



RAMIREDDY SUBBARAMI REDDY ENGINEERING COLLEGE

(Approved by AICTE, Affiliated to JNTUA. An ISO 9001: 2015 Certified Institution)
NH-16, Kadanuthala, Bogole Mandal, Kavali- 524 142, S.P.S.R. Nellore, Andhra Pradesh.)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES

REGULATIONS – R20

Sem: I – I

S.No	Course Code	Course Name	Category	Hours per Week			Credits
				L	T	P	
01	20A54101	Linear Algebra and Calculus	BS	3	0	0	3
02	20A51101T	Chemistry	BS	3	0	0	3
03	20A05201T	C-Programming & Data Structures	ES	3	0	0	3
04	20A02101T	Basic Electrical & Electronics Engineering	ES	3	0	0	3
05	20A03202	Engineering Workshop	LC	0	0	3	1.5
06	20A05202	IT Workshop	LC	0	0	3	1.5
07	20A51101P	Chemistry Lab	BS	0	0	3	1.5
08	20A05201P	C-Programming & Data Structures s Lab	ES	0	0	3	1.5
09	20A02101P	Basic Electrical & Electronics Engineering Lab	ES	0	0	2	1.5
Total							19.5

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
I-I	20A54101	Linear Algebra and Calculus	4101.1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications (BTL6)
			4101.2	Utilize mean value theorems to real life problems (BTL3)
			4101.3	Identify the functions of several variables which is useful in optimization (BTL3)
			4101.4	Understand the two dimensional and Three-Dimensional Co-ordinate systems (BTL2)
			4101.5	Explain the Utilization of special functions. (BTL2)
I-I	20A51101T	Chemistry	1101T.1	Discuss the MOT, Apply Schrodinger wave equation to H. (BTL6)
			1101T.2	Demonstrate the application of Fullerene, CNT and Nano particles. (BTL2)
			1101T.3	Compare between pH metry, Potentiometry. (BTL2)
			1101T.4	Discuss about solid, liquid, gaseous fuels. (BTL6)
			1101T.5	Understand the principles of analytical instruments. (BTL2)
I-I	20A05201T	C-Programming & Data Structures	5201T.1	Apply the concept of arrays with asymptotic notations in building of different sorting technique. (BTL3)
			5201T.2	Apply string handling functions and pointers and analyze functions and storage classes. (BTL3)
			5201T.3	Analyze stacks and queues Data structures. (BTL4)
			5201T.4	Understand the concepts of linked lists. (BTL2)
			5201T.5	Apply various graph traversal methods to applications & design a hashing technique. (BTL3)
I-I	20A02101T	Basic Electrical & Electronics Engineering	2101T.1	Apply concepts of KVL/KCL in solving DC circuits. (BTL3)
			2101T.2	Understand and choose correct rating of a transformer for a specific application. (BTL2)



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			2101T.3	Identify type of electrical machine based on their operation. (BTL3)
			2101T.4	Design summing, differential differentiator & integrator using IC741. (BTL6)
			2101T.5	Analyse standard combinational and sequential circuits. Distinguish between 8085 & 8086 microprocessors also summarize features of a microprocessor. (BTL4)
I-I	20A03202	Engineering Workshop	3202.1	Apply wood working skills in real world applications. (BTL3)
			3202.2	Build different objects with metal sheets in real world applications. (BTL3)
			3202.3	Apply fitting operations in various applications. (BTL3)
			3202.4	Apply different types of basic electric circuit connections. (BTL3)
			3202.5	Understand how to use soldering and brazing techniques. (BTL2)
I-I	20A05202	IT Workshop	5202.1	Analyse the various internal parts of computer and its peripherals. (BT14)
			5202.2	Understand the Assembling and disassembling of PC. (BTL2)
			5202.3	Demonstrate the installation steps of OS and Linux. (BTL2)
			5202.4	Discuss the concepts of Networking, Internet and Antivirus. (BTL6)
			5202.5	Categorize the various Microsoft tools and documents using LAtex. (BTL4)
I-I	20A51101P	Chemistry Lab	1101P.1	Determine the cell constant and conduct of the solutions. (BTL5)
			1101P.2	Estimate the ferrous iron and Strength of an acid in battery. (BTL5)
			1101P.3	Identify the advanced materials and analyse the properties. (BTL3)



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YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			1101P.4	Analyse the IR and NMR spectroscopy. (BTL4)
			1101P.5	Analyse the separation method of HPLC and TLC (BTL4)
I-I	20A05201P	C-Programming & Data Structures s Lab	5201P.1	Select the data structure appropriate for solving the problem. (BTL3)
			5201P.2	Interpret searching and sorting algorithms. (BT5)
			5201P.3	Design new data types. (BT16)
			5201P.4	Illustrate the working of stack and queue. (BTL2)
			5201P.5	Organize the data in the form of files. (BTL3)
I-I	20A02101P	Basic Electrical & Electronics Engineering Lab	2101P.1	Analyse Practical implementation of the fundamental electrical theorems and modelling of simple electrical systems. (BTL4)
			2101P.2	Analyse the various characteristics on DC Machines by conducting various tests. (BTL4)
			2101P.3	Identify the open circuit and short circuit test on single phase transformer. (BTL3)
			2101P.4	Construct the given circuit in the lab. (BTL3)
			2101P.5	Design simple electronic circuits and verify its functioning. (BTL6)



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Sem: I – II

S.No	Course Code	Course Name	Category	Hours per Week			Credits
				L	T	P	
01	20A54202	Probability & Statistics	BS	3	0	0	3
02	20A56201T	Applied Physics	BS	3	0	0	3
03	20A52101T	Communicative English	HS	3	0	0	3
04	20A05101T	T Python Programming & Data Science	ES	3	0	0	3
05	20A03101T	Engineering Drawing	ES	1	0	2	2
06	20A03101P	Engineering Graphics Lab	ES	0	0	2	1
07	20A52101P	Communicative English Lab	HS	0	0	3	1.5
08	20A56201P	Applied Physics Lab	BS	0	0	3	1.5
09	20A05101P	Python Programming & Data Science Lab	ES	0	0	3	1.5
10	20A52201	Universal Human Values	MC	3	0	0	0
Total							19.5



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YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
I-II	20A54202	Probability & Statistics	4202.1	Apply correlations methods and principle of Least squares for regression Analysis. (BTL3)
			4202.2	Make use of probabilities of events in finite sample space from experiments. (BTL3)
			4202.3	Apply Binomial, Poisson and Normal distributions for real data to compute probabilities, theoretical frequencies. (BTL3)
			4202.4	Apply the concept of hypothesis testing for large samples. (BTL4)
			4202.5	Apply the concept of testing hypothesis for small samples to draw the inferences. (BTL3)
I-II	20A56201T	Applied Physics	6201T.1	Analyse the different realms of physics and their applications in both scientific and technological systems through physical optics. (BTL4)
			6201T.2	Analyse the electromagnetic wave propagation and its power in different media. (BTL4)
			6201T.3	Illustrate the response of dielectric and magnetic materials to the applied electric and magnetic fields. (BTL2)
			6201T.4	Illustrate the quantum mechanical picture of subatomic world along with the discrepancies between the classical estimates and laboratory observations of electron transportation phenomena by free electron theory and band theory. (BTL2)
			6201T.5	Distinguish the physical properties exhibited by materials through the understanding of properties of semiconductors and superconductors. (BTL4)
I-II	20A52101T	Communicative English	2101T.1	Identify the need for understanding context, topic and specific information from social and transactional dialogues spoken by native speakers of English language. (BTL3)
			2101T.2	Apply rules of grammar for flawless writing and speaking, and increase the vocabulary. (BTL3)
			2101T.3	List discourse markers to speak clearly on a specific topic/occasion in various discussions. (BTL1)
			2101T.4	Compare the texts on listening or reading and summarize them effectively. (BTL4)
			2101T.5	Understand the table/chart/graph by writing a paragraph coherently. (BTL2)



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YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
I-II	20A05101T	Python Programming & Data Science	5101T.1	Apply the features of Python language in various real applications. (BTL3)
			5101T.2	Identify the appropriate data structure of Python for solving a problem (BTL2)
			5101T.3	Demonstrate data analysis, manipulation and visualization of data using Python libraries (BTL5)
			5101T.4	Enumerate machine learning algorithms. (BTL1))
			5101T.5	Analyse the various applications of Data Science. (BTL4)
I-II	20A03101T	Engineering Drawing	3101T.1	Identify the curves obtained in different conic sections. (BTL3)
			3101T.2	Compare projected length and true length. (BTL4)
			3101T.3	Design and draw the projection of solid inclined to one plain. (BTL6)
			3101T.4	Understand different sectional views of regular solids. (BTL2)
			3101T.5	Construct the development of regular solids such as prism, cylinder, pyramid and cone. (BTL3)
I-II	20A03101P	Engineering Graphics Lab	3101P.1	Make use of computers as a drafting tool. (BTL3)
			3101P.2	Design and draw isometric and orthographic drawings using CAD packages. (BTL6)
			3101P.3	Analyse 3dimensional objective (BTL4)
I-II	20A52101P	Communicative English Lab	2101P.1	Assess their proficiency by listening to audio and video materials to develop their listening, speaking, reading and writing skills. (BTL5)
			2101P.2	Develop pronunciation, accent, stress, rhythm and all other aspects of the phonetics of a language for speaking and listening comprehension. (BTL3)



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YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			2101P.3	Understand the nuances of English language with a focus on removing the influence of the mother tongue while conversing. (BTL2)
			2101P.4	Develop their communication skills and overcome the fear of public speaking by participating in GDs and role plays thereby make themselves employable. (BTL3)
			2101P.5	Evaluate and demonstrate acceptable etiquette required in social and professional contexts. (BTL5)
I-II	20A56201P	Applied Physics Lab	6201P.1	Explain optical instruments. (BTL2)
			6201P.2	Determine wavelength and size. (BTL5)
			6201P.3	Evaluate the dielectric constant, NA, AA. (BTL5)
			6201P.4	Analyse magnetic intensity. (BTL4)
			6201P.5	Estimate susceptibility, BH curve, hall Coeff. (BTL5)
I-II	20A05101P	Python Programming & Data Science Lab	5101P.1	Illustrate the use of various data structures. (BTL3)
			5101P.2	Analyse and manipulate Data using Pandas (BTL4)
			5101P.3	Creating static, animated, and interactive visualizations using Matplotlib. (BTL6)
			5101P.4	Understand the implementation procedures for the machine learning algorithms. (BTL2))
			5101P.5	Apply appropriate data sets to the Machine Learning algorithms (BTL3)
I-II	20A52201	Universal Human Values	2201.1	Identify and apply Machine Learning algorithms to solve real-world problems (BTL1)
			2201.2	Demonstrate Harmony in the Human Being. (BTL2)
			2201.3	Understand Harmony in the Family and Society- Harmony in Human- Human Relationship. (BTL2)
			2201.4	Understand Harmony in the Nature and Existence - Whole existence as Coexistence. (BTL2)
			2201.5	Identify the implications of the above Holistic Understanding of Harmony on Professional Ethics. (BTL3)



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Sem: II – I

S.No	Course Code	Course Name	Category	Hours per Week			Credits
				L	T	P	
01	20A54304	Discrete Mathematics & Graph Theory	BS	3	0	0	3
02	20A04304T	Digital Electronics & Microprocessors	ES	3	0	0	3
03	20A05301T	Advanced Data Structures & Algorithms	PC	3	0	0	3
04	20A05302T	Object Oriented Programming Through Java	PC	3	0	0	3
05	20A05303	Computer Organization	PC	3	0	0	3
06	20A04304P	Digital Electronics & Microprocessors Lab	ES	0	0	3	1.5
07	20A05301P	Advanced Data Structures and Algorithms Lab	PC	0	0	3	1.5
08	20A05302P	Object Oriented Programming Through Java Lab	PC	0	0	3	1.5
09	20A05304	Skill Oriented Course – II Web Application Development	SC	1	0	2	2
10	20A99201	Mandatory Non-Credit Course – II Environmental Science	ME	2	1	0	0
Total							21.5



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AR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
II – I	20A54304	Discrete Mathematics & Graph Theory	4304.1	Understand the concepts and perform the operations related to sets, relations and functions. (BTL2)
			4304.2	Understand the open standard services for grid architecture and able to demonstrate grid service models and functionality requirements of service architecture and service infrastructure. (BTL2)
			4304.3	Apply Gain the conceptual background needed and identify structures of algebraic nature. (BTL3)
			4304.4	Analyze Formulate problems and solve recurrence relations. (BTL4)
			4304.5	Apply Graph Theory in solving computer science problems. (BTL3)
II – I	20A04304T	Digital Electronics & Microprocessors	4303T.1	Design any Logic circuit using basic concepts of Boolean Algebra. (BTL 6)
			4303T.2	Design any Logic circuit using basic concepts of PLDs. (BTL 6)
			4303T.3	Design and develop any application using 8086 Microprocessor. (BTL 6)
			4303T.4	Design and develop any application using 8051 Microcontroller. (BTL 6)
II – I	20A05301T	Advanced Data Structures & Algorithms	5301T.1	Analyse the complexity of algorithms and apply asymptotic notations. (BTL4)
			5301T.2	Apply non-linear data structures and their operations. (BTL3)
			5301T.3	Understand and apply Red-Black trees, Splay trees operations and Hashing Techniques to design the real time applications. (BTL2)
			5301T.4	Understand and apply greedy, divide and conquer algorithms to solve problems. (BTL2)
			5301T.5	Develop dynamic programming algorithms for various real-time applications. Apply Backtracking technique to analyse, design and solve different applications. (BTL5)
II – I	20A05302T	Object Oriented Programming Through Java	5302T.1	Solve real-world problems using OOP techniques (BTL3)
			5302T.2	Apply code reusability through inheritance, packages and interfaces (BTL3)



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AR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			5302T.3	Solve problems using java collection framework and I/O classes (BTL3)
			5302T.4	Develop applications by using parallel streams for better performance (BTL5)
			5302T.5	Develop applets for web applications (BTL5)
			5302T.6	Build GUIs and handle events generated by user interactions (BTL5)
			5302T.7	Use the JDBC API to access the database (BTL3)
II – I	20A05303	Computer Organization	5303.1	Understand the Basic Structure of Computer and analysing the concepts of machine instructions & programs. (BTL2)
			5303.2	Illustrate the various arithmetic operations and learn about basic processing unit. (BTL3)
			5303.3	Analyse the importance and trade-offs of different types of memories. (BTL4)
			5303.4	Identify the different ways of communicating with I/O devices and standard I/O interfaces. (BTL1)
			5303.5	Elaborate the basic concepts of pipelining and learn how to design large computer system. (BTL5)
II – I	20A04304P	Digital Electronics & Microprocessors Lab	4304P.1	Design any Logic circuit using basic concepts of Boolean Algebra. (BTL6)
			4304P.2	Design any Logic circuit using basic concepts of PLDs. (BTL6)
			4304P.3	Design and develop any application using 8086 Microprocessor. (BTL6)
			4304P.4	Design and develop any application using 8051 Microcontroller. (BTL6)
II – I	20A05301P	Advanced Data Structures and Algorithms Lab	5301P.1	Understand and apply data structure operations. (BTL2,3)
			5301P.2	Understand and apply non-linear data structure operations (BTL2,3)
			5301P.3	Apply Greedy, divide and conquer algorithms. (BTL3)
			5301P.4	Design and develop dynamic programming algorithms for various real-time applications (BTL6)



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AR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			5301P.5	Illustrate and apply backtracking algorithms, further able to understand non-deterministic algorithms. (BTL3)
II – I	20A05302P	Object Oriented Programming Through Java Lab	5302P.1	Recognize the Java programming environment (BTL1)
			5302P.2	Develop efficient programs using multithreading (BTL5)
			5302P.3	Design reliable programs using Java exception handling feature. (BTL5)
			5302P.4	Extend the programming functionality supported by Java. (BTL2)
			5302P.5	Select appropriate programming constructs to solve a problem. (BTL1)
II – I	20A05304	Web Application Development	5304.1	Design the interactive web pages with HTML, CSS. (BTL5)
			5304.2	Create Responsive Web design that works on phone, tablets and laptops using bootstrap Framework. (BTL6)
			5304.3	Illustrate client-side scripting using JavaScript and DHTML. (BTL3)
			5304.4	Design and Develop web application using Content Management System like Word press. (BTL6)
II – I	20A99201	Environmental Science	9201.1	Understand the various natural resources. (BTL2)
			9201.2	Describe about the Biodiversity and Ecosystem. (BTL2)
			9201.3	Discuss about the pollution aspects. (BTL3)
			9201.4	To know about the social issues related to environment and their protection acts. (BTL1)
			9201.5	Describe about the population explosion and welfare programme. (BTL2)



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Sem: II – II

S.No	Course Code	Course Name	Category	Hours per Week			Credits
				L	T	P	
01	20A54404	Deterministic & Stochastic Statistical Methods	BS	3	0	0	3
02	20A05401T	Database Management Systems	PC	3	0	0	3
03	20A05402T	Operating Systems	PC	3	0	0	3
04	20A05403T	Software Engineering	PC	3	0	0	3
05	20A52301	Managerial Economics & Financial Analysis	HS	3	0	0	3
06	20A05401P	Database Management Systems Lab	PC	0	0	3	1.5
07	20A05402P	Operating Systems Lab	PC	0	0	3	1.5
08	20A05403P	Software Engineering Lab	PC	0	0	3	1.5
09	20A05404	Skill Oriented Course – II Exploratory Data Analysis with R	SC	1	0	2	2
10	20A99401	Mandatory Non-Credit Course – II Design Thinking for Innovation	MC	2	1	0	0
11	20A99301	NSS/NCC/NSO Activities	MC	0	0	2	0
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II – II	20A54404	Deterministic & Stochastic Statistical Methods	4404.1	Understand The Bayesian process of inference in probabilistic reasoning system. (BTL2)
			4404.2	Elaborate Employ methods related to these concepts in a variety of data science applications. (BTL6)
			4404.3	Apply logical thinking to problem-solving in context. (BTL3)
			4404.4	Analyse Use appropriate technology to aid problem-solving and data analysis. (BTL4)
			4404.5	Understand Demonstrate skills in unconstrained optimization. (BTL2)
II – II	20A05401T	Database Management Systems	5401T.1	Design a database for a real-world information system. (BTL5)
			5401T.2	Define transactions that preserve the integrity of the database. (BTL1)
			5401T.3	Generate tables for a database. (BTL5)
			5401T.4	Organize the data to prevent redundancy. (BTL5)
			5401T.5	Pose queries to retrieve the information from the database. (BTL4)
II – II	20A05402T	Operating Systems	5402T.1	Analyse the Basic Concepts of Operating Systems, types of Computing Environments, Several Open-Source Operating Systems and System Services to Users, Processes and other systems. (BTL4)
			5402T.2	Understand the importance, features of a process and methods of communication between processes, CPU utilization through Multiprogramming and Multithreaded Programming. (BTL2)
			5402T.3	Learn the various Memory Techniques for allocating memory to processes and benefits of Virtual Memory Systems. (BTL2)
			5402T.4	Analyse File Systems and its interface in various operating systems and different disk scheduling algorithms, understand the methods for deadlocks. (BTL4)
			5402T.5	Acquiring knowledge about various countermeasures to security attacks and schemes available for achieving system protection. (BTL5)



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YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
II – II	20A05403T	Software Engineering	5403T.1	Obtaining basic software life cycle activity skills. (BTL3)
			5403T.2	Designing software requirements specifications for given problems. (BTL5)
			5403T.3	Implementing structure, object-oriented analysis and design for given problems. (BTL3)
			5403T.4	Designing test cases for given problems. (BTL5)
			5403T.5	Applying quality management concepts at the application level. (BTL3)
II – II	20A52301	Managerial Economics & Financial Analysis	2301.1	Get the basic inputs of Managerial Economics and demand concept and able to estimate the future demand of a product. (BTL3)
			2301.2	Explain the concepts of cost and production and can calculate the breakeven point. (BTL2)
			2301.3	Learn how to take effective decisions under various market situations and also about different forms of business organizations. (BTL2)
			2301.4	Get the inputs of accounting concepts and analyse the financial statements. (BTL2)
			2301.5	Know how to take an effective investment decision. (BTL1)
II – II	20A05401P	Database Management Systems Lab	5401P.1	Design database for any real-world problem. (BTL5)
			5401P.2	Define SQL queries. (BTL1)
			5401P.3	Implement PL/SQL programs. (BTL3)
			5401P.4	Decide the constraints. (BTL2)
			5401P.5	Investigate for data inconsistency. (BTL5)
II – II	20A05402P	Operating Systems Lab	5402P.1	Understand CPU Scheduling Algorithms. (BTL2)
			5402P.2	Understand concepts of Process Synchronization. (BTL2)
			5402P.3	Acquire knowledge on different types of Memory Techniques (BTL3)
			5402P.4	Acquire knowledge on deadlock Management Techniques (BTL3)



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NH-16, Kadanuthala, Bogole Mandal, Kavali- 524 142, S.P.S.R. Nellore, Andhra Pradesh.)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

YEAR & SEM	SUBJECT CODE	SUBJECT NAME	CO	COURSE OUTCOME
			5402P.5	Analyse the concepts of File Allocation Strategies and Organization Techniques (BTL4)
II – II	20A05403P	Software Engineering Lab	5403P.1	Acquaint with historical and modern software methodologies (BTL3)
			5403P.2	Understand the phases of software projects and practice the activities of each phase (BTL2)
			5403P.3	Practice clean coding (BTL2)
			5403P.4	Take part in project management (BTL3)
			5403P.5	Adopt skills such as distributed version control, unit testing, integration testing, build management, and deployment (BTL4)
II – II	20A05404	Exploratory Data Analytics with R	5404.1	Download and Install R and RStudio. (BTL2)
			5404.2	Navigate and Optimize the R integrated development environment (IDE)RStudio. (BTL5)
			5404.3	Install and Load add-in Packages. (BTL3)
			5404.4	Import External Data into R for Data Processing and Statistical analysis. (BTL2)
			5404.5	Learn the main R Data Structures – Vector and Data Frame. (BTL1)
			5404.6	Compute Basic Summary Statistics. (BTL4)
II – II	20A99401	Design Thinking for Innovation	9401.1	Understand product design process, innovative ideas on product development process. (BTL2)
			9401.2	Examine design thinking methodologies, process and tools on design thinking principles. (BTL4)
			9401.3	Adapt on idea generation techniques, innovation is a new idea to develop the new products. (BTL6)
			9401.4	Identify the business process models and agile s/w development process. (BTL3)
			9401.5	Discuss the role of design thinking Principles in services design. (BTL6)