



# R K COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi & Affiliated to JNTUK, Kakinada & SBTET, Amaravati )  
(An ISO 9001:2015 Certified Institution)  
Kethanakonda (V), Ibrahimpatnam (M), Vijayawada, AMARAVATI - AP - 521456

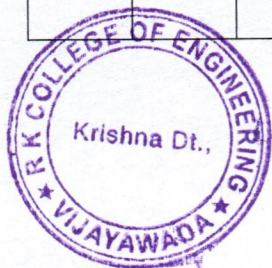


## DEPARTMENT OF FRESHMEN ENGINEERING

### COURSE OUTCOMES (COs)

Course Outcomes (COs) describe what students can able to do after completion of the course.

S.No	Year-Sem	Course Code	Course Name	Course Outcomes After completion of the course student can able to
1	I-I	BS1101	M-I	CO1:Utilize mean value theorems to real life problems
				CO2:Solve the differential equations related to various engineering fields
				CO3:Familiarize with functions of several variables which is useful in optimization
				CO4:Apply double integration techniques in evaluating areas bounded by region
				CO5: Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems
2	I-I	HS1101	English	CO1 :understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
				CO2:ask and answer general questions on familiar topics and introduce oneself/others
				CO3:employ suitable strategies for skimming and scanning to get the generalized of a text and locate specific information
				CO4:recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
				CO5:form sentences using proper grammatical structures and corrector forms
				CO1:The need of coherent sources and the conditions for sustained interference and engineering application so interference



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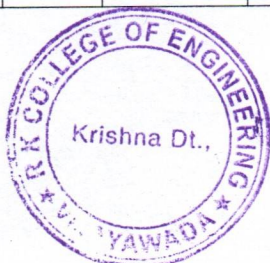
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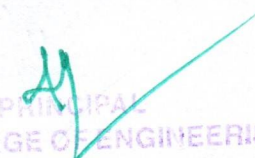
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3	I-I	BS1108	Engineering Physics	engineering application so interference
				CO2:The basic concepts of LASER light Sources and the concepts to learn the type so lasers
				CO3:The concept of dielectric constant and polarization in dielectric material sand various types of polarization of dielectrics
				CO4:how sound is propagated in buildings and acoustic properties of typically used material sin buildings
4	I-I	ES1103	Engineering Drawing	CO5:various crystal systems and different planes in the crystal structure
				CO1:Understand the use and the application of Drawing instruments and Draw the polygons, curves and various types of scales
				CO2:Understand the Orthographic projections and project the points and lines.
				CO3:Understand and draw the projections of the lines inclined to both the planes.
				CO4:Understand and draw the projections of the planes & solids
CO5:Represent and convert the isometric view to orthographic view and vice versa.				
5	I-I	ES1101	Programming for Problem Solving Using C	CO1:To write algorithm sand to draw flow charts for solving problems
				CO2:To convert flow charts/algorithms to C Programs, compile and debug programs
				CO3:To use different operators, data types and write programs that use two-way/multi-way selection
				CO4:To use different operators, data types and write programs that use two-way/multi-way selection
				CO5:To decompose a problem into functions and to develop modular reusable code To apply File I/O operations
				CO1:Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
				CO2:Utilize the theory of construction of



  
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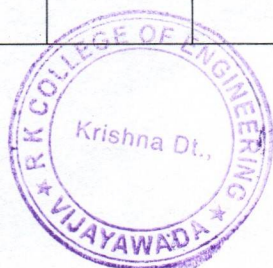
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6	I-I	BS1106	Applied Chemistry	electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
				<b>CO3:</b> Synthe size nonmaterial for modern advances of engineering technology. Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
				<b>CO4:</b> Analyze the principles of different analytical instruments and their applications. Design models for energy by different natural sources
				<b>CO5:</b> Obtain the knowledge of computational chemistry and molecular machines
7	I-I	ESC1102	Engineering Geology	<b>CO1:</b> Identify and classify the geological minerals and Measure the rock strengths of various rocks
				<b>CO2:</b> Classify and measure the earthquake prone areas to practice the hazard zonation
				<b>CO3:</b> Classify,monitor and measure the Land slides and subsidence
				<b>CO4:</b> Prepares, analyses sand inter pert the Engineering Geologic maps
				<b>CO5:</b> Investigate the project site for mega/mini civil engineering projects .Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.
8	I-I	BS1204	Applied Physics	<b>CO1:</b> Explain the need of coherent sources and the conditions for sustained interference Identify the applications of interference in engineering. Analyze the differences between interference and diffraction with applications
				<b>CO2:</b> Explain various types of emission of radiation (L2).Identify the role of laser in engineering applications (L3). Describe the construction and working principles of various types of lasers
				<b>CO3:</b> Describe the dual nature of matter Explain the significance of wave function. Identify the role of Schrodinger's time independent wave equation in studying particle in one-dimensional infinite potential well
				<b>CO4:</b> Explain the concept of dielectric constant and



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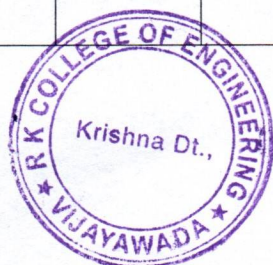
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				<p>polarization in dielectric materials. Summarize various types of polarization of dielectrics</p> <p><b>CO5:</b> Outline the properties of charge carriers in semiconductors Identify the type of semi conductor using Hall effect</p>
9	I-I	ES1102	Computer Engineering Workshop	<p><b>CO1:</b> Assemble and disassemble components of a pc</p> <p><b>CO2:</b> Construct a fully functional virtual machine</p> <p><b>CO3:</b> Summarize various Linux operating system commands</p> <p><b>CO4:</b> Recognize characters &amp; extract text from scanned images</p> <p><b>CO5:</b> Create audio files and podcasts</p>
10	I-I	BSC	M-II	<p><b>CO1:</b> Develop the use of matrix algebra techniques that is needed by engineers for practical applications</p> <p><b>CO2:</b> Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel</p> <p><b>CO3:</b> Evaluate the approximate roots of polynomial and transcendental equations by different algorithms</p> <p><b>CO4:</b> Apply Newton's forward &amp; backward interpolation and Lagrange's formulae for equal and unequal intervals</p> <p><b>CO5:</b> Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations</p>
11	I-I	ESC1102	Engineering geology Lab	<p><b>CO1:</b> Identify Megascopic minerals &amp; their properties.</p> <p><b>CO2:</b> Identify Mega scopes rocks &amp; their properties</p> <p><b>CO3:</b> Identify the site parameters such as contour, slope &amp; aspect for topography</p> <p><b>CO4:</b> Know the occurrence of materials using the strike &amp; dip problems</p>
12	I-I	ESC1103	Basics of civil Engineering Workshop(Lab)	<p><b>CO1:</b> Identify various components of a building and give lump-sum estimate</p> <p><b>CO2:</b> Determine distances and irregular areas using conventional survey instruments like chain, tape, cross-staff and compass</p> <p><b>CO3:</b> Identify different soils</p> <p><b>CO4:</b> Know various traffic signs &amp; signals</p>



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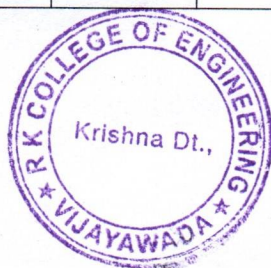
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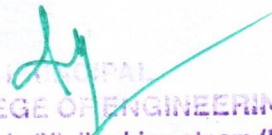
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				CO5:Determine center of gravity and moment of inertia of channel and I-sections
13	I-I	HSMC1102	English Lab	CO1:Vowels,Consonants,Pronunciation,PhoneticTranscription
				CO2:Past tense markers, word stress-di-syllabic words, Poly-Syllabic words
				CO3:Rhythm & Intonation
				CO4:Contrastive Stress (Homographs)
14	I-I	BS1109	Engineering Physics Lab	CO1 :Physics Virtual laboratory curriculum in the form of assignment ensures an engineering graduate to prepare a /technical/mini-project/ experimental report with scientific temper
15	I-I	ESC1103	Basics Of Civil Engg. Work Shop (Lab)	CO1:Identify various components of a building and give lump-sum estimate.
				CO2:Determine distances and irregular areas using conventional survey instruments like chain, tape, cross-staff and compass
				CO3:Identify different soils
				CO4:Know various traffic signs & signals
				CO5:Determine center of gravity and moment of inertia of channel and I-sections
16	I-I		Programming For Problem Solving Laboratory	CO1:Gains Knowledge on various concepts of a C language.
				CO2:Able to draw flowcharts and write algorithms.
				CO3:Able design and development of C problem solving skills
				CO4:Able to design and develop modular programming skills.
				CO5:Able to trace and debug a program
17	I-I	BS1107	Applied Chemistry Lab	CO1:The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.



  
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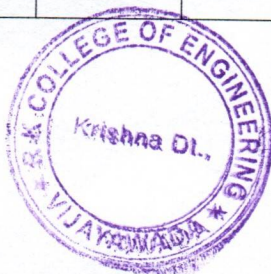
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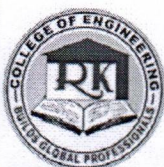
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18	I-I		Programming For Problem Solving Using C Lab	CO1:Gains Knowledge on various concepts of Ac language.
				CO2:Able to draw flowcharts and write algorithms.
				CO3:Able design and development of C problem solving skills.
				CO4:Able to design and develop modular programming skills.
				CO5:Able to trace and debug program
19	I-I	BS1203	Applied Physics Lab	CO1:Physics lab curriculum gives fundamental understanding of design of an instrument with targeted accuracy for physical measurements
20	I-I		Electrical Engineering Workshop	CO1:Explain the limitations, tolerances, safety aspects of electrical systems and wiring.
				CO2:Select wires/cables and other accessories used in different types of wiring.
				CO3 :Make simple lighting and power circuits.
				CO4 :Measure current, voltage and power in a circuit.
21	I-II	BS1102	M-II	CO1:Develop the use of matrix algebra techniques that is needed by engineers for practical applications
				CO2:Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel
				CO3:Evaluate the approximate roots of polynomial and transcendental equations by different algorithms
				CO4:Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals
				CO5:Apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations
22	I-II	BSC1210	Engineering Chemistry	CO1:Analyze the different types of composite plastic material sand interpret the mechanism of conduction in conducting polymers
				CO2: Utilize the theory of construction of electrodes, batteries and fuel cell sinned signing new engineering products and categorize the reasons for corrosion and study methods to control corrosion.



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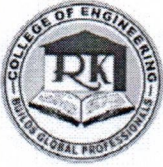
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				<p>CO3: Synthesize nano materials for modern advances of engineering technology. Summarize the techniques that detect and measure changes of state of reaction. Illustrate the commonly used industrial materials</p> <p>CO4: Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced. Study alternate fuels and analyses flue gases.</p> <p>CO5: Analyze the suitable methods for purification and treatment of hard water and brackish water.</p>
23	I-II	ES1204	Engineering Mechanics	<p>CO1: The student should be able to draw free body diagrams for FBDs for particle and rigid bodies. In plane and space and problems to solve the unknown forces, orientations and geometric parameters.</p> <p>CO2: He should be able to determine centroid for lines, areas and center of gravity for volumes and their composites</p> <p>CO3: He should be able to determine area and mass movement of inertia for composite sections</p> <p>CO4: He should be able to analyze motion of particles and rigid bodies</p> <p>CO5: apply the principles of motion, work energy and impulse-momentum</p>
24	I-II	BS1203	M-III	<p>CO1: Interpret the physical meaning of different operators such as gradient, curl and divergence</p> <p>CO2: Estimate the work done against a field, circulation and flux using vector calculus</p> <p>CO3: Apply the Laplace transform for solving differential equations</p> <p>CO4: Find or compute the Fourier series of periodic signals</p> <p>CO5: Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms identify solution methods for partial differential equations that model physical processes</p>
				CO1: To write algorithms and to draw flow charts for solving problems



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25	I-II	ES1201	Programming for Problem Solving Using C	CO2: To convert flow charts/ algorithms to C Programs, compile and debug programs
				CO3: To use different operators, data types and write programs that use two-way/multi-way selection
				CO4: To use different operators, data types and write programs that use two-way/multi-way selection
				CO5: To decompose a problem into functions and to develop modular reusable code To apply File I/O operations
26	I-II	BS1106	Applied Chemistry	CO1: Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
				CO2: Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
				CO3: Synthesize nonmaterial for modern advances of engineering technology. Summarize the preparation of semiconductors;
				CO4: Analyze the principles of different analytical instruments and their applications. Design models for energy by different natural sources
27	I-II	ESC1203	Building Materials & Concrete technology	CO1: Know various engineering properties of building construction materials and suggest their suitability
				CO2: Identify the functional role of ingredients of concrete and apply this knowledge to concrete mix design
				CO3: Acquire and apply fundamental knowledge in the fresh and hardened properties of Concrete
28	I-II	BS1204	Applied Physics	CO1: Explain the need of coherent sources and the conditions for sustained interference Identify the applications of interference in engineering.
				CO2: Explain various types of emission of radiation



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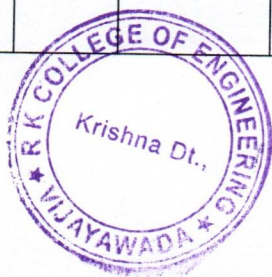
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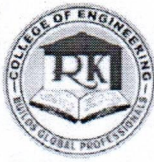


				(L2).Identify the role of laser in engineering applications (L3). Describe the construction and working principles of various types of lasers
				CO3: Describe the dual nature of matter Explain the significance of wave function. Identify the role of Schrodinger's time independent wave equation in studying particle in one-dimensional infinite potential well
				CO4:Explain the concept of dielectric constant and polarization in dielectric materials. Summarize various types of polarization of dielectrics
				CO5:Outline the properties of charge carriers in semiconductors Identify the type of semiconductor using Hall effect
29	I-II	CS1201	Data Structures	CO1: data structures concepts with arrays, stacks, queues.
				CO2: linked lists for stacks, queues and for other applications.
				CO3:traversal methods in the Trees
				CO4:various algorithms available for the graphs
				CO5: sorting and searching in the data ret retrieval applications.
30	I-II	ES1202	Python Programming	CO1:Develop essential programming skills in computer programming concepts like data types, containers
				CO2:Apply the basics of programming in the Python language
				CO3:Solve coding tasks related conditional execution, loops
				CO4:Solve coding tasks related to the fundamental notion sand techniques used in object oriented programming
31	I-II	ES1206	Basics Electrical& Electronic Engineering	CO1: Analyse various electrical networks.
				CO2: Analyse various electrical networks.
				CO3:Analyse performance of single-phase transformer and acquire proper knowledge and working of 3-phase alternator and 3-phase
				CO4: Analyse operation of half wave, full wave bridge rectifiers and OP-AMPs.
				CO5: Understanding operations of CE amplifier ND



  
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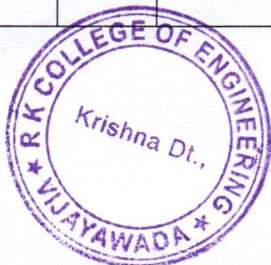
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				basic concept of feedback amplifier.
32	I-II	ES1207	Computer Aided Engineering Drawing	CO1:Student get expose don working of sheet metal with help of development of surfaces.
				CO2:Student understand show to know the hidden details of machine component switch the help of section sand inter penetrations of solids
				CO3:Students hall exposed to modeling commands for generating 2D and 3D object suing compute raided drafting tool switch are useful to create machine elements for computer aided analysis.
33	I-II	ES	Computer Organization	CO1:Demonstrate an understanding of the design of the functional units of a digital computer system
				CO2:Recognize and main plastered presentations of numbers stored in digital computer
				CO3:Design and analyze combinational and sequential circuits
				CO4:Identify, compare and assess issues related to ISA, memory, control and I / Of unction's
				CO5:Recall the internal organization of computers, CPU, memory unit and Input / Output sand the relations between its main components
34	I-II	ES1217	Electrical Circuit Analysis I	CO1:Various electrical networks in presence of active and passive elements. And Electrical networks with network topology concepts
				CO2:Any magnetic circuit with various dot conventions.
				CO3:Any R, L, C network with sinusoidal excitation
				CO4:Any R, L, network with variation of any one of the parameters i.e., R, L, C and f.
				CO5:Electrical networks by using principles of network theorems
35	I-II	ESC	Basic Civil And Mechanical Engineering	CO1:Apply Shear force diagram & Bending moment diagram principles for Cantilever and Simply supported beams.
				CO2:Apply concepts of Rosette analysis for strain measurements
				CO3:Analyse the characteristics of common building materials.
				CO4:Compare the working characteristics of Internal Combustion engines.



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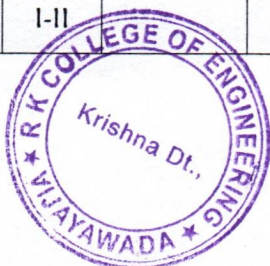
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				CO5: Compare the differences between boiler mountings and accessories.
36	I-II	ES1201	Digital Logic Design	CO1: An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation
				CO2: An ability to understand the different switching algebra theorems and apply them for logic functions
				CO3: An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions
				CO4: Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays
				CO5: Students will be able to design various sequential circuits starting from flip-flop to registers and counters
37	I-II		Object Oriented Programming Through Java	CO1: Show competence in the use of the Java programming language in the development of small to medium-sized application programs that demonstrate professionally acceptable coding and performance standard
				CO2: Illustrate the basic principles of the object-oriented programming
				CO3: Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming.
38	I-II	ES1209	Network Analysis	CO1: gain the knowledge on basic network elements.
				CO2: will analyze the RLC circuits behavior in detailed
				CO3: analyze the performance of periodic waveforms
				CO4: gain the knowledge in characteristics of two port network parameters (Z, Y, ABCD, h&g).
				CO5: analyze the filter design concepts in real world applications
39	I-II		Engineering Chemistry	CO1: Analyze the different types of composite plastic material and interpret the mechanism of



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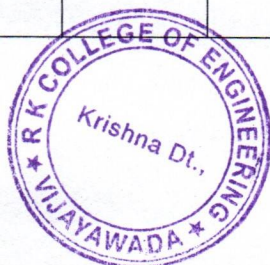
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				conduction in conducting polymers <b>CO2:</b> Utilize the theory of construction of electrodes, batteries and fuel cell sinner designing new engineering products and categorize the reasons for corrosion and study methods to control corrosion. <b>CO3:</b> Synthe size nano materials form oden advances of engineering technology. Summarize the techniques that detect and measure changes of state of reaction. Illustrate the commonly used industrial materials <b>CO4:</b> Analyze the principles of different analytical instruments and their applications. Design models for energy by different natural sources <b>CO5:</b> Obtain the knowledge of computational chemistry and molecular machines
40	I-II	ESC1204	Programming For Problem Solving Using C Lab	<b>CO1 :</b> Gains Knowledge on various concepts of Ac language. <b>CO2 :</b> Able to draw flowcharts and write algorithms. <b>CO3 :</b> Able design and development of C problem solving skills. <b>CO4 :</b> Able to design and develop modular programming skills. <b>CO5 :</b> Able to trace and debug program
41	I-II	ESC1205	Building Planning And Computer Aided Building Drawing	<b>CO1 :</b> Perform basic commands of any suitable CAD software to draw 2D drawings <b>CO2 :</b> Interpret the conventions, signs and symbols from a given drawing. <b>CO3 :</b> Prepare line plans of residential and public buildings using principles of planning. <b>CO4:</b> Prepare submission and working drawing from the given requirement for Load Bearing and Framed structures
42	I-II	BSC1203	Engineering Chemistry Lab	<b>CO1:</b> The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at



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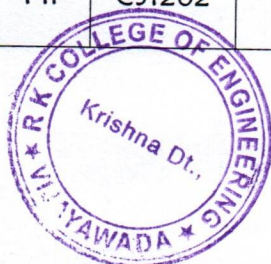
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				the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.
43	I-II	ES1208	Basic Electrical & Electronics Engineering Lab	<p>CO1: Compute the efficiency of DC shunt machine without actual loading of the machine.</p> <p>CO2: Estimate the efficiency and regulation at different load conditions and power factors for single phase transformer with OC and SC tests.</p> <p>CO3: Analyse the performance characteristics and to determine efficiency of DC shunt motor &amp; 3-Phase induction motor</p> <p>CO4 : Pre-determine the regulation of an alternator by synchronous impedance method.</p> <p>CO5: Control the speed of dc shunt motor using Armature voltage and Field flux control methods</p>
44	I-II		Electrical Workshop Lab	<p>CO1: Explain the limitations, tolerances, safety aspects of electrical systems and wiring.</p> <p>CO2 : Select wires/cables and other accessories used in different types of wiring.</p> <p>CO3: Make simple lighting and power circuits.</p> <p>CO4: Measure current, voltage and power in a circuit.</p>
45	I-II	BS1203	Applied Physics Lab	CO1: Physics lab curriculum gives fundamental understanding of design of an instrument with targeted accuracy for physical measurements
46	I-II	ES1203	Python Programming	<p>CO1: Develop essential programming skills in computer programming concepts like data types, containers</p> <p>CO2: Apply the basics of programming in the Python language</p> <p>CO3: Solve coding tasks related conditional execution, loops</p> <p>CO4: Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming</p>
47	I-II	CS1202	Data Structures Lab	<p>CO1: Use basic data structures such as arrays and linked list.</p> <p>CO2: Programs to demonstrate fundamental</p>



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				algorithmic problems including Tree Traversals, Graph traversals, and shortest paths. <b>CO3:</b> Use various searching and sorting algorithms
48	I-II	BS1107	Applied Chemistry Lab	<b>CO1:</b> The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.
49	I-II		Computer Organization Lab	<b>CO1:</b> Understand working of logic families and logic gates. <b>CO2:</b> Design and implement Combinational and Sequential logic circuits. <b>CO3:</b> Solve elementary problems by assembly language programming <b>CO4:</b> Implement assembly language program for given task for 8086 microprocessor.
50	I-II	ESC1103	Basic Civil And Mechanical Engineering Lab	<b>CO1:</b> Solve to arrive at finding constant speed and variable speed on IC engines and interpret their performance. <b>CO2:</b> Estimate energy distribution by conducting heat balance test on IC engines <b>CO3:</b> Explain procedure for standardization of experiments. <b>CO4:</b> Determine flow discharge measuring device used in pipes channels and tanks. <b>CO5:</b> Determine fluid and flow properties



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