

# Course Outcome (CO)-

First Year CO's-

Course Code	Course Name	CO's
		Explain basic concepts of chemistry.
		Select the correct instrumental techniques for the examination of materials.
SH 1033	Engineering	Demonstrate knowledge of science behind normal polluting influences
511 1055	Chemistry	In water and strategies to treat them. Utilize the electrochemical principle for selection of proper batteries
		Apply the science for understanding corrosion and its prevention.
		Compare types and quality of fuels by different instruments and select
		the proper lubricant and lubrication method.
		Sketch the curve with full justification.
		Apply the properties of special functions to evaluate integral.
	<b>_</b>	Evaluate double integral and change the order of the integration.
SH 1053	Engineering Mathematics I	of inertia.
	With internations i	Prove the results of partial differentiation.
		Apply partial differentiation for evaluating and proving the results based
		on Errors approximations ,minima and maxima
		Solve magnetic circuits, d.c. and a.c. electric circuits.
		Describe construction, working and application of transformers.
	Flectrical	Describe construction, working and application of different types of
SH129	Engineering	commonly used rotating machines.
	2	Classify power converters on the basis of their applications.
		Suggest suitable capacity of wires, cables switchgear and illumination
		system for low voltage electrical installations.
		language.
		Design Algorithm and Flow Chart for the given problem.
SH1271	Computer	Write, Compile and execute 'C' programs for a given problem.
5111271	Programming	Analyze the given C Program to predict the output
		Evaluate the C program to resolve the errors
		Examine the materials by using analytical instruments.
		Identify the quality of water for industrial and domestic purposes.
SH1532	Engineering	Apply the knowledge of electrochemistry for design of various cells and batteries.
	Chemistry Lab	Select proper Lubricant for different machines according to working condition.
		Inspect the quality of fuel.
		Describe orally the basic terminology and concepts of C programming
		language.
		Develop algorithm and flow chart for the given problem.
SH1771	Computer	Write, compile and execute 'c' programs for a given problem.
	Computer Programming Lab	Evaluate the C program to resolve the errors.
		Debug the program to predict the correct output.
SH 1921	English	Demonstrate reception skills of language
5Π 1851	Proficiency Lab. I	Communicate using oral and written mode.



SH185         Articulae correctly the frequently used words using phonemic transcriptions           SH185         Engineering Practice Lab. I         Acquire skills in basic engineering practice. Use of hand tools and power tools. Develop sheet metal model for specific application. Understand the various operations performed in machine shop. Perform pipe fittings operations. Perform pipe fittings operations. Perform pipe fittings operations.           SH 106         Engineering Physics         Apply the knowledge of achitectural acoustics for acoustically good halls and the principle of magnetostriction and picoelectric methods for dimensional motion of particles. Understand working principle of laser and optical fiber Use knowledge of basics of semiconductors. Use characteristics of semiconductors. Use characteristics of semiconductors. Use the concepts of matrices that serve as an essential basis for several computational techniques. Solve the differential equations by choosing proper method of solution. Solve the problems on orthogonal trajectorics, simple electrical circuits, andheat flow by applying the methods of ordinary differential equations. Solve the eproblems on orthogonal trajectorics, simple electrical circuits, andheat flow by applying the methods of ordinary differential equations. Solve the ordereop lane sto faw their projection. Develop section views and true shape section of various types of solids. Develop section views and true shape section of various types of solids. Develop section views and true shape section of various types of solids. Develop section views and true shape section of various trajes of solids in tarious conditions. Develop section views and true shape section of various types of solids. Develop section views and true shape section of various trajes of solids. Develop sometric view to convert two-dimension (2D) view to pictorial view. Develop sometric vi			Make use of English language with grammatical accuracy.
SH185         Fingineering Practice Lab. I         Acquire sklis in basic engineering practice. Use of hand tools and power tools. Develop sheet metal model for specific application. Understand the various operations performed in machine shop. Perform pipe fittings operations. Apply the knowledge of architectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of ultrasounds. Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles. Understand working principle of laser and optical fiber Use knowledge of basics of semiconductors. Use characteristics of semiconducting materials in semiconducting devices           SH1023         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques. Solve the ordervant method for solving simultaneous algebraic linear depations. Apply the relevant method for solving simultaneous algebraic linear depations. Apply the relevant metrical method to compute the solution. Solve the differential equations. Develop section views and true shape section of various conditions. Develop the projection of various types of solids in various conditions. Develop section views and true shape section of various types of solids identify the need of development of lateral surfaces and apply the same in engineering Graphics           SH1132         Basics of Electroics Engineering Graphics         Basics of Electroics Engineering         Develop sometric view to convert two-dimension (2D) view to pictorial view. Develop sometric view to convert two-dimension (2D) view to pictorial view. Develop sometric view to convert two-dimension (2D) view to pictorial view. Develop sometric view to convert two-dimension (2D) view to pictorial view. Develop sometric view to convert two-dimension			Articulate correctly the frequently used words using phonemic transcriptions
SH185         Engineering Practice Lab. I         Use of hand nools and power tools. Develop sheer metal model for specific application. Understand the various operations performed in machine shop. Perform different joining operations.           SH106         Fingineering Physics         Perform different joining operations. Perform different joining operations. Perform different joining operations. Perform different joining operations.           SH106         Engineering Physics         Apply the knowledge of anchitectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of particles           SH106         Engineering Physics         Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles           SH1023         Engineering Mathematics II         Select appropriate magnetic materials depending on its properties for various applications           SH1023         Engineering Graphics         Use the concepts of matrices that serve as an essential basis for several computational techniques. Solve the problems on orthogonal trajectories, simple electrical circuits, andheat flow by applying the methods for ordinary differential equations. Solve the problems on orthogonal trajectories, simple electrical linear equations. Apply the relevant numerical method for onioneruptic motion and orientution of point, line, and plane with respect to reference planes to draw their projection. Develop section views and true shape section of various types of solids in engineering Graphics           Basics of Flectronics Engineering SE1051         Basics of Flectronics Engineering         Recognize basic semiconductor compon			Acquire skills in basic engineering practice.
SH185         Develop sheet metal model for specific application.           Practice Lab. I         Develop sheet metal model for specific application.           Perform different joining operations.         Perform different joining operations.           Perform different joining operations.         Perform different joining operations.           SH 106         Engineering Physics         Apply the knowledge of architectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of utrasounds           Engineering Physics         Engineering Physics         Use knowledge of basics of semiconductors.           Use characteristics of semiconductors.         Use characteristics of semiconductors.           Use the concepts of matrices that serve as an essential basis for several computational techniques.         Solve the differential equations.           SH1023         Engineering Mathematics II         Use the relevant method for solving simultaneous algebraic linear equations.           SH1023         Engineering Graphics         Determine horizon of the location and orientation of point.           SH1132         Engineering Graphics         Determine horizon of the location and orientation of point. Inear equations.           SH1132         Basics of Fleetronics Engineering Graphics         Determine horizon of point uses and true shape section of various types of solids.           Fleetronics Engineering         Basics of Civil Engineering		Engineering	Use of hand tools and power tools.
SH100         Lab. 1         Understand the various operations performed in machine shop.           Perform different loining operations.         Perform different loining operations.           Perform pipe fittings operations.         Apply the knowledge of architectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of ultrasounds.           Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.         Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.           SH 106         Engineering Physics         Use characteristics of semiconducting materials in semiconducting devices           SH 107         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SH 1023         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SH 1023         Engineering Graphics         Solve the projection of various types of solids.           SH 1023         Engineering Graphics         Opplying the methods of ordinary differential equations.           SH 1132         Engineering Graphics         Determine horarious types of solids.           SH 1132         Basics of Electronic SEngineering draving.         Determine horarious types of solids in various conditions.           SE 1051         Basics of Civil Engin	SH185	Practice	Develop sheet metal model for specific application.
SH 106         Perform different joining operations.           SH 106         Perform pipe fittings operations.           Apply the knowledge of architectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of ultrasounds.           Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.           Understand working principle of laser and optical fiber.           Use knowledge of seniconducting materials in semiconducting devices.           Sclect appropriate magnetic materials depending on its properties for various applications.           Select appropriate magnetic materials depending on its properties for various applications.           Solve the differential equations by choosing proper method of solution.           Solve the problems on orthogonal trajectories, simple electrical circuits, andheat flow by applying the methods for solving simultaneous algebraic linear equations.           SH1122         Engineering Graphics           Fingineering Graphics         Determine the location of durates of avia wheir projection.           SH1132         Engineering Graphics           Fingineering Graphics         Determine the location of and dist in arious conditions.           Evelop the projection of various types of solids in various conditions.           Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.           Develop orthographic views of an object to convert pictori	511100	Lab. I	Understand the various operations performed in machine shop.
SH 106         Perform pre littings operations.           SH 106         Engineering Physics         Apply the knowledge of architectural acoustics for acoustically good halls and the principle of magnetostriction and piezoelectric methods for the production of ultrasounds           SH 106         Engineering Physics         Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles           Use characteristics of semiconducting devices         Select appropriate magnetic materials depending on its properties for various applications.           SH1023         Fagineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SOVe the problems on orthogonal trajectories, simple electrical circuits, andheat flow by applying the methods of ordinary differential equations.           Use the relevant method for solving simultaneous algebraic linear equations.           Apply the relevant method for solving simultaneous algebraic linear equations.           Apply appropriate numerical method to compute the solution of ordinary differential equations.           Determine he location of the location and orientation of point, line, and plane with respect to reference planes to draw their projection.           Electrive I SE1011         Basics of Electronicig Graphics         Determine horizon of the location and orientation of point, line, and plane with respect to reference planes to draw their projection.           Evelop erthographic views of an object to convert pictorial view.         Develop protograph			Perform different joining operations
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SH 106         Engineering Physics         Understand working principle of laser and optical fiber Use knowledge of basics of semiconductors.           SH 106         Use characteristics of semiconductors.         Use characteristics of semiconductors.           Use characteristics of semiconducting materials in semiconducting devices         Select appropriate magnetic materials depending on its properties for various applications           SH 1023         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SH 1023         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SH 1023         Engineering Mathematics II         Use the concepts of matrices that serve as an essential basis for several computational techniques.           SH 1132         Engineering Graphics Engineering Graphics         Use the relevant method for solving simultaneous algebraic linear equations.           SH 1132         Engineering Graphics Engineering Graphics         Develop the projection of various types of solids in various conditions. Develop the projection of various types of solids in various conditions. Develop influergaphic views of an object to convert pictorial view into two-dimension (2D) view.           Elective I SE1051         Basics of Electronics Engineering         Recognize basic semiconductor components and devices used for different electronic applications. Describe the number system, basic structure of computer and processor architecture. <td></td> <td></td> <td>Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles</td>			Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles
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SH102.5       Mathematics II       Use the relevant method for solving simultaneous algebraic linear equations.         Apply the relevant numerical method for interpolating the polynomial.       Apply the relevant numerical method to compute the solution of ordinary differential equations.         SH1132       Engineering Graphics       Determine the location of the location and orientation of point, line, and plane with respect to reference planes to draw their projection.         Develop the projection of various types of solids in various conditions.       Develop the projection of various types of solids in various conditions.         Develop the projection of various types of solids in various conditions.       Develop the projection of various types of solids.         Identify the need of development of lateral surfaces and apply the same in engineering drawing.       Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.         Develop isometric view to convert two-dimension (2D) view to pictorial view.       Develop isometric view to convert two-dimension (2D) view to pictorial view.         Elective I       Basics of Electronics       Explain working principle of diode, transistor and their applications.         Estios1       Basics of Civil       Apply fundamental knowledge of civil engineering.         Identify building components and materials used in construction along with concepts of suitability and safety of buildings.       Use basic principles of planning in the building design and processes involved in the property transactions.         Dete	SH1023	Engineering	andheat flow by applying the methods of ordinary differential equations.
SH1132         Apply the relevant numerical method for interpolating the polynomial. Apply appropriate numerical method to compute the solution of ordinary differential equations.           SH1132         Engineering Graphics Engineering Graphics         Determine the location of the location and orientation of point, line, and plane with respect to reference planes to draw their projection. Develop the projection of various types of solids in various conditions. Develop section views and true shape section of various types of solids. Identify the need of development of lateral surfaces and apply the same in engineering drawing. Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view. Develop isometric view to convert two-dimension (2D) view to pictorial view.           Elective I SE1011         Basics of Electronics Engineering         Recognize basic semiconductor components and devices used for different electronic applications. Describe the number system, basic structure of computer and processor architecture. Analyze the analog and digital electronic circuits using discrete components.           SE1051         Basics of Civil Engineering         Identify building components and materials used in construction along with concepts of suitability and safety of buildings. Use basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments. Illustrate the infrastructural facilities.	5111025	Mathematics II	Use the relevant method for solving simultaneous algebraic linear equations.
SH1132Apply appropriate numerical method to compute the solution of ordinary differential equations.Basics of SE1011Engineering Graphics Engineering GraphicsDetermine the location of the location of various types of solids in various conditions. Develop the projection of various types of solids in various conditions. Develop section views and true shape section of various types of solids Identify the need of development of lateral surfaces and apply the same in engineering drawing. Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.Elective I SE1011Basics of Electronics EngineeringRecognize basic semiconductor components and devices used for different electronic applications. Explain working principle of diode, transistor and their applications. Describe the number system, basic structure of computer and processor architecture.SE1051Basics of Civil EngineeringApply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings.SE1051Basics of Civil EngineeringApply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings.SE1051Basics of Civil EngineeringUse basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments. Illustrate the infrastructural facilities.Elective IUnderstand the principles of green chemistry and engineering			Apply the relevant numerical method for interpolating the polynomial.
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SH1132       Graphics Engineering Graphics       Identify the need of development of lateral surfaces and apply the same in engineering drawing.         Basics of SE1011       Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.         Basics of Electronics SE1011       Basics of Electronics Engineering       Recognize basic semiconductor components and devices used for different electronic applications.         Explain working principle of diode, transistor and their applications.       Explain working principle of diode, transistor and their applications.         SE1051       Basics of Civil Engineering       Apply fundamental knowledge of civil engineering.         Identify building components and materials used in construction along with concepts of suitability and safety of buildings.       Use basic principles of planning in the building design and processes involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.       Illustrate the infrastructural facilities.		Engineering	Develop section views and true shape section of various types of solids
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Elective IBasics of Electronics EngineeringRecognize basic semiconductor components and devices used for different electronic applications. Explain working principle of diode, transistor and their applications. Describe the number system, basic structure of computer and processor architecture.SE1011Basics of Electronics EngineeringAnalyze the analog and digital electronic circuits using discrete components.SE1051Basics of Civil EngineeringApply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings.SE1051Basics of Civil EngineeringUse basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments. Illustrate the infrastructural facilities.Elective IUnderstand the principles of green chemistry and engineering		Graphics	Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.
Elective I SE1011Basics of Electronics EngineeringRecognize basic semiconductor components and devices used for different electronic applications. Explain working principle of diode, transistor and their applications. Describe the number system, basic structure of computer and processor architecture.SE1011Basics of Civil EngineeringApply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings.SE1051Basics of Civil EngineeringUse basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments.Elective IUnderstand the principles of green chemistry and engineering			Develop isometric view to convert two-dimension (2D) view to pictorial view.
Elective I SE1011Basics of Electronics EngineeringExplain working principle of diode, transistor and their applications. Describe the number system, basic structure of computer and processor architecture.SE1011Analyze the analog and digital electronic circuits using discrete components.Analyze the analog and digital electronic circuits using discrete components.SE1051Basics of Civil EngineeringApply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings.SE1051Basics of Civil EngineeringUse basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments.Elective IUnderstand the principles of green chemistry and engineering			Recognize basic semiconductor components and devices used for different electronic applications.
Elective I SE1011       Electronics Engineering       Describe the number system, basic structure of computer and processor architecture.         Analyze the analog and digital electronic circuits using discrete components.       Analyze the analog and digital electronic circuits using discrete components.         SE1051       Basics of Civil Engineering       Apply fundamental knowledge of civil engineering.         Identify building components and materials used in construction along with concepts of suitability and safety of buildings.       Use basic principles of planning in the building design and processes involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.       Illustrate the infrastructural facilities.         Elective I       Understand the principles of green chemistry and engineering		Basics of	Explain working principle of diode, transistor and their applications.
SE1051       Basics of Civil Engineering       Apply fundamental knowledge of civil engineering. Identify building components and materials used in construction along with concepts of suitability and safety of buildings. Use basic principles of planning in the building design and processes involved in the property transactions. Determine horizontal and vertical distances using modern surveying instruments.         Elective I       Understand the principles of green chemistry and engineering	Elective I SE1011	Electronics	Describe the number system, basic structure of computer and processor architecture.
SE1051       Apply fundamental knowledge of civil engineering.         Identify building components and materials used in construction along with concepts of suitability and safety of buildings.         Use basic principles of planning in the building design and processes involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.         Elective I       Understand the principles of green chemistry and engineering		Engineering	Analyze the analog and digital electronic circuits using discrete components.
SE1051       Basics of Civil Engineering       Identify building components and materials used in construction along with concepts of suitability and safety of buildings.         Use basic principles of planning in the building design and processes involved in the property transactions.       Use basic principles of planning in the building design and processes involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.       Illustrate the infrastructural facilities.         Elective I       Understand the principles of green chemistry and engineering			Apply fundamental knowledge of civil engineering.
SE1051       Basics of Civil Engineering       Use basic principles of planning in the building design and processes involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.       Determine horizontal and vertical distances using modern surveying instruments.         Elective I       Understand the principles of green chemistry and engineering	SE1051		Identify building components and materials used in construction along with concepts of suitability and safety of buildings.
Engineering       Involved in the property transactions.         Determine horizontal and vertical distances using modern surveying instruments.         Illustrate the infrastructural facilities.         Elective I       Understand the principles of green chemistry and engineering		Basics of Civil Engineering	Use basic principles of planning in the building design and processes involved in the property transactions
Illustrate the infrastructural facilities.           Elective I         Understand the principles of green chemistry and engineering			Determine horizontal and vertical distances using modern surveying instruments.
Elective I Understand the principles of green chemistry and engineering			Illustrate the infrastructural facilities.
	Elective I		Understand the principles of green chemistry and engineering



SE1131		Design processes that are benign and environmentally viable
	Green	Design processes and products that are safe and hazard free
	Technology	Learn to modify processes and products to make them green safe and economically acceptable
		Learn structured approach to creativity, problem identification and problem solving in a new venture context
SE145	Creativity, Design Thinking and Entrepreneurial Mindset	Apply design thinking approach to identify innovation opportunities and develop solutions Identify, validate and define specific innovation opportunities through
		Jobs-to-be-Done methodology Develop mindset of a successful entrepreneur
		Explain different power generation systems
		Select appropriate energy conversion device for the given application.
		Classify vehicles on the basis of different parameters.
SE143	Basics of Mechanical	Compare two stroke and four stroke IC engines. Describe different transmission devices in a given system
52110	Engineering	Describe different transmission devices in a given system.
		Choose suitable materials and manufacturing processes for a given application
		Apply the theory of semiconductors to calculate band gap energy and carrier concentration.
	Engineering Physics Lab	Apply theory of interference and grating to calculate radius of curvature of plano convex lens and wavelength of light
SH1512		Compare BH curve for different ferromagnetic materials and measure hysteresis loss in it.
		Determine resolving power of telescope and numerical aperture of optical fiber
		Use ultrasonic interferometer to calculate velocity of ultrasound in given liquid.
		Use laurents half shade polarimeter to calculate specific rotation of optically active solution.
		Determine the location and orientation of point, line, and plane with respect to reference planes to draw their projection.
		Develop the projection of various types of solids in various conditions.
	<b>.</b>	Develop section views and true shape section of various types of solids
SH1552	Engineering Graphics Lab	in engineering drawing.
	Oraphics Lab	Develop orthographic views of an object to convert pictorial view into two-dimension (2D) view.
		Develop isometric view to convert two-dimension (2D) view to pictorial view.
		Demonstrate use of various electronic components & equipment's for building applications.
	Basics of Electronics Engineering Lab	Build the circuits using Diode, Transistor Electronics Devices.
SE151		Construct various applications using Operational Amplifier like Amplifiers.
		Test the basic logic gates, adders & substractors.



	Basics of Civil	Draw dimensioned sketch/plan of building
SE1551		Plan building using principles and bye laws.
521001	Engineering Lab	Perform horizontal and vertical measurement.
		Use modern surveying techniques.
		Illustrate the concept of green technology in energy and building sector.
SE1631	Green	Prepare energy and water budget for a building.
SET051	Technology Lab	Design rainwater harvesting for a small catchment area.
		Analyze air quality by using HC/CO analyzer.
	Creativity, Design	problem solving in a new venture context.
SE167	Entrepreneurial Mindset Lab	Apply design thinking approach to identify innovation opportunities and develop solutions.
		Develop mindset of a successful entrepreneur
		Demonstrate writing skills through letters, circulars, notices, memos, and emails
SU 160	English Droficionary Lab	Apply report writing skills.
51 102	II	Organize message in appropriate structures.
		Prepare job application addressing requirements of the post.
		Explain & demonstrate facts, concept & techniques of manufacturing of various items in technology area.
SU164	Engineering	Develop quality & safety consciousness while working in workshop.
511104	Practice Lab II	Develop respect towards effort, skill &labour work in manufacturing.
		Demonstrate ability to read drawing & carry out Smithy, Tin smithy, Welding & plumbing operations.
	Basics of Mechanical Engineering Lab	Explain the different components of power generation systems.
		Identify the systems and components of vehicle.
SE165		Distinguish between two stroke and four stroke engines.
		Carry out day to day life maintenance of machines.
		Explain the different components of power generation systems.
		Explain the role of an engineer as a problem solver
		Design engineering solutions to complex problems utilizing multi- disciplinary systems approach.
	Engineering	Examine a given problem using process of engineering problem analysis.
SH189	Exploration and Design Project	Build simple systems/prototypes using engineering design and development process
		Analyze engineering solutions from ethical and sustainability
		Apply basics of engineering project management skills in project development.



#### Second Year to Last Year CO's

Semester	Course Code	Course Name	Course Outcome
			Explain the working principle and operation of single phase and three
			phase transformer.
		DC	transformer.
III	EE2031	Machines &	Describe behavior of dc machines.
		Transformer	Interpret characteristics of dc machines.
			Identify the importance of testing and control of dc machines with
			suitable industrial applications.
			Apply knowledge of mathematics, science, and engineering to the
			Identify formulate and solve engineering problems in the area circuits
			and systems
		Electrical	Coordinate various components and process of electrical system to meet
III	EE2051	Circuit	desired needs within realistic constraints
		Analysis	Explain importance of various network topology methods for computer
			analysis of large networks
			implement network reduction techniques to solve power system
			Construct and organize various filter for specific circuits
			Explain the fundamentals of solid state electronics including diode. BJT.
			JFET & MOSFET.
ш	EE2071	Analog	Apply DC & AC (small signal) analysis to solid state electronic circuits.
111	EE2071	Electronics	Design solid state electronic circuits.
			Analyze operational amplifier application circuits.
			Classify power amplifier circuits.
			Distinguish conventional and non-conventional energy sources
		Power	Identify variable load on power stations and factors associated for per
III	EE2091	System	Choose various factors for cost of energy in terms different tariff
		Economics	Determine different methods of power factor improvement
			Compare different supply systems used in power system
			Perform various experiments on DC machines
		DC	Perform various experiments on Transformer.
		Machines &	Find out the characteristics of various machines along with their
III	EE2511	Transformers	efficiencies
		Lab	Analyze various parameters and predict the durability of the machines
			standards
			Analyze responses of electrical circuits in real time
			Design electrical networks using MATLAB/PSPICE etc.
		Circuits &	Compare responses of real-time electrical networks with simulations.
III	EE2531	Simulation	Explain the importance of the virtual environment to analyze electrical
		Lab	networks
			Implement various network reduction techniques for power system
			Build and analyze electronic circuits as per requirement
Ш			Observe input and output waveform at various test points
	550551	Analog	Plot the input & output response of electronic circuits.
	EE2551	Electronics	Interpret results of experiment and compare with theoretical values
		Lab	Improve the ability to communicate effectively through written lab
			journals
III	SH2091	2091 Engineering Mathematics	Solve linear differential equations & problems related to application by
			using various methods
1		-111	Determine expansion of functions by using Fourier series.



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			Solve problems on probability distribution by using different formula.
			functions by using properties.
			Laplace transform & apply Laplace transform to solve linear differential equations
			Calculate z- transform & inverse z- transform by using properties of z- transform
			Explain different types, construction, working principle & characteristics
		Alternating	Apply the knowledge gained through characteristics of three phase
		Current	induction motor.
IV	EE2021	Rotating	of single phase induction motor
		Machines	Describe construction, working principle along with winding details of
			Analyze performance, characteristics and testing of synchronous
			machine.
		Power	Explain structure of power systems
117	FF2041	Transmission	modelling
IV	EE2041	Čč Distribustion	Discover various design aspects of overhead transmission lines
		Distribution	Explain construction & classification of various underground cables
		System(	Classify various types of A.C and D.C. distribution systems
			Classify various signals and systems.
			Analyze linear time invariant systems using different tools.
		Signals and	Apply time and frequency domain analysis techniques to different
IV	EE2101	Systems	signals and systems.
		~ ) ~ ~	Evaluate discrete time Fourier transform of a set of well-defined signals.
			Explain the need of signal processing techniques for various engineering fields.
			Demonstrate basic concept of calibration, statistical evaluation of
		Electrical	measurement data.
	EE2061	and	Explain construction & working of various electrical measuring
IV		Electronic	Instruments.
		Measuremen ts	instruments.
			Determine R, L, C parameters using AC and DC bridges.
			Explain construction and working of digital instruments
			Describe the fundamental concepts and techniques used in digital electronics.
IV	EE2081	Digital Electronics	Formulate the logic expressions using Boolean laws & K-map.
			Design and verify combinational logic circuits
			Design and verify sequential logic circuits.
			Perform various experiments on AC rotating machines.
			Analyze the characteristics of various ac machines along with their
		A.C. Rotating	efficiencies.
IV	EE2521	Electrical	Analyze various parameters and predict the durability of the machine.
ĨV	222021	Machines	Compare the performances of the machines by referring relevant
		Lab	standards.
			Study the constructional details of various electrical motors
			Demonstrate calibration of various measuring instruments using
IV		Electrical and Electronic Measuremen ts Lab	statistical evaluation of measurement data.
	EE2541		Determine power and energy for the given system using various
			measurement techniques.
			Explain construction and working of various instruments
157	EE0561	D'. '. 1	Calculate K, L, C parameters using AC and DC bridges.
1V	EE2561	Digital	verify the truth table of digital electronic components



V         EE301         Freedback Components         Components           V         EE2581         Mini Project Anily Science Freedback         Mini Project Examine technologies for restoration of degraded environment Examine technologies for restoration of degraded environment Examine technologies for restoration of degraded environment Evelops as an individual and in group leadership quality.           V         EE3031         Power Feletronic devices operated as power exvitches.           Power Feletronic devices operated as power exvitches.         Explain operation, waveform and performance parameters of phase controlled converters, uncontrolled creditions, uncontroll excit devices operated as power exvitches.           V         EE3031         Power Feletronic devices for converters.           Power Feletronic devices for converters.         Analyze and design de- de converters.           Apply the electronic devices for conversion, control and conditioning of power.         Analyze symmetrical faults in power systems           V         EE3051         System         Analyze the optimal operation of power system. Analyze the optimal operation of power system. Analyze the optimal operation of power systems.           V         EE3071         Feedback Control System         Feedback System         Interpret and analyze frequency domain systems using virtual environment. Thretpret and analyze frequency domain systems using virtual environment. Thretpret and analyze frequency domain systems using virtual environment. Thretpret and analyze frequency domain systems using virtual environment. Threterpret and			Electronics	Implement desired Boolean functions using digital electronic
V         EES381         Design and verify combinational logic circuits. Design and verify sequential logic circuits.           IV         FE2581         Mini Project Environment al Science         Utilize scientific methods to solve environmental problems Develop presentation and report writing skills Develop presentation and report writing skills           V         FE2581         Ferefunction in the solution of degraded environment Develop presentation and report writing skills           V         FE3031         Ferefunction in the solution of degraded environmental problems Develop resentation and report writing skills           V         FE3031         Ferefunction in the solution of degraded environmental Develop resentation and report writing skills           V         FE3031         Ferefunction in the solution of degraded environmental Develop resentation and report writing skills           V         FE3031         Ferefunction in the solution of degraded environmental problems Develop resentation and report writing skills           V         FE3031         Ferefunction in the solution of degraded environmental problems System Subility and Control         Converters.           V         FE3051         Feedback         Analyze prover system studiation of power system. Analyze prover system studiation of power system. Analyze prover system studiation of feedback control systems. Develop the mathementatical models of any physical systems such as: state space, transfer function Control           V         FE3071         Feedback Microprocc- control <td></td> <td></td> <td>LAB</td> <td>components</td>			LAB	components
V         EE2581         Mini Project Environment al Science         Design and verify sequential logic circuits           V         EE2581         Mini Project Environment al Science         Environment Environment al Science         Environment Evelop resentation and report writing skills           V         EE3031         Power Electronics         Understaud the behavior of semiconductor devices operated as power switches.           V         EE3031         Power Electronics         Explain operation, waveform and performance parameters of phase controlled converters, uncontrolled rectifiers.           V         EE3051         Power System System System         Explain the basic topologics of dc-dc converters analyze and design dc-dc converters.           V         EE3071         Power System System         Analyze and modulation techniques of pulse width modulated inverters.           V         EE3071         Feedback System         Analyze symmetrical faults in power system.           V         EE3071         Feedback Control         Analyze power system stability.           V         EE3071         Feedback Control         Identify the basic clements and structures and demonstrate an understanding of the findamentals of feedback control systems.           V         EE3071         Feedback Control         System           Microprocecontroller         Microprocess and Wicroprocent controllerecoverespresent andinero-controller.      <				Design and verify combinational logic circuits.
IV         EE2581         Mini Project Environment Environment al Science         Utilize scientific methods to solve environmental problems Examine technologies for restoration of degraded environment presentation and report writing skills           v         EE2581         Amine technologies for restoration of degraded environment al Science           v         FE3031         Period         Understand the behavior of semiconductor devices operated as power- switches.           v         FE3031         Power         Explain operation, waveform and performance parameters of phase controlled converters.           v         FE3031         Power         Explain due to behavior of semiconductor devices operated as power- switches.           v         FE3031         Power         Explain due to behavior of semicontrolled reciffers.           v         FE3051         Power         Explain different modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods. Analyze and design dc-ac inverters.           v         FE3051         Power         Analyze system stubility.           System         Interpret the necessity of automatic generation control and excitation control.           control         Analyze the optimal operation of grower system.           Analyze the optimal operation of system stubility.         Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback-courd systems such as: state space, transystem st				Design and verify sequential logic circuits
IV         EE2581         Environment al Science al Science and Scien			Mini Project	Utilize scientific methods to solve environmental problems
V         EE3031         Develop presentation and report writing skills Understand the behavior of semiconductor devices operated as power switches.           V         EE3031         Ferantian and the behavior of semiconductor devices operated as power synthes.           V         EE3031         Power Flectronics         Explain operation, waveform and performance parameters of phase controlled converters.           V         EE3051         Power Flectronics         Explain the basic topologies of de-de converters.           V         EE3051         Power System Stability and Control         Analyze and design de-a inverters.           V         EE3051         Power System Stability and Control         Analyze symmetrical faults in power systems Analyze the optimal components method for fault analysis Interpret the necessity of automatic generation control and excitation control.           V         EE3071         Feedback Control         System System Stability and Control         Therpret and analyze time domain systems such as: state space, transfer function           V         EE3071         Feedback Control         Detempine the architecture of microprocessor and micro-controller.           V         EE3071         Feedback Control         Control         Detempine adapter function system stability.           V         EE3071         Feedback Control         Control         Control           System Stability and Control         Feedback Control<	IV	EE2581	Environment	Examine technologies for restoration of degraded environment
V         EE301         Develop as an individual and m group leadership quality. Explain operation, waveform and performance parameters of phase controlled converters, uncontrolled rectifiers. Analyze and design ac-dc converters           V         EE3031         Power Filectronics         Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain deficient modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods. Analyze and design dc-ac inverters. Apply the electronic devices for conversion, control and conditioning of power. Analyze symmetrical faults in power systems Apply symmetrical faults in power systems. Apply symmetrical faults in power systems. Apply symmetrical faults in power systems. Analyze the optimal operation of power system. Analyze the optimal operation of power system. Analyze power system stability. EE3071           V         EE3071         Feedback Control System         Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback control systems. Develop the mathematical models of any physical systems such as: state space, transfer function Controller           V         EE3071         Microprotection System         Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback control systems. Develop the mathematical models of any physical systems such as: state space, transfer function Controller           V         EE3071         Microprotection System         Identify the basic elements and structures and dimonetent interaction analyze frequency domain systems using virtual e			al Science	Develop presentation and report writing skills
V         FE3031         Feedback System         Power Electronics         Explain operation, waveform and performance parameters of phase controlled converters. Explain the basic topologies of d-dc converters analyze and design d- dc converters.           V         FE3031         Power Electronics         Explain the basic topologies of d-dc converters analyze and design d- ca converters.           V         FE3051         Power System         Analyze argumetrical faults in power systems           V         FE3051         Power System         Analyze the optimal operation of power systems           V         Feedback         Control         Analyze power system stability. Analyze the optimal operation of power system. Analyze power system stability. Analyze the optimal operation of power systems. Analyze power system stability. Analyze the optimal operation of speer systems of various standard signals. Interpret and analyze frequency domain systems using virtual environment. Interpret and analyze frequency domain systems using virtual environment.           V         Feedback         Microproces controlle         Wite assembly language programs for 8085. Explain a tripical input-output interface. Hoefing the basic fields from steady current distributions for electrostatic and magnetic fields from the stationary charge distributions and magnetic fields from steady current distributions for electrostatic and magnetic fields from the stationary charge distributions and magnetic fields from the stationary charge dist				Develop as an individual and in group leadership quality.
V         FE3031         Feedback System         Feedback Controlled Eerronice         Feedback Controlled Explain defigind - a inverters.           V         FE3071         Feedback Controlled Eerronice         Feedback Controlled Explain different modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods. Analyze and design da inverters.           V         FE3071         Power Stability and Control         Analyze and sesing da inverters.           Apply the electronic devices for conversion, control and conditioning of power.         Analyze symmetrical faults in power systems           Analyze and seging dback Stability and Control         Analyze and seging dback System         Analyze symmetrical components method for fault analysis           V         Feedback Control         Therprot the neccessity of automatic generation control and excitation control.           V         Feedback Control         Develop the mathematical models of any physical systems such as: state space, transfer function           System         Microprocestor strand Micro controller         Interpret and analyze frequency domain systems for various standard signals.           V         FE3011         Feedback Microprocestor strand there to the architecture of microprocessor and micro-controller.           V         FE3011         Microprocestor strand there to the architecture of microprocessor and micro-controller.           V         FE3011         Feedback Decreic entro the				Understand the behavior of semiconductor devices operated as power
V         EE3031         Power Electronics         Explain the basic topologies of dc-dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Explain the basic topologies of dc-dc converters analyze and design dc- dc converters. Analyze symmetrical faults in power systems           V         EE3051         Power System         Analyze symmetrical faults in power systems           Subility and Control         Analyze the optimal operation of power system. Analyze power system stability. Interpret the necessity of automatic generation control and excitation control.           V         EE3071         Feedback Control System         Eedotoric function System           V         EE3071         Feedback Control System         Interpret and analyze time domain systems using virtual environment.           V         EE3071         Feedback Control System         Interpret and analyze time domain systems using virtual environment. Interpret and analyze time domain systems using virtual environment.           V         EE3071         Micropcoccs Sors and Micropcotroler         Micropcoccs Sors and Micropcotroler         Describe the architecture of microprocessor and micro-controller. Write assembly language programs for 8051. Create an assembly language programs for 8051. Explain a topical meanings of the differential equations for electrostatic and magnetis fields c				Switches.
V         EE3031         Power Electronics         Analyze and design ac-dc converters. Explain the basic topologies of dc-dc converters analyze and design dc-dc converters. Explain different modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods. Analyze and design dc-ac inverters. Apply the electronic devices for conversion, control and conditioning of power. Apply symmetrical faults in power systems           V         EE3051         Power System Stability and Control         Analyze symmetrical faults in power systems Apply symmetrical faults in power systems. Apply symmetrical faults in power systems. Analyze power system stability. Interpret the necessity of automatic generation control and excitation control. Analyze power system stability. Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback control systems. Develop the mathematical models of any physical systems such as: state signals. Interpret and analyze frequency domain systems using virtual environment. Interpret and analyze frequency domain systems using virtual environment. Interpret and analyze frequency domain systems using virtual environment. Interpret and analyze frequency domain systems using virtual environment. Explain a typical input-output interface. Identify instruction addressing modes and syntax for 8051. Create an assembly language or C program for 8085 that performs a prescribed task. Design and implement a micro-controller-based embedded system. Define electric field from the stationary charge distributions and magnetic fields from steady current distributions. Design and using workels of electric and magnetic field interactions with materials. Explain the concept of electromotive force, Maxwell's equations and magnetic fields from steady current distributions. Describe and use simple models of electric and magnetic field in				controlled converters, uncontrolled rectifiers
VEE3011Power ElectronicsExplain the basic topologies of dc-dc converters analyze and design dc-dc converters analyze the output and the harmonic reduction methods. Analyze and design dc-ac inverters. Apply the cletcronic devices for conversion, control and conditioning of power.VEE3051Power System Stability and ControlAnalyze symmetrical faults in power systems Apply symmetrical components method for fault analysis Interpret the necessity of automatic generation control and excitation control.VEE3071Feedback ControlAnalyze symmetrical faults in power systems Apply symmetrical components method for fault analysis Interpret the necessity of automatic generation control and excitation control.VEE3071Feedback ControlAnalyze the optimal operation of power systems. Analyze power system stability. Interpret and analyze time domain systems using virtual environment. Interpret and analyze time domain systems using virtual environment. Interpret and analyze frequency domain systems substaper system for 8051. Create an asembly language or C program for 8051 interpret effect. Understand the physical meanings of the differential equations for electrostatic fields from static fields interaction and magnetic fields recording to their force effect. Understand the physical meanings of the differential equations and magnetic fields from stade current distributions magnetic fields from stade current distributions magnetic fields from stade				Analyze and design ac-dc converters
VEE3031Ford and the second seco			Power	Explain the basic topologies of dc-dc converters analyze and design dc-
V         EE3011         Explain ifferent modulation techniques of pulse width modulated inverters and to understand the harmonic reduction methods. Analyze and design de-ac inverters. Apply the electronic devices for conversion, control and conditioning of power. Analyze symmetrical faults in power systems           V         EE3051         Power System Stability and Control         Analyze symmetrical components method for fault analysis Interpret the necessity of automatic generation control and excitation control.           V         EE3071         Feedback Feedback         Analyze the optimal operation of power systems. Analyze prever system stability.           V         EE3071         Feedback Feedback         Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback control systems. Develop the mathematical models of any physical system such as: state space, transfer function           V         EE3071         Microproces sors and Microproces controller         Determine the response of different order systems using virtual environment.           V         EE3091         Microproces sors and Microproces controller         Describe the architecture of microprocessor and micro-controller. Write assembly language programs for 8085.           Explain a typical input-output interface.         Describe an use simple models of electron and specified static fields cracluate the electric field from the stationary charge distributions and magnetic fields from steady current distributions magnetic fields from steady current distributions magnetic fields from steady current distributions magnetic fields from steady curerent distrib	V	EE3031	Electronics	dc converters
V         EE3051         Power System Stability and Control         Analyze symmetrical components method for fault analysis Analyze symmetrical faults in power systems           V         EE3051         Power System Stability and Control         Analyze the optimal operation of power systems           V         EE3071         Feedback Control         Analyze the optimal operation of power system. Analyze the optimal operation of power system. Analyze the optimal operation of power systems. Develop the mathematical models of any physical systems such as: state space, transfer function           V         EE3071         Feedback Control         Determine the response of different order systems using virtual environment. Interpret and analyze frequency domain systems and syntax for 8051. Crate an assembly language programs for 8051 that performs a prescribed task. Design and implement a micro-controller-based embedded system. Describe thask. Describe and use simple models of electric and magnetic fields Calculate the electric field from the stationary charge distributions and magnet			Lieeuonies	Explain different modulation techniques of pulse width modulated
V       EE3051       and design dc-ac inverters. Apply the electronic devices for conversion, control and conditioning of power. Analyze symmetrical components method for fault analysis         V       EE3051       Power System Stability and Control       Analyze symmetrical components method for fault analysis         Interpret the neccessity of automatic generation control and excitation control.       Analyze the optimal operation of power system.         V       EE3071       Feedback Control       Interpret the neccessity of automatic generation control and excitation control.         V       EE3071       Feedback Control       Identify the basic elements and structures and demonstrate an understanding of the fundamentals of feedback control systems. Develop the mathematical models of any physical systems such as: state space, transfer function         V       EE3071       Feedback Control       Determine the response of different order systems using virtual environment.         Microproces sors and Micro controller       Microproces sors and Micro controller       Write assembly language programs for 8085.         Explain a typical input-output interface.       Identify instruction addressing modes and syntax for 8051.         V       EE3011       Electromagn etic Field Theory       Define electric field from the stationary charge distributions and magnetic fields from steady current distributions         V       EE3311       Power       Describe and use simple models of electric and magneti field interactions with materials				inverters and to understand the harmonic reduction methods. Analyze
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			performance factors of output of dc-to-dc converters.
			Analyze, sketch, examine waveforms, and calculate, measure
			performance factors of output of dc-to-ac inverters.
			Simulate, analyze and design power electronic circuits using MATLAB software.
			Solve the mathematical model of different electromechanical systems
		Feedback	Model any given electrical, mechanical system with respect to transfer function and state space domain
V	EE3531	Control	Classify appropriate feedback signal, synthesis feedback gains and
		Systems Lab	analyze their results and deduce the first and second order responses.
			Draw the root locus and analyze the system
			Plot the bode, polar and Nyquist plots and analyze frequency domain
			Create a template program, compile it, and then build the executable file.
		Microproces	Examine the effects of executing many of the 8085 and 8051
		sors and	instructions by tracing the execution of a program in GNU Simulator
V	EE3551	Micro	and Kell for microprocessor and microcontroller respectively.
		controller	Write the store they as through to perform their tasks
		Lab	Apply their programming knowledge (assembly and C) for real time
			applications.
			Develop a thorough conceptual understanding and develop a logical
			approach towards solving aptitude and reasoning problems
		Scholastic	Understand usage of basic aptitude terms of percentages, averages, ratios
V	SH 3191	Antitude I	and applications of business aptitude terms of profits and interests
		ripittude I	Develop a bridge in analogies, series and visualizing directions
			Apply various short cuts & techniques to manage speed and accuracy to
			get equipped for various competitive and campus recruitment exams
			Explain different types of protective devices and relay systems.
		Switch Gear	Suggest suitable protection scheme for a particular power system
VI	EE3021	and	component
		Protection	Discuss under voltage and overvoltage protection scheme
			Design a protection scheme for power system
			Design and tune proportional, integral and derivative controllers for
			given specifications
			Design a suitable compensator using root-locus technique for the given
	EE3041	Control	specifications
VI		System Design	Design a suitable compensator in frequency domain for the given
			specifications
			Construct MATLAB models for the implementation of cl. osed loop
			systems
			Explain restructuring of power system and related fundamentals of
			economics
			Analyze role of independent system operator in deregulated power
		Restructured	system
VI	EE3101	Power	Analyze transmission congestion management and ancillary services in
		System	deregulated power system
			Explain Indian electricity act in context with deregulated power market
			Longare different organizations in Indian power sector in view of
			Analyze stability moment of inertial speed and torque in drive systems
VI			Compare various control strategies for electrical drive systems
	EE3081	Electrical Drives and Control	Discuss starting, braking and speed control for AC and DC drives
			Explain vector control of induction motor drives.
			Explain the speed control of synchronous motor and special motor
			drives.
VI	EE3541	Switchgear	Identify different switches and circuit breakers



		and	Observe and explain MCCB.
		Protection Lab	Plot characteristics of Relays.
			Assure working of Relays based on their technology and characteristics.
			Discuss different protection schemes.
			Demonstrate for Transformer and Generator protection
			Demonstrate AC and DC drives fed from various power electronics
			converter.
			Examine closed loop control of electrical drive systems.
		Electrical	Analyze performance of electrical drives by plotting speed-torque
VI	EE3561	Drives and	characteristics.
		Control Lab	Compare performance of electrical drive systems according to speed-
			torque characteristics.
			Simulate AC and DC drives fed from various power electronic
			Converters.
		Control	Design a suitable componenter using root locus technique
VI	FF3521	System	Design a suitable compensator in frequency domain
VI	EE3521	Design Lab	Design a suitable compensator in nequency domain.
		Design Luo	Demonstrate control of closed-loop systems using MATLAB
			Describe basic concepts of instrumentation and characteristics of
			instruments.
		Instrumentati	Explain selection factors and application of transducers and sensors.
VI	EE3061	on	Discuss different types of signal conditioning devices
		Techniques	Explain different data conversion techniques and digital instruments
			Describe different type of industrial process controllers
			Develop a thorough conceptual understanding and develop a logical
			approach towards
			Solving aptitude and reasoning problems
		Scholistic	Understand usage of aptitude terms of speed, time and distance and
VI	SH3222	Apititute	permutations, probabilities and applications.
		- protoco	Understand blood relations and ways of seating arrangements along with
			various geometrical figures
			Apply various short cuts & techniques to manage speed and accuracy to
			A poly the industrial management concepts financial management
		Industrial	concepts
			Contribute to the development implementation and evaluation of
			employee recruitment, selection, and retention plans and processes.
	EE4021		Explain the importance of materials management function in an
VII		and	organization, and how it can help in integrating various plans and reduce
		management	the material related costs
		_	Design a marketing research study that will act as a key resource in the
			development of a marketing plan
			Explain industrial psychology and solve the industrial problems.
			Calculate MMF and thermal rating of various types of electrical
VII			machines
	<b>EE (001</b>	Electrical	Design armature and field systems for DC machines
	EE4031	Machine	Design core, yoke, windings and cooling systems of transformers.
		Design	Design stator and rotor of induction machines.
			Design stator and rotor of synchronous machines and study their thermal
			Describe the need of industrial automation and their functions
			Make use of standard IEC programming languages
		Automation	Design relay/RLL based control logic for Roolean expressions
VII	EE4041	and Control	Construct relay logic ladder diagram for the given application
			Develop GUI for monitoring system of the given real time applications
			using SCADA/HML.
VII	EE4051	Computer	Develop mathematical models of various equipment used in power



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		Modelling of	system to analyses both AC and AC-DC power system network.
		Electrical	Model single and three phase power system network components by using linear transformation and compound admittance technique
		System	Listing linear transformation and compound admittance technique.
		System	Apply various methods of load flow studies to apply 20 AC power system
			network.
			Analyze AC-DC power system network by using power flow analysis method
			Identify and assess the energy conservation/saving opportunities in
			different electric system
		Energy	Identify and assess energy conservation opportunities in thermal system
VII	EE4061	Audit and	Demonstrate skills required for energy audit and management
		Management	Prepare energy flow diagrams and energy audit report
			Suggest cost-effective measures towards improving energy efficient and
			energy conservation.
			Understand the importance of controllable parameters and benefits of
			facts controllers.
		EACTS and	Analyze the functional operation and control of series and shunt compensation.
VII	EE4071	HVDC	Describe the principles, operation and control of multi-functional facts controller.
			Identify significance of DC over AC transmission system, types and
			application of HVDC links in practical power systems.
			Apply various methods of grid control for HVDC systems.
			Explain the need of power system expansion
			Analyze the given power system for determining optimal values of
		Power	decision variables.
VII	EE4081	System	Apply mathematical tools to solve multi-objective optimization
		Planning	problems in expansion planning and reliability studies.
			Explain long term and short term planning.
			Discuss various economic analysis methods.
			Apply z transform techniques to model systems
			Realize the digital PID controller
		Digital	Analyze the systems in s-plane and z-plane
VII	EE4121	Control System	Determine state-space representation of dynamical systems using linear algebra
			Design the controller using pole placement technique and optimal control
			Evaluate different DC-DC regulators
		Advanced	Simulate and analyze resonant converters
VII	EE4511	Power	Select appropriate phase shifting converter for multiphase converter
		Electronics	Evaluate various multi-level inverter configuration
		Laboratory	Compare various facts devices for VAR compensation
			Design relay logic control system for given application using relays.
		Automation	Develop RLL for Boolean expressions.
VII	EE4521	and Control	Develop RLL using timer and counter instructions.
		Lab	Develop RLL using math instructions.
			Develop GUI using SCADA/HMI for given application
		Electrical	Calculate design parameters of an electric machine
VII	EE4531	Machine	Analyze the effect of calculated design parameters electrical machines
		Design lab	Design electrical machine using design software
		Com i	Develop admittance matrix for the given power system network by using
		Computer	Analyzing HVDC conversion plant by simulating accurate strengthere
VII	EE4531	Flectrical	conversion system
VII	Ν	Power System Lab	Apply various power flow analysis method to solve AC and AC-DC
			power system network.
			Develop MATLAB program to solve the defined power system problem.



			Use various application software packages to perform power flow study
			of given power system network.
			To acquire and apply fundamental principles of engineering.
			Become updated with all the latest changes in technological world
		Industry In-	Develop ability to communicate efficiently
VIII	EE4571	plant	Improve ability to identify, formulate and model problems and find
		Training	engineering solution based on a systems approach
		_	Develop awareness of the social, cultural, global and environmental
			responsibility as an engineer
		Research	Perform literature review and identify research topic.
VIII	RE0407	<b>UROP</b> Phase	Write synopsis of the research work that being done in semester.
		Ι	Write technical review paper.
		Liboral	Identify the liberal learning online course from the NPTEL platform
VIII	LL0407	Liberal Learning IIP	Describe the online course given by the institute
			Apply the concept understand through the course in day to day life
		BUSINESS	Generate & identify different business ideas.
VIII	ED4001	OPPORTUN ITY	Make analysis of different ideas.
V 111			Select proper business idea to suit his personality & competencies.
		GUIDANCE	
	EE4101	Advanced Power Electronics	Apply knowledge of modern power electronics converters and its
			application in modern power electronics
VIII			Compute mathematical model of converter
V 111			Solve the state space model for power converters
			Analyze resonant converters and their topologies
			Analyze the operation of power converters, filters, ups systems
VIII			Apply fundamental principles of thermodynamics, fluid mechanics and
			mechanical systems to wind turbine engineering.
	OE422	Wind Energy	Calculate various parameters related to wind turbine.
V 111	UE432	Engineering	Design of wind turbine components.
			Design in virtual environment.
			Work on team-based projects.