

**B.Sc. (RPCs)**

**Program Outcomes (POs)**

<b>Program Outcome</b>	<b>Description</b>
PO1	Propose novel ideas towards solutions to contemporary problems justifying with relevant facts and data
PO2	Develop scientific outlook and see the relevance of science concepts in all aspects of life
PO3	Identify, formulate and analyze complex Scientific problems using principles of natural and applied sciences.
PO4	Comprehend concepts, frameworks and inventions through various learning methods and effectively communicate them to others orally and in writing.
PO5	Analyze critically the given scientific data ascribe meaning to them and draw objective conclusions.
PO6	Demonstrate empathetic social concern, skills to effectively participate in civic affairs and democratic decision making.
PO7	Imbibe ethical, moral and social values to become cultured and civilized global citizens.
PO8	Apply concepts of sustainable development to make a difference in social and environmental issues.
PO9	Develop multidimensional skills and habits as lifelong learners.

### Program Specific Outcomes (PSOs)

<b>Program Specific Outcome</b>	<b>Description</b>
PSO1	Ability to explain core theoretical concepts/ their scientific basis and applications relevant to the disciplines of Renewable energy, Physics, and Computer Science at foundation level
PSO2	Overview of the main sources of renewable energy and provide qualified manpower in the sector of renewable energy systems to match the energy demand and supply.
PSO3	Understand the issues of environmental contexts and sustainability development.
PSO4	Demonstrate awareness of national and global trends in the fields covered by the study and assessing their implications

### Course Outcomes

2019-20 Batch

Sl. No	Subject Code	Subject	Course Outcomes
1	17REN1C01	Renewable Energy (RE) I	<p><b>CO1:</b> In depth knowledge on the available energy resources, their environmental impacts and technologies to harness energy from renewable energy resources.</p> <p><b>CO2:</b> Evaluating the potential depth of the available solar energy on earth and studying the different methods of harnessing the solar energy to meet the different requirements.</p> <p><b>CO3:</b> Interpreting wind availability across the globe and implementing the different technologies to harness this energy, recognizing other potential sources of energy like geothermal, hydro, tidal and OTEC.</p> <p><b>CO4:</b> Understanding the concept of bio-chemical, thermo-chemical conversion with respect to biomass to energy and summarizing different available methods to study biomass energy in detail.</p> <p><b>CO5:</b> Demonstrate the concept of ion transfer in the human body giving an idea of bioelectricity and in depth knowledge of neuron functioning.</p>
1	19PHY1C03	PHYSICS-I (Mechanics and Properties of Matter)	<p><b>CO1:</b> Understanding of basic facts, principles and physical laws</p> <p><b>CO2:</b> Analyze applications of vectors and differential equations, concept of laws of conservation and apply them to basic problems.</p> <p><b>CO3:</b> Exhibit analytical reasoning and logical ability in problem solving related to gravitation, rigid bodies, elasticity and fluid dynamics.</p> <p><b>CO4:</b> Demonstrate basic experimental skills in rigid bodies, elasticity and fluid dynamics</p>
1	16CS1C05	COMPUTER SCIENCE I DIGITAL FUNDAMENTALS AND OBJECT ORIENTED PROGRAMMING USING C++	<p><b>CO1:</b> Describe the operation of logic gates; apply the laws of Boolean algebra to simplify Boolean expressions.</p> <p><b>CO2:</b> Design combinational and sequential circuits using logic gates</p> <p><b>CO3:</b> Distinguish between Structured and Object-Oriented problem solving approaches and apply them based on the problem given</p> <p><b>CO4:</b> Identify classes and objects from the given problem description and able to create classes and objects using C++</p> <p><b>CO5:</b> Discuss and demonstrate operator overloading</p> <p><b>CO6:</b> Achieve code reusability and extensibility by means of Inheritance and Polymorphism.</p>

Sl. No	Subject Code	Subject	Course Outcomes
1	16ENG1L02	English-I	<p><b>CO1:</b> Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.</p> <p><b>CO2 :</b> Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p>
1	16AENG1L01	Additional English-I	<p><b>CO1:</b> Understand representative literary and cultural texts within historical, geographical, and cultural contexts.</p> <p><b>CO2:</b> Apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.</p>
1	16KAN1L01	Kannada-I	<p><b>CO1 :</b> To understand ancient Kannada literature form and principles of life as depicted in it.</p> <p><b>CO2 :</b> Develop creative thinking with the introduction of different literature forms.</p> <p><b>CO3 :</b> Awareness about gender equality and social harmony.</p> <p><b>CO4 :</b> Develop business correspondence skills through letter writing.</p> <p><b>CO5 :</b> Ability to formulate a value based thought process with inclusive approach.</p>
1	16SAN1L01	Sanskrit-I	<p><b>CO1:</b> Student will be able to understand Nitishatakam and Viduraniti as political Science</p> <p><b>CO2:</b> Develop administrative skills.</p> <p><b>CO3 :</b> Analyze five principles of Panchatantra for proper examination.</p> <p><b>CO4:</b> Evaluate the information and defend the right cause.</p> <p><b>CO5:</b> Ability to formulate the value based thought process with inclusive approach.</p>
1	17REN1C01 L	RE LAB I	<p><b>CO1:</b> Demonstrate the working of instruments in electronics and RE laboratory.</p> <p><b>CO2:</b> Depict the working of a wind turbine coupled to a generator.</p> <p><b>CO3:</b> Study of different parameters related to wind energy and their calibration.</p> <p><b>CO4:</b> Depict the technique of performance of the solar cell.</p> <p><b>CO5:</b> Measure the parameters of solar energy radiation.</p> <p><b>CO6:</b> Study the heat capacity of the biomass</p>

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1	16PHY1C3L	PHYSICS LAB-I	<p><b>CO1:</b> Understand the working principles of instruments used in experiment</p> <p><b>CO2:</b> Acquire the experimental skills in concepts like fluid dynamics, oscillations, conservation of energy and rigid bodies</p> <p><b>CO3:</b> Analyze the results with observations and proper theory</p> <p><b>CO4:</b> Gain knowledge about application of the experiments</p>
1	16CS1C5L	COMPUTER SCIENCE LAB 1	<p><b>CO1:</b> Explain the usage of selection statements and iteration statements and write simple programs.</p> <p><b>CO2:</b> Discuss the usage of data structures like arrays and structures.</p> <p><b>CO3:</b> Explain the concepts of inline functions, function overloading and default arguments and use them according to the user requirements.</p> <p><b>CO4:</b> Create solutions to a range of problems using the classes and objects, constructors.</p> <p><b>CO5:</b> Discuss and demonstrate operator overloading</p> <p><b>CO6:</b> Achieve code reusability and extensibility by means of Inheritance and Polymorphism.</p>
2	18REN2C01	RE II	<p><b>CO1:</b> Demonstrate and analyze the different laws, electrical network concepts, AC- DC circuits and their application in energy conversion.</p> <p><b>CO2:</b> Differentiating and identifying electronic components used in the networks to convert renewable energy source to electricity and its commuting.</p> <p><b>CO3:</b> Inspect and understand the basic concepts of linear ICs, Op-amp and digital electronic circuits in control systems to reduce the complexity of the modern electronic network.</p> <p><b>CO4:</b> Brief knowledge on Regulated power supply (RPS), electronic measurement components (CRO, ammeter, voltmeter and so on) and their applications.</p>
2	16PHY2C03	PHYSICS-II (THERMAL AND STATISTICAL PHYSICS AND ACOUSTICS)	<p><b>CO1:</b> Equipped with the basic facets of thermodynamics, statistical distribution laws and acoustics of sound along with their applications</p> <p><b>CO2:</b> Ability to analyze the statistical nature of physical systems from an energy perspective</p> <p><b>CO3:</b> Understand, identify and differentiate between the concepts of statistics and the statistical distribution laws of particles</p> <p><b>CO4:</b> Demonstrate laboratory skills pertaining to Sound and Thermal Physics</p>

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2	16CS2C05	COMPUTER SCIENCE II DATA STRUCTURE S	<p><b>CO1:</b> Explain the organization and operations of different data structures like Stack, Queues, linked lists, Trees, and Graphs.</p> <p><b>CO2:</b> Compare and contrast the functionalities and applications of different data structures</p> <p><b>CO3:</b> Implement data structures efficiently in C++</p> <p><b>CO4:</b> Demonstrate specific search and sort algorithms using data structures given specific user requirements.</p> <p><b>CO5 :</b>Analyze and compare the complexity of searching and sorting algorithms.</p>
2	16ENG2L02	English-II	<p><b>CO1:</b> Display knowledge to cultivate a better understanding of values – both literary values that aid us in literary judgment and also values of life at all stages; apply appropriate methodologies for the development of the creative and analytical faculties of students, their overall development of writing, including imaginative writing.</p> <p><b>CO2 :</b> Cultivate ability to look at and evaluate literary texts as a field of study and as part of the wider network of local and global culture.</p>
2	16AENG2L01	Additional English-II	<p><b>CO1:</b> Recognize and describe the critical approach, ideas, values, and themes contained in the literary writings that affect our culture and society.</p> <p><b>CO2:</b> Write analytically in a variety of formats, including essays, speeches, and reflective writings.</p>
2	16KAN2L01	Kannada-II	<p><b>CO1:</b> Students will be able to understand the importance of democracy, elections and responsibility of the younger generation.</p> <p><b>CO2:</b> Awareness about student life, knowledge acquisition through academics and learning beyond for holistic development.</p> <p><b>CO3:</b> Analyze and differentiate the cultural beliefs to give up superstitious beliefs.</p> <p><b>CO4:</b> Evaluate the information based on social concerns and defend the right cause.</p>
2	16SAN2L01	Sanskrit-II	<p><b>CO1:</b> Student will be able to understand the importance of the ancient knowledge system</p> <p><b>CO2:</b> Develop creative thinking.</p> <p><b>CO3:</b> Analyze the situation on time and gravity which in turn will help in decision making.</p> <p><b>CO4:</b> 'Evaluate the self' – introspection in day to day life, personality development and thereby contribute for a better harmonious society.</p>

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2	18REN2C01 L	RE LAB II	<p><b>CO1:</b> Differentiating and identifying electronic components used in the RE sector to convert renewable energy sources to electricity and its commuting.</p> <p><b>CO2:</b> Performance of electronic circuits using passive components, diodes, transistors, ICs for different applications.</p> <p><b>CO3:</b> Understanding the basic applications of linear ICs, Op-amp and digital electronic circuits in control and conversions systems.</p> <p><b>CO4:</b> Knowledge on Regulated power supply (RPS) used in circuits and systems.</p>
2	16PHY2C3L	PHYSICS LAB-II	<p><b>CO1:</b> Understand the working principles of instruments used in experiment</p> <p><b>CO2:</b> Acquire the experimental skills in concepts like heat, radiation, elasticity sound and shock waves</p> <p><b>CO3:</b> Analyze the results with observations and proper theory</p> <p><b>CO4:</b> Gain knowledge about application of the experiments</p>
2	16CS2C5L	COMPUTER SCIENCE LAB II	<p><b>CO1:</b> To implement algorithms for different Data structures efficiently.</p> <p><b>CO2:</b> Design and implement programs for Stacks, Queues and linked list.</p> <p><b>CO3:</b> Design and implement programs for a given Search problem (Linear Search and Binary Search)</p> <p><b>CO4:</b> Create and Implement the programs for Binary Search Traversals (Inorder, Preorder and PostOrder traversals)</p> <p><b>CO5:</b> Design and implement algorithms for Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, and Merge Sort and compare their performance in term of Space and Time complexity</p>
3	17REN3C01	RE III	<p><b>CO1:</b> Demonstrate the basic concept of the different types of motors, generators available in market and their application with respect to energy conversion systems.</p> <p><b>CO2:</b> Analyze and design the electronic circuits with different power electronic devices, study their characteristics and applications.</p> <p><b>CO3:</b> Demonstration of different types of dc-dc as well as dc-ac converters of current for the commercial and domestic application with respect to solar and wind energy systems and grids.</p> <p><b>CO4:</b> Understanding, evaluating the micro-grid and smart-grid power transmission systems, their importance and applications in the energy conversion industries.</p>

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3	16PHY3C01	PHYSICS-III (OPTICS, ELECTRICITY AND MAGNETISM)	<p><b>CO1:</b> Ability to identify and apply the principles of wave s so as to understand the physics behind various optical phenomenon</p> <p><b>CO2:</b> Equipped with the knowledge of working with optical instruments like polarimeter, interferometer, and diffraction grating</p> <p><b>CO3:</b> Understanding of various Electrostatics and Magnetostatics laws and its applications</p> <p><b>CO4:</b> Identify, analyze and differentiate electrical networks using various analysis techniques</p> <p><b>CO5:</b> Demonstrate knowledge and understanding of the Maxwell's equations and its applications</p> <p><b>CO6:</b> Assessing and interpreting laboratory experiments pertaining to Optics, Electricity and Magnetism</p>
3	16CS3C03	COMPUTER SCIENCE III- JAVA PROGRAMMI NG	<p><b>CO1:</b> Describe the object-oriented Programming principles and explain the concepts of classes, functions, data and objects.</p> <p><b>CO2:</b> Identify the different types of inheritance and demonstrate code reuse using inheritance</p> <p><b>CO3:</b> Explain the concepts of packages, interfaces and access specifiers.</p> <p><b>CO4:</b> Use exceptions, threads in a given program.</p> <p><b>CO5:</b> Explain the concept of applets, and Input/output streams</p>
3	16CENG0A1	Communicativ e English	<p><b>CO1:</b> To enhance the understanding of LSRW skills and various approaches to language.</p> <p><b>CO2:</b> Providing an in-depth academic exposure about various forms of communication to enable students to be better speakers and users of language.</p> <p><b>CO3:</b> Demonstrate a coherent and systematic knowledge of the field of communication through understanding of current linguistic and literary developments.</p> <p><b>CO4:</b> Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p> <p><b>CO5:</b> Write analytically in a variety of formats, including essays, speeches, and reflective writings.</p>
3	17REN3C01	RE LAB III	<p><b>CO1:</b> Demonstrate the working of instruments in electronics and RE laboratory.</p> <p><b>CO2:</b> Illustrate the working of different types of electronic devices like transistors etc.</p> <p><b>CO3:</b> Study of the converters used in the renewable energy field.</p> <p><b>CO4:</b>Understanding the concept of Micro grid and Smart grid on a practical level.</p>



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3	16PHY3C1L	PHYSICS LAB-III	<p><b>CO1:</b> Understand the working principles of instruments used in experiment</p> <p><b>CO2:</b> Acquire the experimental skills in concepts like Optics, Electricity and Magnetism</p> <p><b>CO3:</b> Analyze the results with observations and proper theory</p> <p><b>CO4:</b> Gain knowledge about application of the experiments</p>
3	16CS3C3L	COMPUTER SCIENCE III - LAB	<p><b>CO1:</b> Explain the usage of selection statements and iteration statements and use the correct programming construct according to the situation in their code.</p> <p><b>CO2:</b> Identify the different types of inheritance supported in Java and develop complex programs appropriately reusing previously created classes.</p> <p><b>CO3:</b> Describe and use packages and appropriately use access specifiers, exception handling keywords, exception handling classes, and handle exceptions in programs.</p> <p><b>CO4:</b> Describe the purpose of multithreading and write programs using threads to improve performance of code.</p> <p><b>CO5:</b> Explain the methods defined in Applet class and the life cycle of applet, and write programs to perform input/output operations on file</p>
4	17REN4C01	RE IV	<p><b>CO1:</b> Name the different types of energy storage techniques with respect to different electrical components, storage materials and their characteristics.</p> <p><b>CO2:</b> Identifying the types of battery systems in market and their development with respect to storage capacity.</p> <p><b>CO3:</b> Demonstrate the concept of magnetic energy storage, super capacitors and hybridization of different energy producing - storage systems.</p> <p><b>CO4:</b> Distinguish the different steps involved in battery recycling methods and different battery management technologies for the safe and harm free environment.</p> <p><b>CO5:</b> Test the voltage of different types of batteries and assess the performance of the batteries.</p> <p><b>CO6:</b> Design and implement a novel battery charger.</p>

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4	16PHY4C01	PHYSICS-IV (ELEMENTS OF MODERN PHYSICS)	<p><b>CO1:</b> Interpretation of the inadequacies of classical mechanics and understanding of the historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.</p> <p><b>CO2:</b> Comprehending the central concepts of quantum mechanics and ability to identify and differentiate between wave functions, momentum and energy operator and the time dependent and independent Schrodinger equations.</p> <p><b>CO3:</b> Apply problem solving skills to one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier</p> <p><b>CO4:</b> Understanding the basics of Crystallography</p> <p><b>CO5:</b> Ascertain the quantitative foundations of Atomic and Nuclear Physics</p> <p><b>CO6:</b> Equipped with experimental foundations in Atomic physics, Nuclear physics and X-ray diffraction analysis</p>
4	16CS4C03	COMPUTER SCIENCE IV (OPERATING SYSTEM AND 4 UNIX)	<p><b>CO1:</b> Describe the evolution, types and fundamental components of a computer operating system</p> <p><b>CO2:</b> Define, discuss, and explain the policies for CPU scheduling, deadlocks, memory management, and file systems.</p> <p><b>CO3:</b> Implement processor scheduling, deadlocks and page replacement algorithms for a given scenario.</p> <p><b>CO4:</b> Execute Linux basic commands and shell scripts.</p> <p><b>CO5:</b> Create shell scripts to automate a sequence of operations.</p> <p><b>CO6:</b> Discuss managing user accounts, disk space and security issues</p>
4	19MENV10V E2	ABILITY ENHANCEMENT COURSE Environmental Science	<p><b>CO1</b> - Understanding the nature of our Environment and its importance in real Life</p> <p><b>CO2</b> - To summarize the basic concepts of ecosystems and their functions</p> <p><b>CO3</b> - To Classify the organisms based on the geographical areas, Ecological niche and Threats faced</p> <p><b>CO4</b> - Explain the causes and outcomes of Environmental Pollution on this planet</p> <p><b>CO5</b> - To create an awareness about the possible solutions to the environmental problems faced by mankind.</p> <p><b>CO6</b> - To develop the right attitude towards the environment which eventually helps to deal with environmental problems</p>

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4	17REN4C01 L	RE LAB IV	<p><b>CO1:</b> Identify the different types of batteries and lab equipment</p> <p><b>CO2:</b> Demonstrate the experiments to study the characteristics of the batteries and to determine the internal resistance of the batteries.</p> <p><b>CO3:</b> Demonstrate the experiments to study the characteristics of the batteries in series and parallel.</p> <p><b>CO4:</b> Demonstrate the experiments on charging and discharging of the energy storage devices.</p> <p><b>CO5:</b> Use knowledge to select the right energy storage system for a particular application.</p>
4	16PHY4C1L	PHYSICS LAB-IV	<p><b>CO1:</b> Understand the working principles of instruments used in experiment</p> <p><b>CO2:</b> Acquire the experimental skills in concepts like GM counter, Molecular spectroscopy,</p> <p><b>CO3:</b> Analyze the results with observations and proper theory</p> <p><b>CO4:</b> Gain knowledge about application of the experiments</p>
4	16CS4C3L	COMPUTER SCIENCE IV LAB	<p><b>CO1:</b> Explain the operators, and control structures that can be used to write shell programs.</p> <p><b>CO2:</b> Design shell programs to interpret the concepts of operating system.</p> <p><b>CO3:</b> Design shell programs that helps the functionalities of system administrators.</p>
5	16ECO5G01	ELEMENTS OF ENTREPREN EURSHIP General Elective-I	<p><b>CO1:</b> Outline the function of the entrepreneur in the successful, commercial application of innovations and recall the different opportunities and successful growth stories.</p> <p><b>CO2:</b> Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business.</p> <p><b>CO3:</b> Prioritize personal attributes that enable best use of entrepreneurial opportunities</p> <p><b>CO4:</b> Examine Economic conditions with higher level knowledge and understanding of contemporary trends in e-commerce and business finance.</p> <p><b>CO5 :</b> Explore entrepreneurial leadership and management style.</p>

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5	16MNG5G02	HUMAN RESOURCE MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR General Elective-II	<p><b>CO1:</b> Demonstrate an understanding of key terms, theories/concepts and practices within the field of HRM Summarize the principles of volumetric analysis.</p> <p><b>CO2:</b> Provide innovative solutions to problems in the fields of HRM and be able to identify and appreciate the significance of the ethical issues in HR</p> <p><b>CO3:</b> Demonstrate competence in communicating and exchanging ideas in a group context</p> <p><b>CO4:</b> Work effectively with colleagues with diverse skills, experience levels and way of thinking</p> <p><b>CO5:</b> Evaluate HRM related social, cultural, ethical and environmental responsibilities and issues in a global context</p> <p><b>CO6:</b> To integrate the knowledge of HR practices Related monetary benefits to avail within the organization.</p>
5	20PHY5S01	COMPUTATIONAL PHYSICS Skill Elective-I	<p><b>CO1:</b> Understanding the basics of Python programming language.</p> <p><b>CO2:</b> Analyze various numerical methods like Linear Regression, Successive bisection method, Gauss elimination method, Gauss- Jordan elimination method, Matrix, Eigen value and Eigen vectors of matrices - Power and Jacobi method using python programming language.</p> <p><b>CO3::</b> Application of the Python programming language to process the Renewable energy data.</p>
5	20REN5C01	WIND ENERGY Skill Elective-II	<p><b>CO1:</b> Gives the fundamental knowledge and understanding about the wind flow across the globe and its types, the causes responsible for its production and the factors influencing it.</p> <p><b>CO2:</b> Acquire the knowledge about the different factors influencing the wind energy conversion and also the idea on the design of wind energy conversion system.</p> <p><b>CO3:</b> Evaluate the complete idea on the different methods of harnessing the wind energy and also the hybrid system implemented to increase the efficiency of energy production.</p>
5	16CS5S03	SOFTWARE ENGINEERING AND TESTING Skill Elective-III	<p><b>CO1:</b> Explain the different process models for a software project development.</p> <p><b>CO2:</b> Discuss SRS, Design document, Project planning and scheduling</p> <p><b>CO3:</b> Classifying test types and generating test cases using different techniques</p> <p><b>CO4:</b> Discuss different techniques for cost estimation of software</p>
5	20PHY5S3L	COMPUTATIONAL PHYSICS LAB Skill Elective-I	<p><b>CO1:</b> Acquire the logical programming skills in Python to solve the problems in renewable energy data processing.</p> <p><b>CO2:</b> Analyze the results with observations and proper theory</p> <p><b>CO3:</b> Gain the knowledge about application of the Python programming language.</p>

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5	20REN5C01L	WIND ENERGY LAB Skill Elective-II	<p><b>CO1:</b> Demonstrate the working of instruments in electronics and RE laboratory.</p> <p><b>CO2:</b> Depict the working of a wind turbine coupled to a generator.</p> <p><b>CO3:</b> Study of different parameters related to wind energy and their calibration.</p>
5	16CS5S3L	SOFTWARE ENGINEERING AND TESTING LAB	<p><b>CO1:</b> Discuss the different types of testing and develop test cases for boundary value analysis, equivalence class partitioning, path testing and explain with a suitable program.</p> <p><b>CO2:</b> Develop test cases for automated unit testing, parameterized testing and perform tests using JUnit tool.</p> <p><b>CO3:</b> Derive test cases for assertions and test using JUnit.</p> <p><b>CO4:</b> Discuss load testing and perform real time load testing using Apache JMeter and find response time, delay time and throughput time.</p> <p><b>CO5:</b> Analyse and translate software requirements specification into a design, and then realize that design using a suitable software engineering methodology.</p>
6	16ELE6D02	SOLAR ENERGY Discipline Elective-I	<p><b>CO1:</b> Understanding the solar basics and different instruments available in market to measure the availability of solar radiation</p> <p><b>CO2:</b> Quantitative knowledge on solar cells and its conversion efficiency with respect to its characteristics.</p> <p><b>CO3:</b> Executing and implementing the knowledge of solar basics to design, construct a solar panel for the conversion of solar energy to electricity.</p> <p><b>CO4:</b> In depth knowledge on how a photovoltaic system is implemented on grid level, different design, their drawbacks like trouble shooting and so on related to it.</p>
6	16PHY6D102	MATERIALS SCIENCE Discipline Elective-II	<p><b>CO1:</b> Understanding of synthesis techniques, properties and applications of nano and smart materials</p> <p><b>CO2:</b> Demonstrate good foundations in band theory of solids and free electron theory of metals.</p> <p><b>CO3:</b> Ability to differentiate between the different types of magnetic materials and a good insight of dielectric materials.</p> <p><b>CO4:</b> Equipped with good experimental skills in understanding the properties of different materials</p>

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6	16CS6D304	RELATIONAL DATABASE MANAGEMENT SYSTEM Discipline Elective-III	<p><b>CO1:</b> Describe the fundamental elements of database management systems</p> <p><b>CO2:</b> Explain the basic concepts of entity-relationship model</p> <p><b>CO3:</b> Explain the basic concepts of relational data model, and relational algebra</p> <p><b>CO4:</b> Design tables for a specific database and write SQL queries for data definition/ manipulation/ alteration</p> <p><b>CO5:</b> Recognize and apply functional dependencies to improve database design (Normalization)</p> <p><b>CO6:</b> Analyze the requirements of transaction processing, concurrency control</p>
6	18BSDA301	INFERENCE THEORY GENERAL ELECTIVE-I	<p><b>CO1:</b> Understand and Calculate Probabilities by applying Probability Laws and Theory.</p> <p><b>CO2:</b> Identify appropriate Probability Distribution for a given discrete or continuous random variable.</p> <p><b>CO3:</b> Application of Probability Theorems and Distributions concerning multiple random variables and compute probabilities.</p> <p><b>CO4:</b> Understand and differentiate statistical methods to draw conclusions.</p> <p><b>CO5:</b> Compute large sample, small sample tests and make inference about the phenomena.</p>
6	16ELE6D02L	SOLAR ENERGY LAB Discipline Elective-I	<p><b>CO1:</b> Demonstrate the working of instruments in electronics and RE laboratory.</p> <p><b>CO2:</b> Depict the technique of performance of the solar cell.</p> <p><b>CO3:</b> Measure the parameters of solar energy radiation.</p> <p><b>CO4:</b> Evaluate the performance of the different solar radiation working systems.</p>
6	16PHY6D1L2	MATERIALS SCIENCE LAB Discipline Elective-II	<p><b>CO1:</b> Understand the working principles of instruments used in experiment</p> <p><b>CO2:</b> Acquire the experimental skills in concepts like Energy band gap of materials, Permeability of materials, Fermi energy of materials and Dielectric constant of materials.</p> <p><b>CO3:</b> Analyze the results with observations and proper theory</p> <p><b>CO4:</b> Gain knowledge about application of the experiments</p>
6	16CS6D3L4	RELATIONAL DATABASE MANAGEMENT SYSTEM LAB Discipline Elective-III	<p><b>CO1:</b> Explain the data types, operators, and constraints in SQL and the general form of SQL commands</p> <p><b>CO2:</b> Write SQL queries for data definition/manipulation/alteration</p> <p><b>CO3:</b> Declare and enforce different constraints on a database</p> <p><b>CO4:</b> Write SQL queries to get information from two tables using join operations</p> <p><b>CO5:</b> Write SQL queries to create sub groups of tuples and apply aggregate functions to produce summary reports.</p>

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6	16MATH6G4 L1	INFERENCE THEORY – LAB GENERAL ELECTIVE-I	<p><b>CO1:</b> Describe the procedure to evaluate the mathematical expectation of discrete and continuous random variables.</p> <p><b>CO2:</b> Examine the collected sample and assess different probability distributions.</p> <p><b>CO3:</b> Test the collected sample (quantitative) and report the results based on small sample theory in statistics.</p> <p><b>CO4:</b> Test the sample and report the results based on large sample theory in statistics.</p> <p><b>CO5:</b> Test the sample and report the results based on non-parametric method (chi-square statistic) in statistics.</p>