	4. Describe different flux and permeability measurements methods
CO5	5. Identify different AC potentiometers and bridges,
CO6	6. Understand the working and applications of cathode ray oscilloscope
CO7	7. Identify the transducers for physical variables and to describe operating principle

Course code & Course Name: HS210 LIFE SKILLS

COs	**DESCRIPTION**
CO1	The students will be able to Communicate effectively.
CO2	The students will be able to Make effective presentations.
CO3	The students will be able to Write different types of reports.
CO4	The students will be able to Face interview & group discussion.
CO5	The students will be able to Critically think on a particular problem.

Course code & Course Name: EE232 Electrical Machines Lab - I

COs	**DESCRIPTION**
CO1	Analyse the characteristics of different dc generators
CO2	2. Separate the losses in dc motors
CO3	3. Analyse the performance of different types of dc motors
CO4	4. Determine the performance characteristics of single phase transformers
CO5	5. Compare the performance of transformers in different modes of operations and connections

Course code & Course Name: EE234 CIRCUITS AND MEASUREMENTS LAB

COs	**DESCRIPTION**
CO1	Analyze RLC circuits and coupled circuit to obtain the voltage -current relations
CO2	2. Verify DC network theorems by setting up various networks

CO3	3. Calibrate the single phase and three phase energy meter at various power factors
CO4	4. Measure power in a single and three phase circuits by various methods
CO5	5. Determine magnetic characteristics of iron ring specimen
CO6	6. Measure high and low resistances using various bridges
CO7	7. Use Electronic energy meter, TOD meter and clamp on meter

SEMESTER 5

Course code & Course Name: EE301 POWER GENERATION, TRANSMISSION AND PROTECTION

COs	DESCRIPTION
CO1	Know the basic aspects in the area of power generation, transmission, distribution and protection.
CO2	ii. Design power factor correction equipment, transmission line parameters, and decide upon the various protection schemes to be adopted in various cases.

Course code & Course Name: EE 341 DESIGN PROJECT

COs	DESCRIPTION
CO1	Think innovatively on the development of components, products, processes or technologies in the engineering field
CO2	Analyse the problem requirements and arrive workable design solutions

Course code & Course Name: EE303 Linear Control Systems

COs	DESCRIPTION
CO1	develop mathematical models of various systems.
CO2	analyse the stability aspects of linear time invariant systems.

Course code & Course Name: EE305 Power Electronics

COs	DESCRIPTION
CO1	Choose appropriate power semiconductor device in converter circuits and develop their triggering circuits.
CO2	Analyze various types of power electronic converters and apply different switching techniques.
CO3	iii. Select appropriate power converter for specific applications.
CO4	iv. Interpret and use datasheets of power semiconductor devices for design

Course code & Course Name: EE307 SIGNAL AND SYSTEMS

COs	DESCRIPTION
CO1	Represent various signals and systems
CO2	Analyse the continuous time system with Laplace transform
CO3	Represent and analyse signals using Fourier representation
CO4	Analyse the discrete time system using ZT
CO5	Analyse the DT systems with DFS
CO6	. Acquire basic knowledge in nonlinear systems

Course code & Course Name: EE 309 Microprocessor and Embedded Systems	
COs	**DESCRIPTION**
CO1	Apply the fundamentals of assembly level programming of 8085 microprocessor and8051 microcontroller
CO2	2. Work with standard microprocessor real time interfaces
CO3	3. Develop skill for writing C programs for8051 microcontroller
CO4	4. Design microprocessors/microcontrollers-based systems.

Course code & Course Name: EE367 New and Renewable Energy Systems	
COs	**DESCRIPTION**
CO1	The students will be able to design and analyse the performance of small isolated renewable energy sources.

Course code & Course Name: EE331 Digital Circuits and Embedded Systems Lab	
COs	**DESCRIPTION**
CO1	design, setup and analyse various digital circuits.
CO2	design an embedded system for a particular application

Course code & Course Name: EE333 Electrical Machines Lab II	
COs	**DESCRIPTION**
CO1	After the successful completion of the course, the students will be able to test and validate DC generators, DC motors and transformers

SEMESTER 6

Course code & Course Name: HS300 Principles of Management

COs	DESCRIPTION
CO1	manage people and organizations
CO2	critically analyse and evaluate management theories and practices
CO3	plan and make decisions for organizations
CO4	do staffing and related HRD functions

Course code & Course Name: EE352 Comprehensive Examination

COs	DESCRIPTION
CO1	To assess the comprehensive knowledge gained in basic courses relevant to the branch of study
CO2	To comprehend the questions asked and answer them with confidence.

Course code & Course Name: EE302 ELECTROMAGNETICS

COs	DESCRIPTION
CO1	Analyze fields and potentials due to static charges
CO2	ii. Explain the physical meaning of the differential equations for electrostatic and magnetic fields
CO3	iii. Understand how materials are affected by electric and magnetic fields
CO4	iv. Understand the relation between the fields under time varying situations
CO5	v. Understand principles of propagation of uniform plane waves.
CO6	vi. Be aware of electromagnetic interference and compatibility

Course code & Course Name: EE304 Advanced Control Theory

COs	DESCRIPTION
CO1	design compensators using classical techniques.
CO2	ii. analyse both linear and nonlinear system using state space methods.
CO3	iii. analyse the stability of discrete system and nonlinear system.

Course code & Course Name: EE306 POWER SYSTEM ANALYSIS

COs	DESCRIPTION
CO1	Analyse power systems under normal and abnormal conditions.
CO2	ii. Carry out load flow studies under normal and abnormal conditions

Course code & Course Name: EE308 Electric Drives

COs	DESCRIPTION
CO1	able to select a drive for a particular application. They will familiarize with the various

	control techniques employed for controlling drives with ac and dc motors.

Course code & Course Name: EE332 Systems and Control laboratory

COs	DESCRIPTION
CO1	Develop mathematical models for servomotors and other electrical systems
CO2	2. Performance analysis of different process control systems
CO3	3. Performance analysis of different types of controllers
CO4	4. Use MATLAB and SIMULINK to design and analyze simple systems and compensators

Course code & Course Name: EE334 Power Electronics and Drives Lab

COs	DESCRIPTION
CO1	Students will be able to design, setup and analyse various power electronic converters and apply these converters for the implementation of various motor control applications.

Course code & Course Name: EE372 Biomedical Instrumentation

COs	DESCRIPTION
CO1	human physiology and various instrumentation system for measurement and analysis of physiological parameters.

SEMESTER 7

Course code & Course Name: EE451 SEMINAR & PROJECT PRELIMINARY

COs	DESCRIPTION
CO1	Analyze a current topic of professional interest and present it before an audience
CO2	Identify an engineering problem, analyze it and propose a work plan to solve it
CO3	Student develops the capability to work in a team to design and implement a solution to the problem with the help of appropriate tools
CO4	Student develops the skills required to present and defend his/her work
CO5	Student understands the role of time management in the implementation of the project

Course code & Course Name: EE401 Electronic Communication

COs	DESCRIPTION
CO1	Understand the need of modulation in transferring a signal through either wireless or wired communication systems
CO2	ii. Be able to apply analog modulation techniques and receiver fundamentals in analog communication.
CO3	iii. Be to apply baseband digital encoding & decoding techniques in the storage / transmission of digital signal through wired channel
CO4	iv. Understand the performance of communication systems in the presence of noise and interference

Course code & Course Name: EE403 DISTRIBUTED GENERATION AND SMART GRIDS

COs	DESCRIPTION
CO1	Explain various distributed generation system
CO2	Understand the microgrids and their control schemes
CO3	Understand various developments happening in the field of Smart Grids.

Course code & Course Name: EE405 Electrical System Design

COs	DESCRIPTION
CO1	Know the basic Rules and Regulations of electrical systems design.
CO2	Design simple electrical systems and prepare the schematic diagram with all the specifications.

Course code & Course Name: EE407 DIGITAL SIGNAL PROCESSING

COs	DESCRIPTION
CO1	Analyse DT systems with DFT

CO2	Design digital filters IIR and FIR filters
CO3	Analyse finite word length effects in signal processing
CO4	Design filters using Matlab FDA tool box
CO5	Understand Digital Signal Controllers and their Applications

Course code & Course Name: EE409 Electrical Machine Design

COs	**DESCRIPTION**
CO1	The students will be able to design transformers, DC machines, synchronous machines and induction motors

Course code & Course Name: EE431 Power System Lab

COs	**DESCRIPTION**
CO1	Analyse a power system by carrying out load flow and short circuit experimentations.
CO2	Analyse Power System Stability
CO3	Design a solar panel required for a specified area
CO4	Validate the performance of Power System devices by appropriate tests.

Course code & Course Name: EE465 Power Quality

COs	**DESCRIPTION**
CO1	The students will be able to identify the power quality problems, causes and suggest suitable mitigation techniques.

SEMESTER 8

Course code & Course Name: EE402 Special Electrical Machines

COs	DESCRIPTION
CO1	The students will gain knowledge in the construction and principle of operation of certain special electrical machines having various applications.

Course code & Course Name: EE404 INDUSTRIAL INSTRUMENTATION AND AUTOMATION

COs	DESCRIPTION
CO1	Select instruments and transducers for various physical variables.
CO2	Get an insight on data acquisition, processing and monitoring system
CO3	Design various signal conditioning systems for transducers.
CO4	Analyze dynamic responses of various systems.
CO5	Get the concepts of virtual instrumentation
CO6	Understand the programming realization of PLC

Course code & Course Name: EE474 ENERGY MANAGEMENT AND AUDITING

COs	DESCRIPTION
CO1	The students will be able to understand the different methods used to reduce energy consumption

Course code & Course Name:CE482 ENVIRONMENTAL IMPACT ASSESSMENT

COs	DESCRIPTION
CO1	To have a basic knowledge of various pollution sources and their impacts
CO2	To have a basic knowledge of various environmental pollution

Course code & Course Name: EE492 PROJECT

COs	DESCRIPTION
CO1	Think innovatively on the development of components, products, processes or technologies in the engineering field
CO2	Apply knowledge gained in solving real life engineering problems