

SECOND YEAR (2017-18)		
COURSE CODE	UNIVERSITY CODE	COURSE NAME
C201	ROE-049	Mathematics III
C202	RVE-301	Universal Human Values & Professional Ethics
C203	REC-301	Digital Logic Design
C204	RCS-301	Discrete Structures & Theory of Logic
C205	RCS-302	Computer Organization & Architecture
C206	RCS-305	Data Structures
*C207	*REC-351	Digital Logic Design Lab
*C208	*RCS-351	Discrete Structures & Logic Lab
*C209	*RCS-352	Computer Organization Lab
*C210	*RCS-355	Data Structures Using C /Java Lab
C211	ROE-039	Applied Linear Algebra
C212	RAS-402	Environment & Ecology
C213	REC -405	Introduction To Microprocessor
C214	RCS-401	Operating System
C215	RCS-402	Software Engineering
C216	RCS-403	Theory Of Automata And Formal Language
*C217	*RCS 451	Operating System Lab
*C218	*RCS 452	Software Engineering Lab
*C219	*RCS 453	T AFL Lab
*C220	*RCS-454	Python Language Programming Lab

C-201 MATHEMATICS III (ROE- 049)**Year of Study: 2017-18**

C201.1	Students demonstrate competence with the basic ideas of linear algebra, including the concepts of vector spaces, subspaces, linear systems, linear independence and will be able to find the basis and dimension of a vector space.
C201.2	Students knew how to find row space, column space and null space of the matrix and be familiar with the concepts of rank and nullity of a matrix, and to understand the relationship of these concepts to associated systems of linear transformation.
C201.3	Students use visualization, spatial reasoning as well as geometric properties and strategies to model, solve problems of linear algebra, including finding the inverse of an invertible matrix, sum and product of linear transformations.
C201.4	Students are able to understand and recognize inner product space, invert orthogonal matrices and compose accurate proofs using the concept of various inequalities.
C201.5	Students demonstrate ability to compute eigen value problems of a square matrix using the characteristic polynomial and gain the knowledge of various operators of linear algebra.

C-201 MATHEMATICS III (ROE- 049)**Years of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
201.1	3	3	3	3	2	2				1		3
C201.2	3	3	3	3	2	2				1		3
C201.3	3	3	3	3	2	2				1		3
C201.4	3	3	3	3	2	2				1		3
C201.5	3	3	3	3	3	2				1		3
C201	3	3	3	3	2	2				1		3

C201 MATHEMATICS III (ROE- 049)**Years of Study: 2017-18**

CO	PSO1	PSO2
C201.1	1	1
C201.2	1	1
C201.3	1	1
C201.4	1	1
C201.5	1	1
C201	1	1

C-202 Universal Human Values And Professional Ethics (RVE-301) Year Of Study: 2017-18

C-202.1	Students learn to facilitate the development of a Holistic perspective among students towards life and to help them appreciate the essential complementarity between Values & Skills to ensure sustained happiness and prosperity, which are the core aspirations of all human beings through Self Exploration
C-202.2	Students understand that human being is a co-existence of the sentient “I” and the material “Body”. This chapter also makes them understand the correct appraisal of Physical Needs and the meaning of prosperity in detail.
C-202.3	Students learn 9 feelings (values) in relationship to ensure justice. Making programs to achieve comprehensive human goals like- Education-Right Understanding, Health-Education, Justice-Preservation, Production-Work and Exchange-Storage. It provides acquaintance in detail of the core values in human-human relationship and also make them visualize an Undivided Society (“Akhand Samaj”).
C-202.4	Students learn how the harmony is maintained in nature. It also tells them the interconnectedness and mutual fulfillment among the four orders of nature and how the recyclability and self regulation in nature.
C-202.5	Students learn to develop competence in professional ethics. Ability to identify and develop appropriate technologies and management patterns which are more people and eco-friendly.

C-202 Universal Human Values and Professional Ethics (RVE-301) Year of Study: 2017-18

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-202.1						1	1	3				3
C-202.2						2		3				3
C-202.3						3	2	3	3		2	3
C-202.4						3	3	3				3
C-202.5						3		3	3		3	3
C-202						2	2	3	3		3	3

C-202 Universal Human Values and Professional Ethics (RVE-301) Year of Study: 2017-18

CO	PSO1	PSO2
C-202.1	3	2
C-202.2	2	2
C-202.3	2	2
C-202.4	2	2
C-202.5	3	2

C202	2	2
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C-203 Digital Logic Design (REC-301)

Year of Study: 2017-18

C-203.1	Students get knowledge about the different number systems and the principle of Boolean algebra to manipulate and minimize logic expression.
C-203.2	Students are able to understand how to design following combinational circuits: encoders/decoders, (de)multiplexers, sub-tractor, comparators, adders, multipliers and are able to build simple applications.
C-203.3	Students are able to analyze the operation of sequential circuits built with various latches, flip-flops, counters and registers to perform simple projects with them.
C-203.4	Students learn design procedure of synchronous and asynchronous circuits and various hazards' and race around conditions.
C-203.5	Students acquire the skill to design memory devices: ROM, RAM, PROM, PLD and gain knowledge of digital logic families.

C-203 Digital Logic Design (REC-301)

Year of Study: 2017-18

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-203.1	3	3	3	3	2			1				3
C-203.2	3	3	3	2	1			1				2
C-203.3	3	3	3	2	2							2
C-203.4	3	3	3	3	3							3
C-203.5	2	2	2	2	1							1
C203	3	3	3	2	2			1				2

C-203 Digital Logic Design (REC-301)

Year of Study: 2017-18

CO	PSO1	PSO2
C-203.1	3	3
C-203.2	3	3
C-203.3	3	3
C-203.4	3	3
C-203.5	3	3
C203	3	3

C-204 Discrete Structure and Theory of Logic (RCS-301)**Year of Study: 2017-18**

C-204.1	Students are able to recall the set theory and number system concepts and should have acquired skills to solve advanced problems on these topics and demonstrate the same through class assignments
C-204.2	Students acquire skills to visualize a unified algebraic system and apply the principles in engineering problems.
C-204.3	Students learnt the concepts of ordered sets and identify special elements of the same. Students should have acquired skills to learn Boolean Algebra and apply the concepts of the same to solve engineering problems related to circuit design. The students should be able to demonstrate these skills through class and lab assignments.
C-204.4	Students learnt and acquired the skills to apply the concepts of inference theory to prove validity of mathematical or societal arguments. The students should be able to demonstrate these skills through lab and class assignments
C-204.5	Students learnt the concepts of graph theory and apply them in complex engineering and social problems.

C-204 Discrete Structure and Theory of Logic (RCS-301)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-204.1	2	3	2	2	3	2				2	2	3
C-204.2	3	3	2	2	3	2				2	2	3
C-204.3	3	3	3	2	3	2				2	2	3
C-204.4	3	3	3	2	3	3				3	2	3
C-204.5	3	3	3	2	3	3				3	2	3
C204	3	3	3	2	3	2				2	2	3

C-204 Discrete Structure and Theory of Logic (RCS-301)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-204.1	3	3
C-204.2	3	3
C-204.3	3	3
C-204.4	3	3
C-204.5	3	3
C204	3	3

C-205 Computer Organization & Architecture (RCS-302)**Year of Study: 2017-18**

C205.1	Students are able to understand about the evolution of digital computers. The students are able to apply arithmetic operations required for creating the circuit design and register transfer.
C205.2	Students are able to analyze how the instructions are given to the processor, decoded and executed in the control unit.
C205.3	Students are able to analyze the hierarchical memory system including cache memories and virtual memory. The students acquire the skills to apply various memory mapping schemes.
C205.4	Students acquire knowledge and understanding of the different ways of communication with I/O devices and remember the standard I/O interfaces.
C205.5	Students get knowledge about architectural classification schemes and evaluate Speed up performance of Parallel processing & pipelining processors.

C-205 Computer Organization & Architecture (RCS-302)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205.1	3	3	3	2								2
C205.2	2	3	3	3						2		2
C205.3	3	3	3	3								3
C205.4	2	2	2	2	2					2		2
C205.5	3	2	2	2						1		2
C205	3	3	3	2	2					2		3

C-205 Computer Organization & Architecture (RCS-302): Year of Study: 2017-18

CO	PSO1	PSO2
C205.1	3	2
C205.2	3	3
C205.3	3	3
C205.4	2	2
C205.5	2	2
C205	3	2

C- 206 Data Structures (RCS-305)**Year of Study: 2017-18**

C-206.1	Students are able to understand the need for dynamic memory storage over static memory storage in a computer program and apply it to implement the linked list data structures.
C-206.2	Students acquire skills to solve problems in real life using the concept of recursion and implementation of real life concepts of stacks and queues.
C-206.3	Students are able to understand and implement the concept of hierarchical data structures in the form of Binary trees.
C-206.4	Students are able to analyze the concept of graphs and apply to compute the shortest paths and minimum cost spanning trees.
C-206.5	Students are able to apply the knowledge to obtain the relevant information from a data set using selective searching and sorting methods.

C- 206 Data Structures (RCS-305)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-206.1	3	3	3	3	2			1	2			2
C-206.2	3	3	3	3	2	2		1	2			2
C-206.3	3	3	3	3	2	1		1	2	3		3
C-206.4	3	3	3	3	2	2			2	3		3
C-206.5	3	3	3	3	2	2		1	2			3
C206	3	3	3	3	2	2		1	2	3		3

C- 206 Data Structures (RCS-305)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-206.1	3	3
C-206.2	3	3
C-206.3	3	3
C-206.4	3	3
C-206.5	3	3
C206	3	3

C-207 Digital Logic Design Lab (REC-351)**Year of Study: 2017-18**

C-207.1	Students are able to interface various electronic components, devices and logic gates.
C-207.2	Students acquire the skill to design, simulate and implement basic combinational logic circuits.
C-207.3	Students understand the operation of latches, flip-flops, counters, registers, and register transfer using implementation.
C-207.4	Students are able to analyze the operation of sequential circuits built with various flip-flops
C-207.5	Students are able to correctly analyze a circuit and compare its theoretical performance to actual performance

C-207 Digital Logic Design Lab (*REC-351)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-207.1	3	3	3	3	1				3			3
C-207.2	3	3	3	2	1				3			2
C-207.3	3	3	3	1	1				2		1	1
C-207.4	3	3	3	3	1				3			1
C-207.5	3	3	3	2	1				2			1
C207	3	3	3	2	1				3		1	2

C-207 Digital Logic Design Lab (REC-351)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-207.1	3	2
C-207.2	3	3
C-207.3	3	2
C-207.4	3	2
C-207.5	3	2
C207	3	2

C-208 Discrete Structure and Logic Lab (RCS-351)**Year of Study: 2017-18**

C208.1	Students are able to recall, from previous set theoretical knowledge, concepts of basic set operations and should be able to design solutions to simple socio-engineering problems by way of computer programs
C-208.2	Students are able to simulate probability theory concepts in Scilab environment. The students should be able to analyze a socio-engineering problem of probability theory, design algorithm for it and implement it in Scilab.
C-208.3	Students are able to design algorithmic solutions to socio-engineering problems of binary relations that would answer complex queries of the user

C-208 Discrete Structure and Logic Lab (*RCS-351)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C208.1	3	2	2	2	3	3				1	1	3
C208.2	3	3	2	3	3	3				2	2	3
C208.3	3	3	2	2	3	3				2	2	3
C208.4												
C208.5												
C208	3	3	2	2	3	3				2	2	3

C-208 DISCRETE STRUCTURE AND LOGIC LAB (RCS-351)**Year of Study: 2017-18**

CO	PSO1	PSO2
C208.1	3	3
C208.2	3	3
C208.3	3	3
C208.4	3	3
C208.5	3	3
C208	3	3

C-209 Computer Organization & Architecture Lab (RCS-352)**Year of Study: 2017-18**

C-209.1	Students create combinational and sequential circuits such as adder, decoder and flip-flop and analyze digital function of the circuits.
C-209.2	Students acquire the skills to apply control unit functions. Students get knowledge about hardwired and micro programmed control on the basis of register transfer language.
C-209.3	Students understand and remember fundamental memory elements of a digital computer. Students apply the knowledge to design a data path so they get to know how the data transmitted from one hardware component to another.
C-209.4	Students develop skills to analyze the issues encountered in different models such as SIMD, hypercube model in multiprocessor system.
C-209.5	Students understand the ability to apply techniques for scalability in multiprocessor system. The student acquires the skill to make circuits that can work on timing basis.

C-209 Computer Organization Lab (*RCS-352)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-209.1	3	3	3	3	2	2			3	2	1	3
C-209.2	3	3	3	2	3	1			3		2	3
C-209.3	3	3	3	2	3	2			3	2	3	2
C-209.4	3	3	3	3	2				3	2		2
C-209.5	3	3	3	2	2				2			2
C209	3	3	3	2	2	1			3	1	1	2

C-209 Computer Organization & Architecture Lab (RCS-352)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-209.1	3	2
C-209.2	3	3
C-209.3	3	3
C-209.4	3	2
C-209.5	2	2
C209	3	3

C-210 Data Structures Using C Lab (RCS-355)**Year of Study: 2017-18**

C-210.1	Students are able to design and apply appropriate data structure using simple algorithms for modeling and solving given computing problems
C-210.2	Students are able to understand and implement linked-list based data structures, including singly, doubly, and circular linked-lists
C-210.3	Students are able to understand and implement the both array based and linked-list based Stack and queue data structure and its operations.
C-210.4	Students are able to understand and implement general tree data structures, including binary tree and binary search trees using linked lists.
C-210.5	Students are able to understand, analyze and develop programs to implement various searching and sorting techniques using appropriate data structures.

C-210 Data Structures Using C Lab (*RCS-355):*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-210.1	3	3	3	3	1			1	1			3
C-210.2	3	3	3	3	1			1	1			3
C-210.3	3	3	3	3	1			1	1			3
C-210.4	3	3	3	3	1			1	1			3
C-210.5	3	3	3	3	1			1	1			3
C210	3	3	3	3	1			1	1			3

C-210 Data Structures Using C/ Java Lab (RCS-355)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-210.1	3	2
C-210.2	3	2
C-210.3	3	2
C-210.4	3	1
C-210.5	3	2
C210	3	2

C-211 Applied Linear Algebra (ROE-039)**Year of Study: 2017-18**

C-211.1	Students demonstrate competence with the basic ideas of linear algebra, including the concepts of vector spaces, subspaces, linear systems, linear independence and are able to find the basis and dimension of a vector space.
C-211.2	Students are able to find row space, column space and null space of the matrix and be familiar with the concepts of rank and nullity of a matrix, and to understand the relationship of these concepts to associated systems of linear transformation.
C-211.3	Students use visualization, spatial reasoning as well as geometric properties and strategies to model, solve problems of linear algebra, including finding the inverse of an invertible matrix, sum and product of linear transformations.
C-211.4	Students are able to understand and recognize inner product space, invert orthogonal matrices and compose accurate proofs using the concept of various inequalities.
C-211.5	Students demonstrate ability to compute eigen value problems of a square matrix using the characteristic polynomial and gain the knowledge of various operators of linear algebra.

C-211 Applied Linear Algebra (ROE-039)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
C-211.1	2	2	1									2
C-211.2	3	3	2	3							3	2
C-211.3	2	2	3	2								2
C-211.4	3	2	3	2								2
C-211.5	2	3	2	3								2
C-211	2	2	2	2							3	2

C 211 Applied Linear Algebra (ROE-039)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-211.1	1	2
C-211.2	1	2
C-211.3	1	2
C-211.4	1	2
C-211.5	1	2
C211	1	2

C-212 Environment and Ecology (RAS-402)**Year of Study: 2017-18**

C212.1	Students get basic knowledge about environmental studies and the need for awareness about it. Awareness about ecosystems and its balance.
C212.2	Students explore human activities-food, shelter, socio-economic development and their impacts on environment.
C212.3	Students understand sustainable development and relevance of environment impact assessment of any developmental project.
C212.4	Students acquire knowledge of natural resources- forest, water, mineral, land and energy resources.
C212.5	Students analyze and understand environmental changes (pollutions) and human health.
C212.6	Students develop the sense of environmental protection through legislations and education.

C-212 Environment & Ecology (RAS- 402)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C212.1		2	2			3	3	3	2			3
C212.2		2	3			3	3	3	1			3
C212.3		2	2			3	3		2			3
C212.4			1			3	3	2	3			3
C212.5		3	3			3	3	3	1			3
C212		2	2			3	3	3	2			3

C-212 Environment and Ecology (RAS 402) Year of Study: 2017-18

CO	PSO1	PSO2
C212.1	2	2
C212.2	2	2
C212.3	2	2
C212.4	2	2
C212.5	2	2
C212.6	2	2

C-213 Introduction to Microprocessor (REC-405)**Year of Study: 2017-18**

C-213.1	Students familiarized with how microprocessor works. Students understand the microprocessor based computer system, basic microprocessor architectures (e.g. 8085) and their operations, its different functional blocks, various logic devices used to interface microprocessor to the outside world.
C-213.2	Students learn the microprocessor (8085) instruction set and its interfacing concepts with various I/O devices.
C-213.3	Students develop the programming skills with the help of arithmetic, logical, branching and data transfer instructions usage.
C-213.4	Students are able to design the hardware and software programs using assembly language programming. Students are able to implement the instructions in programs to solve real life problems.
C-213.5	Students analyze the working of special purpose processors like 8255, 8259 and understand interfacing external devices. Students are aware with essentials of a computer system interfaces for its functionality.

C-213 Introduction to Microprocessor (REC-405)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
C-213.1	2	2	3	2	2	3	2	1	2	1	1	2
C-213.2	2	3	2	2	2	3	2	1	2	1	1	2
C-213.3	3	3	3	2	3	3	3	1	2	1	1	3
C-213.4	3	2	3	2	3	3	3	1	3	1	1	3
C-213.5	2	2	3	2	3	3	3	3	3	1	1	3
C-213	2	2	3	2	3	3	3	1	2	1	1	3

C-213 Introduction to Microprocessor (REC-405)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-213.1	1	2
C-213.2	2	3
C-213.3	3	3
C-213.4	3	3
C-213.5	3	3
C-213	2	3

C-214 Operating Systems (RCS-401)**Year of Study: 2017-18**

C-214.1	Students are able to understand the main components of operating system, its principles, techniques and functionalities.
C-214.2	Students are able to gain knowledge about the communication and concurrency control among the concurrent processes in operating system and analyze as well as handle various issues in inter process communication.
C-214.3	Students are able to understand the concept of process and its management and apply these concepts in process scheduling, process synchronization and deadlock.
C-214.4	Students are able to apply the concept of paging, segmentation to perform memory management techniques implemented by the operating system. The students will be able to understand the need and implementation of virtual memory.
C-214 .5	Students understand the requirement and working of an OS as a resource manager, file system manager and I/O manager. They become familiar with the protection and security mechanisms taken by operating system.

C-214 Operating System (RCS-401)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1
C-214.1	2	2	2	2	2							2
C-214.2	3	3	3	2	2						2	2
C-214.3	3	3	3	2	2						2	2
C-214.4	3	3	3	3	2						2	2
C-214 .5	3	3	3	2	2						2	2
C214	3	3	3	2	2						2	2

C-214 Operating System (RCS-401)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-214.1	3	3
C-214.2	3	3
C-214.3	3	2
C-214.4	2	3
C-214 .5	3	2
C214	3	3

C-215 Software Engineering (RCS-402)**Year of Study: 2017-18**

C215.1	Students are able to understand the basic concepts of software engineering, along with the different phases of software development life cycle and software development models.
C215.2	Students are able to get the knowledge of requirement engineering process and are also learning about different methods to extract requirements from user along with the knowledge to prepare SRS and perform software quality assurance process.
C215.3	Students are imparted with the skills to create high level and detailed design to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, and sustainability.
C215.4	Students acquire in depth knowledge to perform functional and structural testing. The students acquire the skill to compare and apply different testing strategies.
C215.5	Students acquire in depth knowledge of maintenance and re-engineering. The students can estimate cost, time and effort etc. Students also get knowledge about various risks associated with the project.

C215 Software Engineering (RCS-402)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215.1	3	3	3	2								
C215.2	2	2	3	3	3							
C215.3	2	2	3	3	3				2	2	2	2
C215.4	2	2	2	2	3			2	3	2	2	2
C215.5	2	2	3	2	2				2	2	2	2
C215	2	2	3	2	3			2	2	2	2	2

C-215 Software Engineering (RCS-402)**Year of Study: 2017-18**

CO	PSO1	PSO2
C215.1	3	3
C215.2	3	3
C215.3	3	3
C215.4	3	3
C215.5	3	3
C215	3	3

C216 Theory of Automata & formal Languages (RCS-403)**Year of Study: 2017-18**

C-216.1	Students understand the mechanical computations and acquire skills that are to be demonstrated through lab and class assignments, to analyze and design regular language acceptors used in engineering systems
C-216.2	Students analyze and design machines (Mealy and Moore) for mathematical problem solving. Students demonstrate the same through lab and class assignments
C-216.3	Students analyze a Context Free Language and design rules to generate the strings and verify the properties of the same. Students demonstrate the same through lab and class assignments
C-216.4	Students acquire skills that are to be demonstrated through lab and class assignments, to analyze CF languages and design pushdown automaton to identify the same.
C-216.5	Students demonstrate their insight, through lab and class assignments, into analysis of computational problems and design of Turing Machines for the same.

C216 Theory of Automata & formal Language (RCS-403)**Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-216.1	3	3	3	2	3					2		3
C-216.2	3	3	3	2	3					2		3
C-216.3	3	3	3	2	3					2		3
C-216.4	3	3	3	2	3					2		3
C-216.5	3	3	3	2	3					2		3
C216	3	3	3	2	3					2		3

C216 Theory of Automata & formal Languages (RCS-403)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-216.1	3	3
C-216.2	3	3
C-216.3	3	3
C-216.4	3	3
C-216.5	3	3
C216	3	3

C-217 Operating Systems Lab (RCS-451)**Year of Study: 2017-18**

C-217.1	Students are familiarized with the operating system modules by implementing various process scheduling and memory management algorithms.
C-217.2	Students simulate various CPU Scheduling Algorithms (FCFS, SJF, RR, Priority, Multilevel queue) and compare their performance.
C-217.3	Students stimulate banker's algorithms for deadlock avoidance, prevention.
C-217.4	Students implement various page replacement algorithms for FIFO, LRU, and optimal page replacement and do a comparative study.
C-217.5	Students implement and evaluate different disk scheduling algorithms (FCFS, SSTF, SCAN).

C217 Operating System Lab (*RCS-451)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-217.1	3	3	3	3	2	2	3				2	3
C-217.2	3	3	3	2	2	2	3				2	3
C-217.3	3	3	3	3	2	2	3				2	3
C-217.4	3	3	3	3	2	2	3				2	3
C-217.5	3	3	3	2	2	2	3				2	3
C217	3	3	3	3	2	2	3				2	3

C-217 Operating System Lab (RCS-451)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-217.1	3	3
C-217.2	3	3
C-217.3	3	2
C-217.4	2	3
C-217.5	3	2
C217	3	3

C218 Software Engineering Lab (RCS-452)**Year of Study: 2017-18**

C-218.1	Students acquire the generic software development skills through various stages of software development life cycle.
C-218.2	Students are able to ensure the quality of software through software development with various protocol based environment.
C-218.3	Students are prepared to be able to generate test cases for software testing.
C-218.4	Students are able to handle software development models through rational method.
C-218.5	Students present case studies to demonstrate practical applications of different concepts learned in the class.

C218 Software Engineering Lab (*RCS-452)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-218.1	2	3	2	2					2		2	2
C-218.2	2	2	3	2	2				2	2	2	2
C-218.3	2	2	3	2	2				2	2	2	2
C-218.4	2	2	2	2	2		2		2	2	2	2
C-218.5	2	2	2	2	2	2		2	3	2	2	2
C218	2	2	2	2	2	2	2	2	2	2	2	2

C-218 Software Engineering Lab (RCS-452)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-218.1	3	3
C-218.2	3	3
C-218.3	3	3
C-218.4	3	3
C-218.5	2	3
C218	3	3

C219 TAFL LAB (*RCS-453)*Year of Study: 2017-18**

C-219.1	Students are able to design DFA & NFA, conversion of NFA to DFA and DFA minimization.
C-219.2	Students are able to learn about regular expression, regular pumping lemma and perform DFA to regular expression conversion and vice-versa, combining automata and simulate Mealy & Moore machine.
C-219.3	Students are able to study CFG with both single & multiple symbols, LL Parsing & LR parsing and context free pumping lemma.
C-219.4	Students are able to study & simulate pushdown automata
C-219.5	Students are able to study single-tape Turing machine & multi-tape Turing machine

C219 TAFL LAB (*RCS-453)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C219.1	3	3	3	2	3				2	1	1	2
C219.2	3	2	3	3	2				1	1	1	2
C219.3	3	3	3	3	3				1	2	2	2
C219.4	3	2	3	2	3				1		1	1
C219.5	3	3	3	2	3				2	1	1	1
C219	3	3	3	2	3				1	1	1	2

C219 TAFL LAB (RCS-453)**Year of Study: 2017-18**

CO	PSO1	PSO2
C219.1	3	2
C219.2	3	2
C219.3	3	2
C219.4	3	2
C219.5	3	2
C219	3	2

C220 Python Language Programming Lab (RCS-454)**Year of Study: 2017-18**

C-220.1	Students are able to describe the numbers, math functions, strings, list, tuples and dictionaries in python
C-220.2	Students acquire the skills to apply different decision making statements and functions in python
C-220.3	Students are able to interpret object oriented programming in python
C-220.4	Students develop skill to understand and summarize different file handling operations
C-220.5	Students demonstrate the ability to design GUI applications in python and evaluate different database operations

C220 Python Language Programming Lab(* RCS-454)*Year of Study: 2017-18**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C-220.1	3	2	2	3	3	2	3				3	3
C-220.2	3	2	3	3	2	3	1				3	3
C-220.3	3	2	3	2	3	3	3				3	2
C-220.4	3	2	3	2	1	2	1				2	3
C-220.5	3	2	3		3	3	2				2	3
C220	3	2	3	3	2	3	2				3	3

C-220 Python Language Programming Lab (RCS-454)**Year of Study: 2017-18**

CO	PSO1	PSO2
C-220.1	3	3
C-220.2	3	2
C-220.3	2	3
C-220.4	3	2
C-220.5	3	3
C220	3	3

Course Outcome Mapping With Program Specific Outcome – Second Year (2017-18)**Program Level Course –PO matrix of all Courses Second Year (2017-18)**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C201	3	3	3	3	2	2				1		3
C202						2	2	3	3		3	3
C203	3	3	3	2	2			1				2
C204	3	3	3	2	3	2				2	2	3
C205	3	3	3	2	2					2		3
C206	3	3	3	3	2	2		1	2	3		3

C207	3	3	3	2	1				3		1	2
C208	3	3	2	2	3	3				2	2	3
C209	3	3	3	2	2	1			3	1	1	2
C210	3	3	3	3	1			1	1			3
C211	2	2	2	2							3	2
C212		2	2			3	3	3	2			3
C213	2	2	3	2	3	3	3	1	2	1	1	3
C214	3	3	3	2	2						2	2
C215	2	2	3	2	3			2	2	2	2	2
C216	3	3	3	2	3					2		3
C217	3	3	3	3	2	2	3				2	3
C218	2	2	2	2	2	2	2	2	2	2	2	2
C219	3	3	3	2	3				1	1	1	2
C220	3	2	3	3	2	3	2				3	3

Program Level Course –PSO matrix of all Courses Second Year (2017-18)

C O	PSO1	PSO2
C201	1	1
C202	2	2
C203	3	3
C204	3	3
C205	3	2
C206	3	3
C207	3	2
C208	3	3
C209	3	3
C210	3	2
C211	1	2
C212	2	2
C-213	2	3
C214	3	3
C215	3	3
C216	3	3
C217	3	3
C218	3	3
C219	3	2
C220	3	3