

First Year I Semester

Sl.No.	Year	Semester	Regulation	Course Code	Course Name		Course Outcomes
1	First Year	First Sem	R 16	PH103BS	Engineering Physics I	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
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 linear 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
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
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 theorems
						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 neutralize the mother tongue influence
						5	To train students to use language appropriately for interview, group discussion and public speaking
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 processes including drilling, material removing, measuring, chiseling
						4	Apply basic electrical engineering knowledge for house wiring practice
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.
2	First Year	Second	R 16	MA202BS	Mathematics II	1	Use Laplace transform techniques for solving DE's

		Sem				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
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
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.
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.
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.
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.
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.
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
2	Second Year	First Sem	R 16	CS303ES	Mathematical Foundations of Computer Science	1	Ability to apply mathematical logic to solve problems.
						2	Understand sets, relations, functions, and discrete structures.
						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.
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.
4	Second	First Sem	R 16	CS305ES	Object Oriented	1	Able to solve real world problems using OOP

	Year				Programming through Java		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
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.
6	Second Year	First Sem	R 16	CS307ES	IT Workshop	1	Apply knowledge for computer assembling and software installation.
						2	Ability how to solve the trouble shooting problems.
						3	Apply the tools for preparation of PPT, Documentation and budget sheet etc.
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.
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.
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
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.
						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.
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.
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.
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.
						5	Able to gain proficiency with mathematical tools and formal methods.
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.
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 lcs
						3	They will verify the functionality of combinational and sequential circuits
						4	Students will verify string manipulation practically through programs
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/DDI/DCL commands.
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.
						4	Ability to simulate and implement operating system concepts such as scheduling, deadlock management, file management, and memory management.
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.

First Year

Sl.No.	Year	Semester	Regulation	Course Code	Course Name		Course Outcomes
1	First Year	NA	R 15	A10001	English	1	Usage of english language written and spoken
						2	Enrichment of comprehension and fluency
						3	Gaining confidence in using language in verbal situation
2	First Year	NA	R 15	A10002	Mathematics I	1	Student is able to write the matrix representation of a set of linear equations and to analyse solutions of system of equations
						2	The student will be able to understand the methods of differential calculus to optimise single and multi

						variable functions
						3 Student to able to evaluate multiple integrals and can apply the concepts to find the areas, volumes, moment of inertia etc of regions on a plane or in space
						4 Student is able to identify the types of differential equation and uses right method to solve the differential equation and also apply the theory of differential equation to real world problems
						5 Student is able to solve certain differential equations using Laplace transform and also able to transform functions on time domain to frequency domain using Laplace transform
3	First Year	NA	R 15	A10003	Mathematical Methods	1 After studying this unit one will be able to find a root of a given equation and will be able to find a numerical solution for a given differential equation.
						2 Helps in describing the system by an ODE, if possible. Also, suggests to find the solution as a first approximation.
						3 One will be able to find the expansion of a given function by Fourier series and Fourier Transform of the function
						4 Helps in phase Transformation, Phase change and attenuation of coefficients in acoustics.
						5 After studying this unit, one will be able to find a corresponding Partial Differential Equation for an unknown function with many independent variables and to find their solution.
						6 Most of the problems in physical and engineering applications, problems are highly nonlinear and hence expressing them as PDEs Hence

							understanding the nature of the equation and finding a suitable solution is very much essential.
						7	After studying this unit, one will be able to evaluate multiple integrals (line, surface, volume integrals) and convert line integrals to area integrals and surface integrals to volume integrals.
						8	It is an essential requirement for an engineer to understand the behavior of the physical system.
4	First Year	NA	R 15	A10004	Engineering Physics	1	The student would be able to learn the fundamental concepts on behavior of crystalline solids.
						2	The knowledge on Fundamentals of Quantum Mechanics, Statistical Mechanics enables the student to apply to various systems like Communications Solar Cells, Photo Cells and so on.
						3	Design, Characterization and study of properties of materials help the student to prepare new materials for various Engineering applications.
						4	This course also helps the student exposed to non destructive testing methods.
						5	Finally, Engineering Physics Course helps the student to develop problem solving skills and analytical skills.
5	First Year	NA	R 15	A10005	Engineering Chemistry	1	Students will demonstrate a depth of knowledge and apply the methods of inquiry in a discipline of their choosing, and they will demonstrate a breadth of knowledge across their choice of varied disciplines.
						2	Students will demonstrate the ability to access and interpret information, respond and adapt to changing situations, make complex decisions, solve

							problems, and evaluate actions.
6	First Year	NA	R 15	A10501	Computer Programming	1	Demonstrate the basic knowledge of computer hardware and software.
						2	Ability to apply solving and logical skills to programming in C language and also in other languages.
7	First Year	NA	R 15	A10301	Engineering Drawing	1	Ability to prepare working drawings to communicate the ideas and information.
						2	Ability to read, understand and interpret engineering drawings.
8	First Year	NA	R 15	A10081	Engineering Physics Lab	1	The student is exposed to learn from this laboratory, the concept of error and its analysis
						2	It also allows the students to develop experimental skills to design new experiments in engineering
						3	With the exposure to these experiments the student can compare the theory and co-relate with the experiment
9	First Year	NA	R 15	A10081	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.
10	First Year	NA	R 15	A10083	English Language Communication Skills Lab	1	Better Understanding of nuances of language through audio visual experience and group activities
						2	Neutralization of accent for intelligibility
						3	Speaking with clarity and confidence thereby enhancing employability skills of the students.
11	First Year	NA	R 15	A10082	IT Workshop	1	Apply knowledge for computer assembling and software installation.
						2	Ability how to solve the trouble shooting problems.
						3	Apply the tools for preparation od PPT, Documentation budget sheet etc.
12	First Year	NA	R 15	A10082	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
13	First Year	NA	R 15	A10581	Computer Programming Lab	1	Ability to understand, design, implement, and find the output of simple C programs.
						2	Ability to understand and practice modular programming using functions.

						3	Ability to easily learn new programming languages such as C++ and Java.
						4	Ability to implement data structures for creating efficient programs.
Second Year I Semester							
1	Second Year	First Sem	R 15	A30008	Probability and Statistics	1	Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuits as well as non circuit branches of engineering. Also able to differentiate among many random variable involved in the probability models. It is quite useful for all branches of engineering.
						2	The student would be able to calculate mean and proportions (small and large sample) and to make important decisions from few samples which are taken out of unmanagably huge populations. It is Mainly useful for noncircuit branches of engineering.
						3	The students would be able to find the expected queue length, the ideal time, the traffic intensity and the waiting time. These are very useful tools in many engineering and data management problems in industry. It is useful for all branches of engineering.
						4	The student would be able to understand about the random process, Markov process and Markov chains which are essentially models of many time dependent processes such as signals in communications, time series analysis, queuing systems. The student would be able to find the limiting probabilities and the probabilities in n th state.

5	Second Year	First Sem	R 15	A30502	Data Structures	1	Learn how to use data structure concepts for realistic problems.
						2	Ability to identify appropriate data structure for solving computing problems in respective language
						3	Ability to solve problems independently and think critically
6	Second Year	First Sem	R 15	A30202	Basic Electrical Engineering	1	Ability to apply relevant mathematical, scientific, and basic engineering knowledge
						2	Ability to apply core electrical engineering technical knowledge.
						3	Ability to apply the skills and concepts within one or more of the specializations within the electrical engineering program.
						4	Ability to engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues.
7	Second Year	First Sem	R 15	A30282	Electrical and Electronics Lab	1	Read and interpret electrical diagrams and blueprints.
						2	Apply principles of mathematics and applied science to perform the laws encountered with electrical technology.
						3	Diagnose and correct electrical and electronic problems effectively using various testing instruments.
						4	Design and analyze systems in residential, commercial, and industrial buildings that meet all codes and regulations as defined by OSHA standards.
8	Second	First Sem	R 15	A30582	Data Structures Lab	1	Ability to identify the appropriate data structure for

	Year						given problem
						2	Graduate able to design and analyze the time and space complexity of algorithm or program
						3	Ability to effectively use compilers includes library functions, debuggers and trouble shooting
Second Year II Semester							
1	Second Year	Second Sem	R 15	A40511	Principles of Programming Languages	1	Ability to express syntax and semantics in formal notation.
						2	Ability to apply suitable programming paradigm for the application.
						3	Gain knowledge and comparison of the features programming languages.
2	Second Year	Second Sem	R 15	A40507	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.
3	Second Year	Second Sem	R 15	A40503	Java Programming	1	Understanding of OOP concepts and basics of Java programming (Console and GUI based).
						2	The skills to apply OOP and Java programming in problem solving.
						3	Should have the ability to extend his/her knowledge of Java programming further on

							his/her own.
4	Second Year	Second Sem	R 15	A40009	Environmental Studies	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.
5	Second Year	Second Sem	R 15	A40409	Data Communications	1	Student will know the functioning of various ways of different communication system
						2	Student will be in a position to understand practically the working mechanism of telephone, satellite and other communication system
6	Second Year	Second Sem	R 15	A40508	Design and Analysis of Algorithm	1	Be able to analyze algorithms and improve the efficiency of algorithms.
						2	Apply different designing methods for development of algorithms to realistic problems, such as divide and conquer, greedy and etc. Ability to understand and estimate the performance of algorithm.
7	Second Year	Second Sem	R 15	A40584	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/DDI/DCL commands.
8	Second Year	Second Sem	R 15	A40585	Java Programming Lab	1	Basics of java programming, multi-threaded programs and Exception handling.

						2	The skills to apply OOP in Java programming in problem solving.
						3	Ability to access data from a DB with Java programs.
9	Second Year	Second Sem	R 15		Gender Sensitization	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.
Third Year I Semester							
1	Third Year	First Sem	R 15	A50513	Automata and Compiler Design	1	Student should be able to understand the concept of abstract machines and their power to recognise the

							languages
						2	Attains the knowledge of language classes and grammars relationship among them with help of Chomsky Hierarchy
						3	Ability to understand the design of compiler, given features of the languages
						4	Ability to implement practical aspects of automata theory
						5	Gain knowledge of powerful compiler generation tools
2	Third Year	First Sem	R 15	A50517	Linux Programming	1	Work confidently in Linux environment.
						2	Work with shell script to automate different tasks as Linux administration.
3	Third Year	First Sem	R 15	A50518	Software Engineering	1	Ability to identify the minimum requirements for the development of application.
						2	Ability to develop, maintain, efficient, reliable and cost effective software solutions.
						3	Ability to critically thinking and evaluate assumptions and arguments.
4	Third Year	First Sem	R 15	A50510	Operating Systems	1	Apply optimization techniques for the improvement of system performance.
						2	Ability to understand the synchronous and asynchronous communication mechanisms in their respective OS.
						3	Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput with keeping CPU as busy as possible.
						4	Ability to compare the different OS

5	Third Year	First Sem	R 15	A50515	Computer Networks	1	Students should be understand and explore the basics of Computer Networks and Various Protocols. He/She will be in a position to understand the World Wide Web concepts.
						2	Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile, and adhoc networks.
6	Third Year	First Sem	R 15	A50010	Managerial Economics and Financial Analysis	1	Understand the market dynamics namely, demand and supply, demand forecasting, lasticity of demand and supply, pricing methods and pricing in different market structures.
						2	Gain an insight into how production function is carried out to achieve least cost combination of inputs and cost analysis.
						3	Develop an understanding of
						4	Analyse how capital budgeting decisions are carried out.
						5	Understanding the framework for both manual and computerised accounting process
						6	Know how to analyse and interpret the financial statements through ratio analysis.
7	Third Year	First Sem	R 15	A50589	Operating Systems Lab	1	The course objectives ensure the development of students applied skills in operating systems related areas.
						2	Students will gain knowledge in writing software routines modules or implementing various concepts of operating system.
8	Third	First Sem	R 15	A50588	Computer Network	1	Ability to understand the encryption and decryption

						3	
						4	
						5	
5	Third Year	Second Sem	R 15	A60524	Object Oriented Analysis and Design	1	Graduate can able to take up the case studies and model it in different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Library application.
6	Third Year	Second Sem	R 15	A60520	Datawarehousing and Data Mining	1	Student should be able to understand why the data warehouse in addition to database systems.
						2	Ability to perform the preprocessing of data apply mining techniques on it.
						3	Ability to identify the association rules, classification and clusters in large data sets.
						4	Ability to solve world problems in business and scientific information using data mining
7	Third Year	Second Sem	R 15	A60525	Software Testing Methodologies	1	Ability to identify the minimum requirements for the development of application.
						2	Ability to develop, maintain, efficient, reliable and cost effective software solutions.
						3	Ability to critically thinking and evaluate assumptions and arguments.
8	Third Year	Second Sem	R 15	A60519	Cloud Computing	1	Introduce the broad perspective of cloud architecture and model
						2	Apply different cloud programming model as per need.

						3	Explore some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications
9	Third Year	Second Sem	R 15	A60592	Data Mining and Web Technologies Lab	1	Ability to use LAMP Stack for web applications
						2	Able to use Tomcat Server for servlets and JSPs
						3	Ability to write simple applications with technologies like HTML, JAVA Script, AJAX, PHP, Servlets and JSPs
						4	Able to connect to database and get results
						5	Parse XML files using Java (DOM and SAX Parsers)
10	Third Year	Second Sem	R 15	A60086	Advanced Communications Skills Lab	1	Accomplishment of sound vocabulary and its proper use contextually.
						2	Flair in Writing and felicity in written expression.
						3	Enhanced job prospects.
						4	Effective Speaking Abilities.
Fourth Year I Semester							
1	Fourth Year	First Sem	R 15	A70522	Information Security	1	Students will be able to understand basic cryptographic algorithms, message and web authentication and web authentication and security issues.
						2	Ability to identify information system requirements for both of them such as client and server
						3	Ability to understand the current legal issues towards information security.
2	Fourth Year	First Sem	R 15	A70530	Design Patterns	1	Ability to understand and apply common design patterns to incremental / iterative development.

						2	Ability to identify appropriate pattern for design of given problem
3	Fourth Year	First Sem	R 15	A70535	Mobile Application Development	1	Ability to evaluate and select appropriate solutions to mobile computing platform
						2	Ability to develop the user interface
						3	Ability to design a simple mobile game
4	Fourth Year	First Sem	R 15	A70533	Information Retrieval Systems	1	Possess the ability to store and retrieve textual documents using appropriate models.
						2	Possess the ability to use the various retrieval utilities for improving search.
						3	Possess an understanding of indexing and compressing documents to improve space and time efficiency.
						4	Possess the skill to formulate SQL like queries for unstructured data.
						5	Understand issues in web search
5	Fourth Year	First Sem	R 15	A70541	Wireless Networks and Mobile Computing	1	Ability to understand the strengths and limitations of mobile / wireless networks
						2	Ability to design and analyse the performance of location update algorithm for cellular networks
6	Fourth Year	First Sem	R 15	A70532	Image Processing and Pattern Recognition	1	Ability to apply computer algorithm to practical problems.
						2	Ability to image segmentation recognition and restoration.
						3	Ability to perform the classification of patterns.
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						2	Students should be able to understand the concept of artificial neural networks, fuzzy arithmetic and fuzzy logic with their day to day applications.
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						2	Understand the mathematical tools that are needed to solve optimization problems.
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Fourth Year II							

Semester							
1	Fourth Year	Second Sem	R 15	A80014	Management Science	1	Plan an organizational structure for a given context in the organization carry out production operations through Work study.
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						3	Understand the markets, customers and competetion better and price the given products appropriately.
						4	Ensure quality for a given product or service.
						5	Plan and control the HR function better.
						6	Plan, schedule and control projects through PERT and CPM.
						7	Evolve a strategy for a business or service organization.
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						2	Implement WS client and server with interoperable systems.
3	Fourth Year	Second Sem	R 15	A80544	E-commerce	1	Ability to identify the business relationships between the organizations and their customers
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						2	Ability to create simple interface between the software and hardware
5	Fourth Year	Second Sem	R 15	A80542	Adhoc Sensor Networks	1	Ability to understand the concept of adhoc and sensor networks.

						2	Ability to design and implement sensor network protocols
						3	Ability to set up and evaluate measurements of protocol performance in sensor networks.
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						2	Ability to formulate machine learning techniques to

							respective problems
						3	Apply machine learning algorithms to solve problems of moderate complexity.

First Year

Sl.No.	Year	Semester	Regulation	Course Code	Course Name		Course Outcomes
1	First Year	NA	R 13	A10001	English	1	Usage of english language written and spoken
						2	Enrichment of comprehension and fluency
						3	Gaining confidence in using language in verbal situation
2	First Year	NA	R 13	A10002	Mathematics I	1	Student is able to write the matrix representation of a set of linear equations and to analyse solutions of system of equations
						2	The student will be able to understand the methods of differential calculus to optimise single and multi variable functions
						3	Student to able to evaluate multiple integrals and can apply the concepts to find the areas, volumes, moment of inertia etc of regions on a plane or in space
						4	Student is able to identify the types of differential equation and uses right method to solve the differential equation and also apply the theory of differential equation to real world problems
						5	Student is able to solve certain differential equations using Laplace transform and also able to transform functions on time domain to frequency domain using Laplace transform
3	First Year	NA	R 13	A10003	Mathematical Methods	1	After studying this unit one will be able to find a root of a given equation and will be able to find a numerical solution for a given differential equation.

						2	Helps in describing the system by an ODE, if possible. Also, suggests to find the solution as a first approximation.
						3	One will be able to find the expansion of a given function by Fourier series and Fourier Transform of the function
						4	Helps in phase Transformation, Phase change and attenuation of coefficients in acoustics.
						5	After studying this unit, one will be able to find a corresponding Partial Differential Equation for an unknown function with many independent variables and to find their solution.
						6	Most of the problems in physical and engineering applications, problems are highly nonlinear and hence expressing them as PDEs Hence understanding the nature of the equation and finding a suitable solution is very much essential.
						7	After studying this unit, one will be able to evaluate multiple integrals (line, surface, volume integrals) and convert line integrals to area integrals and surface integrals to volume integrals.
						8	It is an essential requirement for an engineer to understand the behavior of the physical system.
4	First Year	NA	R 13	A10004	Engineering Physics	1	The student would be able to learn the fundamental concepts on behavior of crystalline solids.
						2	The knowledge on Fundamentals of Quantum Mechanics, Statistical Mechanics enables the student to apply to various systems like Communications Solar Cells, Photo Cells and so on.
						3	Design, Characterization and study of properties of materials help the student to prepare new materials for various Engineering applications.

						4	This course also helps the student exposed to non destructive testing methods.
						5	Finally, Engineering Physics Course helps the student to develop problem solving skills and analytical skills.
5	First Year	NA	R 13	A10005	Engineering Chemistry	1	Students will demonstrate a depth of knowledge and apply the methods of inquiry in a discipline of their choosing, and they will demonstrate a breadth of knowledge across their choice of varied disciplines.
						2	Students will demonstrate the ability to access and interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.
6	First Year	NA	R 13	A10501	Computer Programming	1	Demonstrate the basic knowledge of computer hardware and software.
						2	Ability to apply solving and logical skills to programming in C language and also in other languages.
7	First Year	NA	R 13	A10301	Engineering Drawing	1	Ability to prepare working drawings to communicate the ideas and information.
						2	Ability to read, understand and interpret engineering drawings.
8	First Year	NA	R 13	A10081	Engineering Physics Lab	1	The student is exposed to learn from this laboratory, the concept of error and its analysis
						2	It also allows the students to develop experimental skills to design new experiments in engineering
						3	With the exposure to these experiments the student can compare the theory and co-relate with the experiment

9	First Year	NA	R 13	A10081	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.						
10	First Year	NA	R 13	A10083	English Language Communication Skills Lab	1	Better Understanding of nuances of language through audio visual experience and group activities	
							2	Neutralization of accent for intelligibility
							3	Speaking with clarity and confidence thereby enhancing employability skills of the students.
11	First Year	NA	R 13	A10082	IT Workshop	1	Apply knowledge for computer assembling and software installation.	
							2	Ability how to solve the trouble shooting problems.
							3	Apply the tools for preparation od PPT, Documentation budget sheet etc.
12	First Year	NA	R 13	A10082	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 processes including drilling, material removing, measuring, chiseling
						4	Apply basic electrical engineering knowledge for house wiring practice
13	First Year	NA	R 13	A10581	Computer Programming Lab	1	Ability to understand, design, implement, and find the output of simple C programs.
						2	Ability to understand and practice modular programming using functions.
						3	Ability to easily learn new programming languages such as C++ and Java.
						4	Ability to implement data structures for creating efficient programs.
Second Year I Semester							
1	Second Year	First Sem	R 13	A30008	Probability and Statistics	1	Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuits as well as non circuit branches of engineering. Also able to differentiate among many random variable involved in the probability models. It is quite useful for all branches of engineering.
						2	The student would be able to calculate mean and proportions (small and large sample) and to make important decisions from few samples which are taken out of unmanagably huge populations. It is Mainly useful for noncircuit branches of engineering.
						3	The students would be able to find the expected queue length, the ideal time, the traffic intensity and the waiting time. These are very useful tools in many engineering and data management problems in industry. It is useful for all branches of engineering.

						4	The student would be able to understand about the random process, Markov process and Markov chains which are essentially models of many time dependent processes such as signals in communications, time series analysis, queuing systems. The student would be able to find the limiting probabilities and the probabilities in n^{th} state.
2	Second Year	First Sem	R 13	A30504	Mathematical Foundations of Computer Science	1	Ability to illustrate by examples the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.
						2	Ability to demonstrate in practical applications the use of basic counting principles of permutations, combinations, inclusion/exclusion principle and the pigeonhole methodology.
						3	Ability to represent and apply theory in solving computer science problems.
3	Second Year	First Sem	R 13	A30402	Digital Logic Design and Computer Organization	1	After this course student could be able to design, understand the number systems, combinational sequential circuits. And they should be in a position to continue with computer organization
						2	Student could be able to design, understand the number systems, combinational sequential circuits. And they should be in a position to continue with computer organization.
						3	Students understand in a better way the I/O and memory organization in depth. They should be in a position to write assembly language programs for various applications.

4	Second Year	First Sem	R 13	A30404	Electronic Devices and Circuits	1	Understand and Analyse the different types of diodes, operation and its characteristics.
						2	Design and analyse the DC bias circuitry of BJT and FET.
						3	Design biasing circuits using diodes and transistors.
						4	To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.
5	Second Year	First Sem	R 13	A30502	Data Structures	1	Learn how to use data structure concepts for realistic problems.
						2	Ability to identify appropriate data structure for solving computing problems in respective language
						3	Ability to solve problems independently and think critically
6	Second Year	First Sem	R 13	A30202	Basic Electrical Engineering	1	Ability to apply relevant mathematical, scientific, and basic engineering knowledge
						2	Ability to apply core electrical engineering technical knowledge.
						3	Ability to apply the skills and concepts within one or more of the specializations within the electrical engineering program.
						4	Ability to engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues.
7	Second Year	First Sem	R 13	A30282	Electrical and Electronics Lab	1	Read and interpret electrical diagrams and blueprints.
						2	Apply principles of mathematics and applied science to perform the laws encountered with electrical technology.

						3	Diagnose and correct electrical and electronic problems effectively using various testing instruments.
						4	Design and analyze systems in residential, commercial, and industrial buildings that meet all codes and regulations as defined by OSHA standards.
8	Second Year	First Sem	R 13	A30582	Data Structures Lab	1	Ability to identify the appropriate data structure for given problem
						2	Graduate able to design and analyze the time and space complexity of algorithm or program
						3	Ability to effectively use compilers includes library functions, debuggers and trouble shooting
Second Year II Semester							
1	Second Year	Second Sem	R 13	A40511	Principles of Programming Languages	1	Ability to express syntax and semantics in formal notation.
						2	Ability to apply suitable programming paradigm for the application.
						3	Gain knowledge and comparison of the features programming languages.
2	Second Year	Second Sem	R 13	A40507	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.
3	Second Year	Second Sem	R 13	A40503	Java Programming	1	Understanding of OOP concepts and basics of Java programming (Console and GUI based).
						2	The skills to apply OOP and Java programming in problem solving.
						3	Should have the ability to extend his/her knowledge of Java programming further on his/her own.
4	Second Year	Second Sem	R 13	A40009	Environmental Studies	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.
5	Second Year	Second Sem	R 13	A40409	Data Communications	1	Student will know the functioning of various ways of different communication system
						2	Student will be in a position to understand practically the working mechanism of telephone, satellite and other communication system
6	Second Year	Second Sem	R 13	A40508	Design and Analysis of Algorithm	1	Be able to analyze algorithms and improve the efficiency of algorithms.
						2	Apply different designing methods for development of algorithms to realistic problems, such as divide and conquer, greedy and etc. Ability to understand and estimate the performance of algorithm.
7	Second Year	Second Sem	R 13	A40584	Database Management	1	Ability to design and implement a database schema for given problem.

					Systems Lab	2	Apply the normalization techniques for development of application software to realistic problems
						3	Ability to formulate queries using SQL DML/DDDL/DCL commands.
8	Second Year	Second Sem	R 13	A40585	Java Programming Lab	1	Basics of java programming, multi-threaded programs and Exception handling.
						2	The skills to apply OOP in Java programming in problem solving.
						3	Ability to access data from a DB with Java programs.
Third Year I Semester							
1	Third Year	First Sem	R 13	A50513	Automata and Compiler Design	1	Student should be able to understand the concept of abstract machines and their power to recognise the languages
						2	Attains the knowledge of language classes and grammars relationship among them with help of Chomsky Hierarchy
						3	Ability to understand the design of compiler, given features of the languages
						4	Ability to implement practical aspects of automata theory
						5	Gain knowledge of powerful compiler generation tools
2	Third Year	First Sem	R 13	A50517	Linux Programming	1	Work confidently in Linux environment.
						2	Work with shell script to automate different tasks as Linux administration.
3	Third	First Sem	R 13	A50518	Software Engineering	1	Ability to identify the minimum requirements for the

	Year						development of application.
						2	Ability to develop, maintain, efficient, reliable and cost effective software solutions.
						3	Ability to critically thinking and evaluate assumptions and arguments.
4	Third Year	First Sem	R 13	A50510	Operating Systems	1	Apply optimization techniques for the improvement of system performance.
						2	Ability to understand the synchronous and asynchronous communication mechanisms in their respective OS.
						3	Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput with keeping CPU as busy as possible.
						4	Ability to compare the different OS
5	Third Year	First Sem	R 13	A50515	Computer Networks	1	Students should be understand and explore the basics of Computer Networks and Various Protocols. He/She will be in a position to understand the World Wide Web concepts.
						2	Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile, and adhoc networks.
6	Third Year	First Sem	R 13	A50010	Managerial Economics and Financial Analysis	1	Understand the market dynamics namely, demand and supply, demand forecasting, lasticity of demand and supply, pricing methods and pricing in different market structures.
						2	Gain an insight into how production function is carried out to achieve least cost combination of inputs and cost analysis.

2	Third Year	Second Sem	R 13	A60018	Human Values and Professional Ethics	1	
						2	
						3	
						4	
						5	
3	Third Year	Second Sem	R 13	A60017	Intellectual Property Rights	1	
						2	
						3	
						4	
						5	
4	Third Year	Second Sem	R 13	A60117	Disastar Management	1	
						2	
						3	
						4	
						5	
5	Third Year	Second Sem	R 13	A60524	Object Oriented Analysis and Design	1	Graduate can able to take up the case studies and model it in different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Library application.
6	Third Year	Second Sem	R 13	A60520	Datawarehousing and Data Mining	1	Student should be able to understand why the data warehouse in addition to database systems.
						2	Ability to perform the preprocessing of data apply mining techniques on it.
						3	Ability to identify the association rules, classification

							and clusters in large data sets.
						4	Ability to solve world problems in business and scientific information using data mining
7	Third Year	Second Sem	R 13	A60525	Software Testing Methodologies	1	Ability to identify the minimum requirements for the development of application.
						2	Ability to develop, maintain, efficient, reliable and cost effective software solutions.
						3	Ability to critically thinking and evaluate assumptions and arguments.
8	Third Year	Second Sem	R 13	A60519	Cloud Computing	1	Introduce the broad perceptive of cloud architecture and model
						2	Apply different cloud programming model as per need.
						3	Explore some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other businesses cloud applications
9	Third Year	Second Sem	R 13	A60592	Data Mining and Web Technologies Lab	1	Ability to use LAMP Stack for web applications
						2	Able to use Tomcat Server for servlets and JSPs
						3	Ability to write simple applications with technologies like HTML, JAVA Script, AJAX, PHP, Servelets and JSPs
						4	Able to connect to database and get results
						5	Par XML files using Java (DOM and SAX Parsers)
10	Third Year	Second Sem	R 13	A60086	Advanced Communications Skills Lab	1	Accomplishment of sound vocabulary and its proper use contextually.
						2	Flair in Writing and felicity in written expression.
						3	Enhanced job prospects.

						4	Effective Speaking Abilities.
Fourth Year I Semester							
1	Fourth Year	First Sem	R 13	A70522	Information Security	1	Students will be able to understand basic cryptographic algorithms, message and web authentication and web authentication and security issues.
						2	Ability to identify information system requirements for both of them such as client and server
						3	Ability to understand the current legal issues towards information security.
2	Fourth Year	First Sem	R 13	A70530	Design Patterns	1	Ability to understand and apply common design patterns to incremental / iterative development.
						2	Ability to identify appropriate pattern for design of given problem
3	Fourth Year	First Sem	R 13	A70535	Mobile Application Development	1	Ability to evaluate and select appropriate solutions to mobile computing platform
						2	Ability to develop the user interface
						3	Ability to design a simple mobile game
4	Fourth Year	First Sem	R 13	A70533	Information Retrieval Systems	1	Possess the ability to store and retrieve textual documents using appropriate models.
						2	Possess the ability to use the various retrieval utilities for improving search.
						3	Possess an understanding of indexing and compressing documents to improve space and time efficiency.
						4	Possess the skill to formulate SQL like queries for unstructured data.

						5	Understand issues in web search
5	Fourth Year	First Sem	R 13	A70541	Wireless Networks and Mobile Computing	1	Ability to understand the strengths and limitations of mobile / wireless networks
						2	Ability to design and analyse the performance of location update algorithm for cellular networks
6	Fourth Year	First Sem	R 13	A70532	Image Processing and Pattern Recognition	1	Ability to apply computer algorithm to practical problems.
						2	Ability to image segmentation recognition and restoration.
						3	Ability to perform the classification of patterns.
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						3	Ability to design Web application using J2ME.
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1	Fourth Year	Second Sem	R 13	A80014	Management Science	1	Plan an organizational structure for a given context in the organization carry out production operations through Work study.
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						4	Ensure quality for a given product or service.
						5	Plan and control the HR function better.
						6	Plan, schedule and control projects through PERT and CPM.
						7	Evolve a strategy for a business or service organization.

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						2	Implement WS client and server with interoperable systems.
3	Fourth Year	Second Sem	R 13	A80544	E-commerce	1	Ability to identify the business relationships between the organizations and their customers
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4	Fourth Year	Second Sem	R 13	A80546	Middleware Technologies	1	Ability to design the integrated system with different softwares
						2	Ability to create simple interface between the software and hardware
5	Fourth Year	Second Sem	R 13	A80542	Adhoc Sensor Networks	1	Ability to understand the concept of adhoc and sensor networks.
						2	Ability to design and implement sensor network protocols
						3	Ability to set up and evaluate measurements of protocol performance in sensor networks.
6	Fourth Year	Second Sem	R 13	A80547	Multimedia and Rich Internet Applications	1	Ability to create and design rich internet applications.
						2	Ability to develop different multimedia tools to produce web based and independent user interfaces.
7	Fourth Year	Second Sem	R 13	A80526	Artificial Intelligence	1	Possess the ability to formulate an efficient problem space for a problem expressed in English.

						2	Possess the ability to select a search algorithm for a problem and characterize its time and space complexities.
						3	Possess the skill for representing knowledge using the appropriate technique.
						4	Possess the ability to apply AI techniques to solve problems of Game Playing, Expert Systems Machine Learning and Natural Language Processing.
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						3	Apply machine learning algorithms to solve problems of moderate complexity.