**First Year I Semester**

| Sl.No. | Year | Semester | Regulation | Course Code | Course Name | | Course Outcomes |
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| 1 | First Year | First Sem | R 16 | PH103BS | course Name | 1 | Realize the importance of light phenomena in thin films and resolution |
| | | | | | | 2 | Learn principle, working of various laser systems and light propagation through optical fibers |
| | | | | | | 3 | Distinguish various crystal systems and understand automatic packing factor |
| | | | | | | 4 | Know the various defects in crystals |
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| 2 | First Year | First Sem | R 16 | MA101BS | Mathematics I | 1 | Write the matrix representation of a set of linear equations and to analyse the solutions of the system of equations |
| | | | | | | 2 | Find the Eigen values and Eigen Vectors which come across under lenear transformations |
| | | | | | | 3 | Find the extreme values of functions of two variables with or without constraints |
| | | | | | | 4 | Identify whether the given first order DE is exact or not |
| | | | | | | 5 | Solve higher order DE's and apply them for solving some real world problems |
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| 3 | First Year | First Sem | R 16 | CH102BS | Engineering Chemistry | 1 | Student will gain the basic knowledge of electro chemical procedures related to corrosion and its control |
| | | | | | | 2 | They can understand the basic properties of water and its usage in domestic and industrial purposes |
| | | | | | | 3 | They learn the use of fundamental principles to make predictions about the general properties of materials |
| | | | | | | 4 | They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs |

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| 4 | First Year | First Sem | R 16 | EN104HS | Professional Communication in English | 1 | Students will be proficient in skills related to Vocabulary, Grammar, Reading and Writing |
| | | | | | | 2 | Students will be able to study academic subjects more effectively using the theoretical and Practical components of English syllabus. |
| | | | | | | 3 | Students are well equipped in study skills and communication skills in formal and informal situations. |
| | | | | | | 4 | Use English Language effectively in spoken and written forms. |
| | | | | | | 5 | Comprehend the given texts and respond appropriately.C |
| | | | | | | 6 | Communicate confidently in formal and informal contexts |
| 5 | First Year | First Sem | R 16 | ME105ES | Engineering Mechanics | 1 | To understand resolving forces and moments for a given force system |
| | | | | | | 2 | To analyse the types of friction for moving bodies and problems related to friction |
| | | | | | | 3 | To determine the centroid and second moment of area |
| 6 | First Year | First Sem | R 16 | EE106ES | Basic Electrical and Electronics Engineering | 1 | To analyse and solve problems of electrical circuits using network laws and theroms |
| | | | | | | 2 | To identify and characterize diodes and various types of transistors |
| 7 | First Year | First Sem | R 16 | EN107HS | English Language Communication Skills Lab | 1 | To facilitate computer aided multimedia instruction enabling individualized and independent language learning |
| | | | | | | 2 | To sensitize the students to the nuances of english speech sounds, word accent, intonation and rhythm |
| | | | | | | 3 | To bring about consistent accent and intelligibility in their pronunciation of english by providing an opportunity to practice in speaking |
| | | | | | | 4 | To improve the fluency in spoken english and nuetralize the mother toungue influence |

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| | | | | | | 5 | To train students to use language appropriately for interview, group discussion and public speaking |
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| 8 | First Year | First Sem | R 16 | ME108ES | Engineering Workshop | 1 | Study and practice on machine tools and their operations |
| | | | | | | 2 | Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentering, foundry, house wiring and welding |
| | | | | | | 3 | Identify and apply suitable tools for different trades of engineering processess including drilling, material removing, measuring, chiseling |
| | | | | | | 4 | Apply basic electrical engineering knowledge for house wiring practice |
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| **First Year II Semester** | | | | | | | |
| 1 | First Year | Second Sem | R 16 | PH201BS | Engineering Physics II | 1 | Realize the importance of behavior of a particle quantum mechanically. |
| | | | | | | 2 | Learn concentration estimation of charge carriers in semi conductors. |
| | | | | | | 3 | Learn various magnetic dielectric properties and apply them in engineering applications. |
| | | | | | | 4 | Know the basic principles and applications of super conductors. |
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| 2 | First Year | Second Sem | R 16 | MA202BS | Mathematics II | 1 | Use Laplace transform techniques for solving DE's |
| | | | | | | 2 | Evaluate integrals using Beta and Gamma functions |
| | | | | | | 3 | Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space |
| | | | | | | 4 | Evaluate the line, surface and volume integrals and converting them from one to another |
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| 3 | First Year | Second Sem | R 16 | MA203BS | Mathematics III | 1 | Differentiate among random variables involved in the probability models which are useful for all branches of engineering |
| | | | | | | 2 | Calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a large data |
| | | | | | | 3 | Solve the tests of ANOVA for classified data |
| | | | | | | 4 | Find the root of a given equation and solution of a system of equations |
| | | | | | | 5 | Fit a curve for a given data |
| | | | | | | 6 | Find the numerical solutions for a given first order initial value problem |
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| 4 | First Year | Second Sem | R 16 | ME205ES | Engineering Graphics | 1 | Ability to prepare working drawings to communicate the ideas and information. |
| | | | | | | 2 | Ability to read, understand and interpret engineering drawings. |
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| 5 | First Year | Second Sem | R 16 | CS204ES | Computer Programming in C | 1 | Demonstrate the basic knowledge of computer hardware and software. |
| | | | | | | 2 | Ability to write algorithms for solving problems. |
| | | | | | | 3 | Ability to draw flowcharts for solving problems. |
| | | | | | | 4 | Ability to code a given logic in C programming language. |
| | | | | | | 5 | Gain knowledge in using C language for solving problems. |
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| 6 | First Year | Second Sem | R 16 | PH207BS | Engineering Physics Lab | 1 | Students can effectively use vernier calipers, various rules, meters, scales and other measuring devices to acquire measurements within the stated precision. |
| | | | | | | 2 | Student will use oscilloscopes and multimeters to construct a wide variety of electrical circuits and measure the properties of those circuits. |
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| 7 | First Year | Second Sem | R 16 | CH206BS | Engineering Chemistry Lab | 1 | At the end of the course, the students are able to determine: The hardness of water. |
| | | | | | | | The amount of metals like Copper and Iron in solutions. |
| | | | | | | | The amount of chloride ions in samples |
| | | | | | | | Viscosity of liquids. |
| | | | | | | | Strength of acids. |
| | | | | | | | The percentage of MnO 2 in ores. |
| | | | | | | 2 | The students are trained in using equipments like potentiometer, colorimeter, conductivity meter, viscometer for analysis. |
| | | | | | | 3 | The students are able to prepare polymers synthetically. |
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| 8 | First Year | Second Sem | R 16 | CS208ES | Computer Programming Lab | 1 | Ability to design and test programs to solve mathematical and scientific problems. |
| | | | | | | 2 | Ability to write structured programs using control structures and functions. |
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| **Second Year I Semester** | | | | | | | |
| 1 | Second Year | First Sem | R 16 | MA301BS | Mathematics IV | 1 | Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem |
| | | | | | | 2 | Find the Taylor's and Laurent's series expansion of complex functions |
| | | | | | | 3 | The bilinear transformation |
| | | | | | | 4 | Express any periodic function in term of sines and cosines |
| | | | | | | 5 | Express a non-periodic function as integral representation |
| | | | | | | 6 | Analyze one dimensional wave and heat equation |
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| 2 | Second Year | First Sem | R 16 | CS303ES | Mathematical Foundations of | 1 | Ability to apply mathematical logic to solve problems. |
| | | | | | | 2 | Understand sets, relations, functions, and discrete structures. |

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| | | | | | Computer Science | 3 | Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. |
| | | | | | | 4 | Able to formulate problems and solve recurrence relations. |
| | | | | | | 5 | Able to model and solve real-world problems using graphs and trees. |
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| 3 | Second Year | First Sem | R 16 | CS304ES | Digital Logic Design | 1 | Able to understand number systems and codes. |
| | | | | | | 2 | Able to solve Boolean expressions using Minimization methods. |
| | | | | | | 3 | Able to design the sequential and combinational circuits. |
| | | | | | | 4 | Able to apply state reduction methods to solve sequential circuits. |
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| 4 | Second Year | First Sem | R 16 | CS305ES | Object Oriented Programming through Java | 1 | Able to solve real world problems using OOP techniques. |
| | | | | | | 2 | Able to understand the use of abstract classes. |
| | | | | | | 3 | Able to solve problems using java collection framework and I/o classes. |
| | | | | | | 4 | Able to develop multithreaded applications with synchronization. |
| | | | | | | 5 | Able to develop applets for web applications. |
| | | | | | | 6 | Able to design GUI based applications |
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| 5 | Second Year | First Sem | R 16 | CS302ES | Data Structures through C ++ | 1 | Able to identify the appropriate data structures and algorithms for solving real world problems |
| | | | | | | 2 | Able to implement various kinds of searching and sorting techniques. |
| | | | | | | 3 | Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems. |
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| 6 | Second Year | First Sem | R 16 | CS307ES | IT Workshop | 1 | Apply knowledge for computer assembling and software installation. |

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| | | | | | | 2 | Ability how to solve the trouble shooting problems. |
| | | | | | | 3 | Apply the tools for preparation of PPT, Documentation and budget sheet etc. |
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| 7 | Second Year | First Sem | R 16 | CS308ES | Object Oriented Programming through Java Lab | 1 | Able to write programs for solving real world problems using java collection frame work |
| | | | | | | 2 | Able to write programs using abstract classes. |
| | | | | | | 3 | Able to write multithreaded programs. |
| | | | | | | 4 | Able to write GUI programs using swing controls in Java. |
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| 8 | Second Year | First Sem | R 16 | CS306ES | Data Structures through C ++ Lab | 1 | Able to identify the appropriate data structures and algorithms for solving real world problems |
| | | | | | | 2 | Able to implement various kinds of searching and sorting techniques. |
| | | | | | | 3 | Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems. |
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| 9 | Second Year | First Sem | R 16 | MC300ES | Environmental Science and Technology | 1 | Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development |
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| **Second Year II Semester** | | | | | | | |
| 1 | Second Year | Second Sem | R 16 | CS401BS | Computer Organization | 1 | Able to understand the basic components and the design of CPU, ALU and Control Unit |
| | | | | | | 2 | Ability to understand memory hierarchy and its impact on computer cost/performance. |

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| | | | | | | 3 | Ability to understand the advantage of instruction level parallelism and pipelining for high performance Processor design. |
| | | | | | | 4 | Ability to understand the instruction set, instruction formats and addressing modes of 8086 |
| | | | | | | 5 | Ability to write assembly language programs to solve problems. |
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| 2 | Second Year | Second Sem | R 16 | CS402ES | Database Management Systems | 1 | Demonstrate the basic elements of a relational database management system. |
| | | | | | | 2 | Ability to identify the data models for relevant problems. |
| | | | | | | 3 | Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data. |
| | | | | | | 4 | Apply normalization for the development of application software. |
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| 3 | Second Year | Second Sem | R 16 | CS403ES | Operating Systems | 1 | Apply optimization techniques for the improvement of system performance. |
| | | | | | | 2 | Ability to design and solve synchronization problems. |
| | | | | | | 3 | Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible. |
| | | | | | | 4 | Ability to change access controls to protect files. |
| | | | | | | 5 | Ability to compare the different operating systems. |
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| 4 | Second Year | Second Sem | R 16 | CS404ES | Formal Languages and Automata Theory | 1 | Able to understand the concept of abstract machines and their power to recognize the languages |
| | | | | | | 2 | Able to employ finite state machines for modeling and solving computing problems |
| | | | | | | 3 | Able to design context free grammars for formal languages. |
| | | | | | | 4 | Able to distinguish between decidability and undecidability. |

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| | | | | | | 5 | Able to gain proficiency with mathematical tools and formal methods. |
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| 5 | Second Year | Second Sem | R 16 | SM405MS | Business Economics and Financial Analysis | 1 | The students will understand the various Forms of Business and the impact of economic variables on the Business. |
| | | | | | | 2 | The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. |
| | | | | | | 3 | The Students can study the firm's financial position by analysing the Financial Statements of a Company. |
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| 6 | Second Year | Second Sem | R 16 | CS406ES | Computer Organization Lab | 1 | Students will learn to unit ALP for different tasks based on architecture of 8086. |
| | | | | | | 2 | Students will design Digital logic circuit using Ics |
| | | | | | | 3 | They will verify the functionally of combinational and sequential circuits |
| | | | | | | 4 | Students will verify string manipulation practically through programs |
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| 7 | Second Year | Second Sem | R 16 | CS407ES | Database Management Systems Lab | 1 | Ability to design and implement a database schema for given problem. |
| | | | | | | 2 | Apply the normalization techniques for development of application software to realistic problems |
| | | | | | | 3 | Ability to formulate queries using SQL DML/DDL/DCL commands. |
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| 8 | Second Year | Second Sem | R 16 | CS408ES | Operating Systems Lab | 1 | Ability to develop application programs using system calls in Unix. |
| | | | | | | 2 | Ability to implement interprocess communication between two processes. |
| | | | | | | 3 | Ability to design and solve synchronization problems. |

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| | | | | | | 4 | Ability to simulate and implement operating system concepts such as scheduling, deadlock management, file management, and memory management. |
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| 9 | Second Year | Second Sem | R 16 | MC400HS | Gender Sensitization Lab | 1 | Students will have developed a better understanding of important issues related to gender in contemporary India. |
| | | | | | | 2 | Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film. |
| | | | | | | 3 | Students will attain a finer grasp of how gender discrimination works in our society and how to counter it. |
| | | | | | | 4 | Students will acquire insight into the gendered division of labour and its relation to politics and economics. |
| | | | | | | 5 | Men and women students and professionals will be better equipped to work and live together as equals. |
| | | | | | | 6 | Students will develop a sense of appreciation of women in all walks of life. |
| | | | | | | 7 | Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence. |