CO, PO, PSO Attainment Calculations

Vivekanand Education Society's
Institute of Technology
Approved by AICTE & Affiliated to University of Mumbai

Index

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Vision and Mission of the Institute

Vision of the Institute:

To create a vibrant knowledge-oriented environment with innovative teaching practices and to inculcate a tradition of socially conscious application of technology.

Mission of the Institute:

- To inculcate a culture of value based education.
- To enthuse students to develop in an ambient environment of caring and of sharing information.
- To enable students to work towards excellence in their chosen fields with a professional bent of mind.

Program Outcomes (POs)

POs FOR UNDERGRADUATE COURSES

PO1 Computational Knowledge: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
PO2 Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
PO3 Design /Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
PO4 Conduct Investigations of Complex Computing problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5 Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
PO6 Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PO7 Life-long Learning: Recognize the need, and have the ability to engage in independent learning for continual development as a computing professional.
PO8 Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO9 Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
PO10 Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.
PO11 Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
PO12 Innovation and Entrepreneurship: Identify a timely opportunity and use innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

POS FOR MASTER IN ENGINEERING COURSES

PO1 Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.
PO2 Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
PO3 Innovation and Entrepreneurship: Identify a timely opportunity and use innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Program Specific Outcomes (PSOs)

ELECTRONICS ENGINEERING

Program Specific Outcomes (PSOs)

PSO1. Graduates will be able to apply the fundamentals of analog electronics and digital electronics systems.
PSO2 Design a variety of Hardware and Software based systems for applications in the fields of communication, networking, power electronics and control systems.

Program Educational Objectives (PEOs)

PEO1 To enable the graduates to identify, analyze and solve technical problems using appropriate theory, laws and formulas of applied physics, applied mathematics and electronic circuits and thus demonstrate an ability to assemble, test, maintain, and troubleshoot experiments relating to electronic systems and measure electrical and electronic quantities in a safe manner.
PEO2 To train students to develop critical thinking skills and to make them technocrats to meet latest industrial requirements in the field of robotics, communication, signal processing, VLSI design, computer programming ,embedded system programming and simulation.

PEO3 To help Graduates to gain broad knowledge of electronics engineering technology practices to support cost effective design, application, installation, operation and maintenance and pursue higher studies for meeting the desired global needs.
PEO4 To develop soft skills of students and enable them to work in a team to solve problems in case studies and design systems with an awareness of social issues, ethical responsibilities and professional practices.

COMPUTER ENGINEERING

Program Specific Outcomes (PSOs)

PSO1 Professional Skills - The ability to develop programs for computer based systems of varying complexity and domains using standard practices.
PSO2 Successful Career - The ability to adopt skills, languages, environment and platforms for creating innovative career paths, being successful entrepreneurs or for pursuing higher studies.

Program Educational Objectives (PEOs)

PEO1 To provide students with a solid foundation in their core concepts of mathematical, scientific and computer engineering fundamentals required to comprehend, analyze and design solutions for real life problems.
PEO2 To inculcate in students, a balanced outlook with professional and ethical attitude, develop effective communication skills, teamwork and leadership qualities with multidisciplinary approach.
PEO3 To prepare students to excel in postgraduate programs through an excellent academic environment and make them ready for productive employment in the public or private sectors and provide lifelong learning experience.

INSTRUMENTATION ENGINEERING

Program Specific Outcomes (PSOs)

PSO1 Apply the concepts of measurement using various sensors/transducers along with associated signal processing for controlling machines or processors using automation tools like PLC, DCS with proper planning and documentation.
PSO2 Apply the concept of automatic control including measurement, feedback and feed forward regulation for the operation of continuous and discrete systems using mathematics as the basis of modeling and design.
PSO3 Apply the concepts of physics, chemistry and electricity/electronics to measurement, control and communication for design and implementation of various instruments and systems utilizing analog and/or digital circuits and control devices.

Program Educational Objectives (PEOs)

PEO1 To enable students to gain broad knowledge of concepts of instrumentation and control required to formulate, solve and analyze real time problems.
PEO2 To develop a solid foundation in mathematical, scientific and engineering fundamentals required to excel in various fields and to prepare students for higher studies.
PEO3 To familiarize students with professional issues including: ethics, planning & implementation for developing leadership qualities, entrepreneurship and successful careers in core industry and interdisciplinary fields.
PEO4 To prepare students on various aspects of research & development so as to excel in design & development of instrumentation systems.

ELECTRONICS AND TELECOMMUNICATION

Program Specific Outcomes (PSOs)

PSO1 Apply their electronics and communication fundamentals to develop prototypes using analysis, synthesis, programming skills and realization.
PSO2 To demonstrate the ability to develop engineering solutions for modern electronics and communication problems of the industry.

Program Educational Objectives (PEOs)

PEO1 To prepare students to aptly apply their acquired knowledge of engineering fundamentals and core concepts in Electronics and Telecommunications.
PEO2 To contribute to the needs of society in solving real life technical challenges using Electronics and Telecommunication engineering principle tools and practices.
PEO3 To enable students to be successful technocrats with effective communication skills and be socially conscious with a strong ethical and balanced outlook.
PEO4 To create and provide a conducive environment suitable for lifelong learning, successful entrepreneurship, multidisciplinary engineering challenges and to tackle contemporary issues.

INFORMATION TECHNOLOGY

Program Specific Outcomes (PSOs)

PSO1 Professional Skills- The ability to develop programs for computer based systems of varying complexity and domains using standard practices.
PSO2 Successful Career – The ability to adopt skills, languages, environment and platforms for creating innovative career paths, being successful entrepreneurs or for pursuing higher studies.

Program Educational Objectives (PEOs)

PEO1 To provide students with a solid foundation in the core engineering concepts like mathematics, programming, data management, networking etc. This will further enable students to analyze, design and create solutions for any enterprise, national or global in multidisciplinary fields.
PEO2 To inculcate in students a strong ethical and professional attitude, which, along with effective communication, managerial and teamwork skills will enable success in a broad social context.
PEO3 To provide students with an environment programmed for academic excellence, leadership, and life-long learning needed for a successful professional career.
PEO4 To empower and enable students with the capabilities to develop high end business and innovation skills.

Master of Engineering

ELECTRONICS AND TELECOMMUNICATION

Program Specific Outcomes (PSOs)

PSO1 Apply their electronics and communication fundamentals to develop innovative solutions using analysis, synthesis, programming skills and realization.
PSO2 To demonstrate the ability to propose, present and develop engineering solutions of societal problems using signal processing, communication, networking, embedded systems, artificial intelligence and machine learning.

Program Educational Objectives (PEOs)

PEO1 Employable by applying the knowledge of Communications and proposing innovative solutions to solve societal problems, using modern engineering tools
PEO2 Able to develop an aptitude towards lifelong learning demonstrates interpersonal skills, leaders of diverse teams with good ethical and social behaviour.

INFORMATION TECHNOLOGY

Program Specific Outcomes (PSOs)

PSO1 Professional Skills - The ability to develop programs for computer based systems of varying complexity and domains using standard practices.
PSO2 Successful Career – The ability to adopt skills, languages, environment and platforms for creating innovative career paths, being successful entrepreneurs or for pursuing higher studies.

Program Educational Objectives (PEOs)

PEO1 To provide students with a solid foundation in the core engineering concepts like mathematics, programming, data management, networking, project management and research and development. This will further enable the students to analyze, design and create solutions for any business enterprise, national or global in multidisciplinary fields.
PEO2 To inculcate in students a strong ethical and professional attitude, which along with effective communication, managerial and teamwork skills will enable success in a broad social context
PEO3 To provide students with an environment programmed for academic excellence, leadership, and lifelong learning needed for a successful professional career.
PEO4 To empower and enable students with the capabilities to develop high end business and innovative skills.

INSTRUMENTATION ENGINEERING

Program Specific Outcomes (PSOs)

PSO1 Apply the concepts of measurement using various sensors/transducers along with associated signal processing for controlling machines or processors using automation tools like PLC, DCS with proper planning and documentation.
PSO2 Apply the concept of automatic control including measurement, feedback and feed forward regulation for the operation of continuous and discrete systems using mathematics as basis of modeling and design.
PSO3 Apply the concepts of physics, chemistry and electricity/electronics to measurement, control and communication for design and implementation of various instruments and systems utilizing analog and/or digital circuits and control devices.

Program Educational Objectives (PEOs)

PEO1 To introduce students to advanced concepts of Instrumentation and Control engineering to gain proficiency in core/allied fields.
PEO2 To perform independent study and research to solve industrial and societal issues.
PEO3 To evoke intellectual interest in engineering concepts for providing innovative solutions to real life problems.
PEO4 To create awareness on professional issues and to develop qualities of communication, ethics and team spirit to groom into successful leaders and entrepreneurs.

Master of Computer Applications

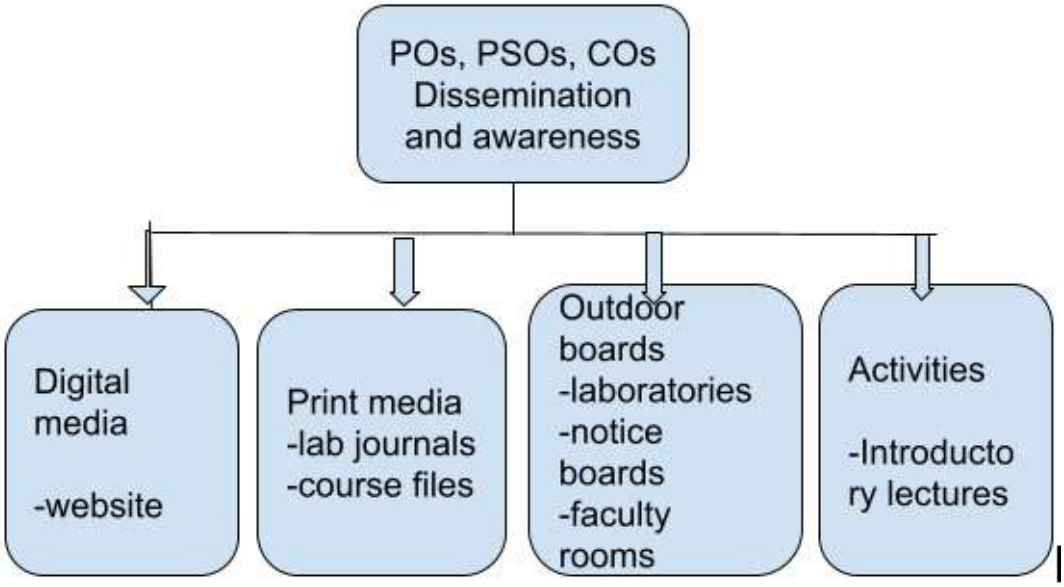
Program Specific Outcomes (PSOs)

PSO1 The ability to develop and apply computer based applications of varying complexity and domains using standard practice.
PSO2 Demonstrate the ability to use the latest technology and tools in developing the software thus helping our product to be Employable and become a Successful Entrepreneur.

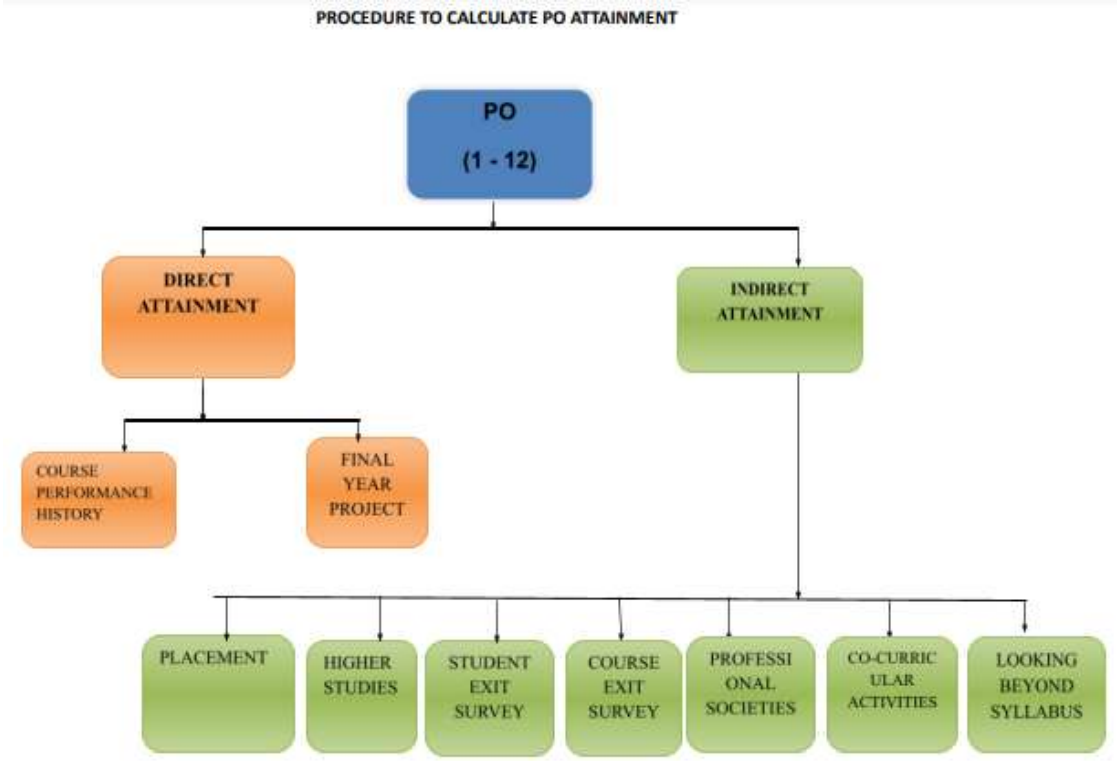
Program Educational Objectives (PEOs)

PEO1 To provide students with a solid foundation in the Computing concepts like mathematics, programming, data management, networking etc. This will further enable students to analyze, design and create solutions for any enterprise, national or global in multidisciplinary fields.
PEO2 To inculcate in students a strong ethical and professional attitude which, along with effective communication, managerial and teamwork skills will enable success in a broad social context.
PEO3 To prepare the students to excel in an academic environment and make them ready for productive employment through global education and to empower them to develop high end business and innovative skills.
PEO4 To provide broad educational and research experience through interdisciplinary and industrial collaboration programs.

Mechanism of communication of COs, POs and PSOs to students



Factors contributing for PO attainment (Diagram)



1 Bachelor of Electronics Engineering

1.1: CO-PO-PSO Mapping (2019-2020)

SEM	COURSE CODE	COURSE NAME	a	b	c	d	e	f	g	h	i	j	k	l	PSO 1	PSO2
			PO1	PO 2	PO3	PO4	PO5	PO 6	PO 7	PO8	PO9	PO 10	PO 11	PO1 2		
SEM-III	ELX301	Applied Mathematics III	3.00	3.00	2.00	2.00	-	-	-	-	-	-	-	2.00	1.00	2.00
	ELX302	Electronic Devices and Circuits I	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELX303	Digital Circuit Design	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00
	ELX304	Electrical Network Analysis and Synthesis	3.00	3.00	2.25	2.75	3.00	2.00	2.25	2.00	2.00	2.00	1.00	3.00	3.00	2.25
	ELX305	Electronics Instruments and Measurement	2.50	2.00	2.25	2.00	2.50	1.25	1.00	1.00	2.00	2.00	2.00	2.00	3.00	2.00
	ELXL301	Electronic Devices and Circuits I Laboratory	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELXL302	Digital Circuit Design Laboratory	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00
	ELXL303	Electrical Network and Measurement Laboratory	2.71	2.57	2.29	2.43	2.86	1.71	1.71	1.57	2.00	2.00	1.43	2.57	3.00	2.14
	ELXL304	Object Oriented Programming Methodology Laboratory	3.00	2.17	2.83	2.33	2.33	2.33	2.67	1.17	2.00	1.83	2.33	2.17	2.33	2.17
SEM-IV	ELX401	Applied Mathematics IV	3.00	3.00	-	2.00	-	-	-	-	-	-	-	-	1.00	2.00

(Mrs. Dipti Karani)

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	ELX402	Electronic Devices and Circuits II	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELX403	Microprocessors and Applications	2.75	2.75	3.00	2.50	2.25	1.00	1.00	1.00	1.50	2.25	2.00	2.00	2.00	2.50
	ELX404	Digital System Design	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00
	ELX405	Principles of Communication Engineering	3.00	2.00	2.20	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
	ELX406	Linear Control Systems	2.50	2.50	2.00	2.00	1.83	1.00	1.33	1.00	2.00	2.00	1.67	1.50	2.00	2.00
	ELXL401	Electronic Devices and Circuits II Laboratory	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELXL402	Microprocessors and Applications Laboratory	2.75	2.75	3.00	2.50	2.25	1.00	1.00	1.00	1.50	2.25	2.00	2.00	2.00	2.50
	ELXL403	Digital System Design Laboratory	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00
	ELXL404	Principles of Communication Engineering Laboratory	3.00	2.00	2.20	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
SEM-V	ELX501	Micro-controllers and Applications	3.00	2.00	2.50	2.00	2.50	2.00	1.75	2.50	2.50	2.00	2.25	2.25	2.00	1.75
	ELX502	Digital Communication	2.00	3.00	3.00	3.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
	ELX503	Engineering Electromagnetics	2.75	2.25	2.25	3.00	2.25	2.50	2.00	2.50	2.50	2.50	2.50	2.25	2.50	2.50
	ELX504	Design with Linear Integrated Circuits	3.00	3.00	2.75	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.50	3.00	3.00	2.75
	ELXDLO5011	Data Base and Management System	2.50	2.50	2.25	2.75	2.00	2.50	2.25	2.50	2.00	3.00	2.25	2.25	1.75	2.00
	ELXDLO5012	Digital Control system	3.00	2.00	2.40	2.17	2.17	1.75	2.00	2.00	-	-	2.00	2.00	2.00	2.00

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	ELXL 501	Microcontrollers and Applications Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50
	ELXL 502	Digital Communication Laboratory	3.00	2.00	2.50	2.00	2.50	2.00	1.75	2.50	2.50	2.00	2.25	2.25	2.00	1.75
	ELXL 503	Design with Linear Integrated Circuits Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50
	ELXL 504	Business Communication & Ethics	3.00	3.00	2.75	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.50	3.00	3.00	2.75
	ELXL DLO5 011	Database and Management System Laboratory	3.00	2.00	2.40	2.17	2.17	1.75	2.00	2.00	-	-	2.00	2.00	2.00	2.00
	ELXL DLO5 012	Digital Control system Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50
	ELX6 01	Embedded System and RTOS	3.00	2.75	2.75	1.50	2.00	1.25	1.00	2.00	1.25	1.25	2.25	2.00	2.75	1.00
	ELX6 02	Computer Communication Network	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	1.75	3.00	2.00	3.00
	ELX6 03	VLSI Design	2.75	2.75	3.00	2.75	2.75	2.75	-	-	-	-	2.75	3.00	3.00	2.00
	ELX6 04	Signals and systems	3.00	3.00	3.00	2.50	2.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00
	ELXD LO602 3	Wireless Communication	3.00	2.00	2.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
SEM-VI	ELXD LO602 4	Computer Organization and Architecture	3.00	2.00	3.00	2.25	2.50	2.50	2.25	2.25	1.50	2.50	2.25	2.00	2.00	1.75
	ELXL 601	Embedded System and RTOS Laboratory	3.00	2.75	2.75	1.50	2.00	1.25	1.00	2.00	1.25	1.25	2.25	2.00	2.75	1.00
	ELXL 602	Computer Communication Network Laboratory	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	1.75	3.00	2.00	3.00

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	ELXL 603	VLSI Design Laboratory	2.75	2.75	3.00	2.75	2.75	2.75	-	-	-	-	2.75	3.00	3.00	2.00
	ELXL DLO6 023	Wireless Communicatio n Laboratory	3.00	2.00	2.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
	ELXL DLO6 024	Computer Organization and Architecture Laboratory	3.00	2.00	3.00	2.25	2.50	2.50	2.25	2.25	1.50	2.50	2.25	2.00	2.00	1.75
	ELX7 01	Instrumentation System Design	3.00	2.80	2.80	2.00	2.40	3.00	1.80	1.80	1.00	1.00	2.40	2.20	1.40	2.20
	ELX7 02	Power Electronic	2.80	2.80	2.20	2.20	2.00	2.00	1.80	1.80	1.80	2.80	2.00	1.80	2.00	2.80
	ELX7 03	Digitanal processing	3.00	3.00	3.00	3.00	2.00	2.00	2.00	1.50	1.50	1.50	2.25	2.25	2.00	3.00
	ELX DLO7 032	Advance Networking Technologies	3.00	2.67	2.67	2.33	1.83	1.17	1.17	1.00	1.17	1.17	1.17	1.50	1.67	2.50
	ELX DLO7 033	Robotics	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
	ILO7 013	Management Information System	1.00	2.20	1.00	2.00	2.40	-	-	1.20	1.00	2.00	1.00	2.00	-	1.00
	ILO7 015	Operation Research	3.00	3.00	2.75	3.00	-	-	-	-	2.00	2.00	2.75	3.00	-	2.25
SEM - VII	ILO7 016	Cyber Security and Laws	2.00	3.00	2.00	3.00	1.00	3.00	2.00	3.00	2.00	1.00	3.00	3.00	1.00	1.00
	ELXL 701	Instrumentati on System Design Laboratory	3.00	2.80	2.80	2.00	2.40	3.00	1.80	1.80	1.00	1.00	2.40	2.20	1.40	2.20
	ELXL 702	Power Electronics Laboratory	2.80	2.80	2.20	2.20	2.00	2.00	1.80	1.80	1.80	2.80	2.00	1.80	2.00	2.80
	ELXL 703	Digital signal processing Laboratory	3.00	3.00	3.00	3.00	2.00	2.00	2.00	1.50	1.50	1.50	2.25	2.25	2.00	3.00
	ELXL 704	Project -I	3	3	3	3	3	3	3	3	3	3	3	3	3	3

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF ETRX

	ELXLDLO7032	Advance Networking Technologies Laboratory	3.00	2.67	2.67	2.33	1.83	1.17	1.17	1.00	1.17	1.17	1.17	1.50	1.67	2.50
	ELXLDLO7033	Robotics Laboratory	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
SEM-VIII	ELX801	Internet of Things	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	3.00	3.00	2.00	3.00
	ELX802	Analog and Mixed VLSI Design	3.00	2.75	2.75	3.00	3.00	2.50	2.50	2.00	2.75	2.00	2.75	3.00	3.00	2.00
	ELXDLO8042	MEMS Technology	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
	ELXDLO8044	Digital Image Processing	3.00	2.50	2.50	2.50	2.25	2.00	2.25	1.75	2.00	2.25	2.00	2.00	2.75	2.25
	ILO8021	Project Management	-	-	2.60	-	2.60	2.00	2.60	1.40	2.00	-	2.60	2.40	2.20	2.20
	ILO8022	Finance Management	1.00	-	-	1.00	1.00	-	3.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
	ILO8023	Entrepreneurship Development and Management	-	-	-	-	-	2.00	2.67	1.33	2.00	2.67	2.33	2.00	3.00	1.00
	ILO8026	Research Methodology	3.00	-	-	2.67	2.50	1.00	1.00	2.00	1.00	2.00	-	3.00	-	2.00
	ILO8029	Environmental Management	-	1.00	-	1.00	1.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	-	2.00
	ELXL801	Internet of Things Laboratory	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	3.00	3.00	2.00	3.00
	ELXL802	Analog and Mixed VLSI Design Laboratory	3.00	2.75	2.75	3.00	3.00	2.50	2.50	2.00	2.75	2.00	2.75	3.00	3.00	2.00
	ELXL803	Project - II	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	ELXLDLO8042	MEMS Technology Laboratory	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
	ELXLDLO8044	Digital Image Processing Laboratory	3.00	2.50	2.50	2.50	2.25	2.00	2.25	1.75	2.00	2.25	2.00	2.00	2.75	2.25

V.E.S. INSTITUTE OF TECHNOLOGY
DEPT. OF ETRX

CO-PO-PSO Attainment (2019-2020):

	COURSE CODE	COURSE NAME	a	b	c	d	e	f	g	h	i	j	k	l	PSO 1	PSO 2
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
SEM - III	ELX301	Applied Mathematics III	2.00	2.00	1.33	1.33	-	-	-	-	-	-	-	1.33	0.67	1.33
	ELX302	Electronic Devices and Circuits I	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELX303	Digital Circuit Design	0.83	1.67	1.67	0.83	2.50	0.83	0.83	0.83	1.67	1.67	0.83	0.83	2.50	1.67
	ELX304	Electrical Network Analysis and Synthesis	2.00	2.00	1.50	1.83	2.00	1.33	1.50	1.33	1.33	1.33	0.67	2.00	2.00	1.50
	ELX305	Electronics Instruments and Measurement	2.08	1.67	1.88	1.67	2.08	1.04	0.83	0.83	1.67	1.67	1.67	1.67	2.50	1.67
	ELXL301	Electronic Devices and Circuits I Laboratory	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELXL302	Digital Circuit Design Laboratory	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00
	ELXL303	Electrical Network andL Measurement Laboratory	2.71	2.57	2.29	2.43	2.86	1.71	1.71	1.57	2.00	2.00	1.43	2.57	3.00	2.14

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	ELXL304	Object Oriented Programming Methodology Laboratory	3.00	2.17	2.83	2.33	2.33	2.33	2.67	1.17	2.00	1.83	2.33	2.17	2.33	2.17
SEM - IV	ELX401	Applied Mathematics IV	3.00	3.00	-	2.00	-	-	-	-	-	-	-	-	1.00	2.00
	ELX402	Electronic Devices and Circuits II	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELX403	Microprocessors and Applications	2.29	2.29	2.50	2.08	1.88	0.83	0.83	0.83	1.25	1.88	1.67	1.67	1.67	2.08
	ELX404	Digital System Design	0.50	1.00	1.00	0.50	1.50	0.50	0.50	0.50	1.00	1.00	0.50	0.50	1.50	1.00
	ELX405	Principles of Communication Engineering	3.00	2.00	2.20	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
	ELX406	Linear Control Systems	2.50	2.50	2.00	2.00	1.83	1.00	1.33	1.00	2.00	2.00	1.67	1.50	2.00	2.00
	ELXL401	Electronic Devices and Circuits II Laboratory	3.00	3.00	3.00	3.00	3.00	2.00	2.00	1.00	3.00	2.00	3.00	3.00	3.00	3.00
	ELXL402	Microprocessors and Applications Laboratory	2.75	2.75	3.00	2.50	2.25	1.00	1.00	1.00	1.50	2.25	2.00	2.00	2.00	2.50
	ELXL403	Digital System Design Laboratory	1.00	2.00	2.00	1.00	3.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	3.00	2.00

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	ELXL404	Principles of Communication Engineering Laboratory	3.00	2.00	2.20	1.80	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
SEM - V	ELX501	Micro-controllers and Applications	2.50	1.67	2.08	1.67	2.08	1.67	1.46	2.08	2.08	1.67	1.88	1.88	1.67	1.46
	ELX502	Digital Communication	2.00	3.00	3.00	3.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
	ELX503	Engineering Electromagnetics	2.75	2.25	2.25	3.00	2.25	2.50	2.00	2.50	2.50	2.50	2.50	2.25	2.50	2.50
	ELX504	Design with Linear Integrated Circuits	3.00	3.00	2.75	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.50	3.00	3.00	2.75
	ELXDLO5011	DataBase and Management System	2.50	2.50	2.25	2.75	2.00	2.50	2.25	2.50	2.00	3.00	2.25	2.25	1.75	2.00
	ELXDLO5012	Digital Control system	1.50	1.00	1.20	1.09	1.09	0.88	1.00	1.00	-	-	1.00	1.00	1.00	1.00
	ELXL501	Microcontrollers and Applications Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50
	ELXL502	Digital Communication Laboratory	3.00	2.00	2.50	2.00	2.50	2.00	1.75	2.50	2.50	2.00	2.25	2.25	2.00	1.75
	ELXL503	Design with Linear Integrated Circuits Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50

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	ELXL504	Business Communication & Ethics	3.00	3.00	2.75	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.50	3.00	3.00	2.75
	ELXLDLO5011	Data Base and Management System Laboratory	3.00	2.00	2.40	2.17	2.17	1.75	2.00	2.00	-	-	2.00	2.00	2.00	2.00
	ELXLDLO5012	Digital Control system Laboratory	1.50	2.17	2.50	2.33	2.33	2.20	1.83	2.50	2.20	2.33	2.17	1.83	1.83	2.50
SEM - VI	ELX601	Embedded System and RTOS	3.00	2.75	2.75	1.50	2.00	1.25	1.00	2.00	1.25	1.25	2.25	2.00	2.75	1.00
	ELX602	Computer Communication Network	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	1.75	3.00	2.00	3.00
	ELX603	VLSI Design	2.75	2.75	3.00	2.75	2.75	2.75	-	-	-	-	2.75	3.00	3.00	2.00
	ELX604	Signals and systems	2.00	2.00	2.00	1.67	1.67	1.33	1.33	1.33	1.33	1.33	1.33	1.33	2.00	2.00
	ELXDLO6023	Wireless Communication	3.00	2.00	2.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
	ELXDLO6024	Computer Organization and Architecture	3.00	2.00	3.00	2.25	2.50	2.50	2.25	2.25	1.50	2.50	2.25	2.00	2.00	1.75
	ELXL601	Embedded System and RTOS Laboratory	3.00	2.75	2.75	1.50	2.00	1.25	1.00	2.00	1.25	1.25	2.25	2.00	2.75	1.00
	ELXL602	Computer Communication Network Laboratory	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	1.75	3.00	2.00	3.00
	ELXL603	VLSI Design Laboratory	2.75	2.75	3.00	2.75	2.75	2.75	-	-	-	-	2.75	3.00	3.00	2.00

	ELXLDLO6023	Wireless Communication Laboratory	3.00	2.00	2.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	3.00	2.00
	ELXLDLO6024	Computer Organization and Architecture Laboratory	3.00	2.00	3.00	2.25	2.50	2.50	2.25	2.25	1.50	2.50	2.25	2.00	2.00	1.75
	ELX701	Instrumentation System Design	3.00	2.80	2.80	2.00	2.40	3.00	1.80	1.80	1.00	1.00	2.40	2.20	1.40	2.20
	ELX702	Power Electronics	2.33	2.33	1.83	1.83	1.67	1.67	1.50	1.50	1.50	2.33	1.67	1.50	1.67	2.33
	ELX703	Digital signal processing	2.50	2.50	2.50	2.50	1.67	1.67	1.67	1.25	1.25	1.25	1.88	1.88	1.67	2.50
	ELXDLO7032	Advance Networking Technologies	3.00	2.67	2.67	2.33	1.83	1.17	1.17	1.00	1.17	1.17	1.17	1.50	1.67	2.50
	ELXDLO7033	Robotics	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
SEM - VII	ILO7013	Management Information System	1.00	2.20	1.00	2.00	2.40	-	-	1.20	1.00	2.00	1.00	2.00	-	1.00
	ILO7015	Operation Research	2.00	2.00	1.83	2.00	-	-	-	-	1.33	1.33	1.83	2.00	-	1.50
	ILO7016	Cyber Security and Laws	1.67	2.50	1.67	2.50	0.83	2.50	1.67	2.50	1.67	0.83	2.50	2.50	0.83	0.83
	ELXL701	Instrumentation System Design Laboratory	3.00	2.80	2.80	2.00	2.40	3.00	1.80	1.80	1.00	1.00	2.40	2.20	1.40	2.20
	ELXL702	Power Electronics Laboratory	2.80	2.80	2.20	2.20	2.00	2.00	1.80	1.80	1.80	2.80	2.00	1.80	2.00	2.80

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	ELXL703	Digital signal processing Laboratory	3.00	3.00	3.00	3.00	2.00	2.00	2.00	1.50	1.50	1.50	2.25	2.25	2.00	3.00
	ELXL704	Project -I	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	ELXLDLO7032	Advance Networking Technologies Laboratory	3.00	2.67	2.67	2.33	1.83	1.17	1.17	1.00	1.17	1.17	1.17	1.50	1.67	2.50
	ELXLDLO7033	Robotics Laboratory	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
	ELX801	Internet of Things	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	3.00	3.00	2.00	3.00
	ELX802	Analog and Mixed VLSI Design	3.00	2.75	2.75	3.00	3.00	2.50	2.50	2.00	2.75	2.00	2.75	3.00	3.00	2.00
	ELXDLO8042	MEMS Technology	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
	ELXDLO8044	Digital Image Processing	3.00	2.50	2.50	2.50	2.25	2.00	2.25	1.75	2.00	2.25	2.00	2.00	2.75	2.25
	ILO8021	Project Management	-	-	2.60	-	2.60	2.00	2.60	1.40	2.00	-	2.60	2.40	2.20	2.20
SEM - VIII	ILO8022	Finance Management	1.00	-	-	1.00	1.00	-	3.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00
	ILO8023	Entrepreneurship Development and Management	-	-	-	-	-	2.00	2.67	1.33	2.00	2.67	2.33	2.00	3.00	1.00
	ILO8026	Research Methodology	3.00	-	-	2.67	2.50	1.00	1.00	2.00	1.00	2.00	-	3.00	-	2.00
	ILO8029	Environmental Management	-	1.00	-	1.00	1.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	-	2.00

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ELXL801	Internet of Things Laboratory	2.25	2.75	2.75	3.00	2.25	2.50	2.25	2.00	1.75	1.50	3.00	3.00	2.00	3.00
ELXL802	Analog and Mixed VLSI Design Laboratory	3.00	2.75	2.75	3.00	3.00	2.50	2.50	2.00	2.75	2.00	2.75	3.00	3.00	2.00
ELXL803	Project - II	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
ELXLDLO8042	MEMS Technology Laboratory	2.00	2.75	2.75	2.75	2.25	1.25	1.25	1.00	1.25	1.25	1.25	2.00	1.25	2.25
ELXLDLO8044	Digital Image Processing Laboratory	3.00	2.50	2.50	2.50	2.25	2.00	2.25	1.75	2.00	2.25	2.00	2.00	2.75	2.25
	AVG	**2.44**	**2.41**	**2.44**	**2.26**	**2.29**	**1.88**	**1.79**	**1.62**	**1.84**	**1.81**	**1.96**	**2.14**	**2.17**	**2.15**

1.2: PO Attainment for Batch 2016-2020

Batch 2016-2020															
PO ATTAINMENT															
PO		**PO1**	**PO2**	**PO3**	**PO 4**	**PO5**	**PO6**	**PO7**	**PO 8**	**PO9**	**PO10**	**PO11**	**PO1 2**	**PSO 1**	**PSO 2**
DIRECT ASSESSMENT	**Average from sem III to sem VIII (A)**	2.44	2.41	2.44	2.26	2.29	1.88	1.79	1.62	1.84	1.81	1.96	2.14	2.17	2.15
INDIRECT ASSESSMENT	**Graduate Exit Survey**	4.32	4.26	4.14	4.04	4.14	4.27	4.24	4.37	4.44	4.49	4.31	4.4	4.21	4.2
	Placements	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Higher Studies	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Co-curricular Activities	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Extra Curricular Activities	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Overall Average (B)	**3.27**	**3.26**	**3.23**	**3.21**	**3.23**	**3.26**	**3.25**	**3.28**	**3.29**	**3.3**	**3.27**	**3.28**	**3.25**	**3.24**

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PO		PO1	PO2	PO3	PO 4	PO5	PO6	PO7	PO 8	PO9	PO10	PO11	PO1 2	PSO 1	PSO 2
80% DIRECT ASSESSMENT	A	1.95	1.93	1.95	1.81	1.83	1.50	1.43	1.30	1.47	1.45	1.57	1.71	1.73	1.72
20% INDIRECT ASSESSMENT	B	0.65	0.65	0.65	0.64	0.65	0.65	0.65	0.66	0.66	0.66	0.65	0.66	0.65	0.65
OVERALL ATTAINMENT		**2.60**	**2.58**	**2.60**	**2.45**	**2.48**	**2.15**	**2.08**	**1.96**	**2.13**	**2.11**	**2.22**	**2.37**	**2.38**	**2.37**

PO Attainment for Last 3 batches

Batch	PO1 (a)	PO2 (b)	PO3 (c)	PO4 (d)	PO5 (e)	PO6 (f)	PO7 (g)	PO8 (h)	PO9 (i)	PO10 (j)	PO11 (k)	PO12 (l)
2016-2020	2.60	2.58	2.60	2.45	2.48	2.15	2.08	1.96	2.13	2.11	2.22	2.37
2015-2019	2.72	2.54	2.57	2.49	2.53	2.34	2.25	2.19	2.31	2.38	2.35	2.29
2014-2018	2.69	2.52	2.54	2.47	2.50	2.32	2.23	2.16	2.27	2.36	2.32	2.31

Dipti

INSTITUTE OF TECHNOLOGY
DEPT. OF ETRX

Department Of Computer Engineering

Course Outcome Attainment

2019-20 ODD SEM

Course Outcome- PO Mapping

Year	Courses		Program Outcome											
		SUB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
SE	C201	AMIII	3	3	-	-	-	-	-	-	-	-	-	2
	C202	DLDA	3	2	-	2	1	-	-	-	2	-	-	-
	C203	DM	3	3	-	-	-	-	-	-	-	-	-	3
	C204	ECCF	3	3	-	2	1	-	-	-	-	2	-	-
	C205	DS	3	3	2	-	-	-	-	-	1	1	-	2
	C206	Digital system lab	3	3	-	3	3	-	-	-	3	-	-	-
	C207	Basics electronics lab	3	3	-	3	1	-	-	-	-	2	-	-
	C208	Data structure lab	3	2	3	-	-	-	-	-	1	1		2
	C209	OOPM lab	2	2	2	2	-	-	-	-	1		1	1
TE	C301	MP	3.00	2.00	2.00	2.00	2.00	3.00	3.00	2.00	2.00	2.00	2.00	3.00
	C302	DBMS	2.00	2.00	3.00	2.00	2.00	1.00	-	1.00	2.00	1.00	2.00	3.00
	C303	CN	2.00	3.00	3.00	2.00	3.00	2.00	1.00	2.00	2.00	2.00	2.00	3.00
	C304	TCS	3.00	3.00	-	-	3.00	-	-	-	-	-	-	3.00
	C305	BCE	-	-	-	-	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	C306	MP Lab	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	2.00	3.00
	C307	CN Lab	2.00	3.00	3.00	2.00	3.00	-	-	2.00	2.00	2.00	2.00	2.00
	C308	DB and INFO lab	1.00	3.00	3.00	2.00	2.00	1.00	-	1.00	2.00	1.00	1.00	3.00
	C309	WEB Design lab	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	C310	AOA	3.00	3.00	3.00	2.00	-	-	-	-	-	-	-	3.00
	C311	AOS	3.00	2.00	2.00	2.00	-	-	-	-	-	-	-	-

Abha Tewari
Abhatewari

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BE	C401 CSC701	DSIP	3	3	3	-	2	2	2	-	3	-	2	2
	C402 CSC702	MCC	2	3	-	2	-	2	2	2	-	1	-	2
	C403 CSC703	AISC	2	2	3	3	2	1	2	1	2	2	2	3
	C404 CSCDLO7032	BDA	3	3	3	3	3	2	2	2	2	2	-	3
	C405 ILO7013	MIS	1	2	2	2	2	-	-	2	2	2	-	1
	C406 ILO7015	OR	3	3	3	3	-	-	-	-	2	2	3	3
	C407 CSL701	DSIP Lab	3.00	3.00	3.00	-	2.00	2.00	2.00	-	3.00	-	2.00	2.00
	C408 CSL702	Mob App Dev Lab	2.00	3.00	-	3.00	3.00	3.00	-	3.00	-	-	-	-
	C409 CSL703	AI SC Lab	2.00	3.00	3.00	3.00	3.00	1.00	-	1.00	2.00	-	2.00	3.00
	C410 CSL704	BDA Lab	1.00	2.00	-	2.00	3.00	2.00	1.00	1.00	1.00	1.00	2.00	2.00
		Project	2.00	2.00	2.00	2.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	2.00
			2.58	2.65	2.67	2.32	2.18	1.83	2.00	1.67	2.00	1.71	1.85	2.36

Course Outcome Attainment

Year	Courses		Program Outcome											
		SUB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
SE	C201	AMIII	2.69	2.69	-	-	-	-	-	-	-	-	-	2.69
	C202	DLDA	2.72	2.66	-	2.66	2.42	-	-	-	2.72	-	-	-
	C203	DM	2.50	2.50	-	-	-	-	-	-	-	-	-	2.5
	C204	ECCF	2.74	2.75	-	2.75	2.42	-	-	-	-	2.74	-	-
	C205	DS	2.79	2.79	2.79	-	-	-	-	-	2.79	2.79	-	2.79
	C206	Digital system lab	3.00	3.00	-	3.00	3.00	-	-	-	3.00	-	-	-

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	C207	Basics electronics lab	2.80	2.80	-	2.80	2.80	-	-	-		2.80	-	-
	C208	Data structure lab	3.00	3.00	3.00	-	-	-	-	-	3.00	3.00	-	3.00
	C209	OOPM lab	3.00	3.00	3.00	3.00	-	-	-	-	3.00	-	3.00	3.00
TE	C301	MP	2.59	2.59	2.54	2.54	2.54	2.59	2.59	2.59	2.59	2.59	2.51	2.59
	C302	DBMS	2.75	2.78	2.78	2.78	2.73	2.67	-	2.66	2.73	2.78	2.78	2.78
	C303	CN	2.72	2.69	2.66	2.69	2.57	2.69	2.52	2.59	2.69	2.66	2.75	2.72
	C304	TCS	2.69	2.69	-	-	2.73	-	-	-	-	-	-	2.69
	C305	BCE	-	-	-	-	-	2.40	2.40	2.40	2.40	2.40	2.40	2.40
	C306	MP Lab	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
	C307	CN Lab	3.00	2.99	2.99	2.98	2.99	-	-	2.99	3.00	2.99	2.98	2.99
	C308	DB and INFO lab	3.00	3.00	3.00	3.00	3.00	3.00	-	3.00	3.00	3.00	3.00	3.00
	C309	WEB Design lab	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	C310	AOA	2.72	2.72	2.77	2.64	-	-	-	-	-	-	-	2.72
	C311	AOS	1.43	1.38	1.38	1.40	-	-	-	-	-	-	-	-
BE	C401 CSC701	DSIP	2.77	2.77	2.77	-	2.77	2.77	2.80	-	2.77	-	2.77	2.77
	C402 CSC702	MCC	2.72	2.72	-	2.72	-	2.72	2.72	2.72	-	2.72	-	2.72
	C403 CSC703	AISC	2.80	2.80	2.80	2.80	2.79	2.80	2.79	2.79	2.80	2.79	2.80	2.80
	C404 CSCDLO7032	BDA	2.62	2.63	2.63	2.62	2.63	2.61	2.70	2.61	2.63	2.63	-	2.63
	C405 ILO7013	MIS	2.55	2.55	2.55	2.55	2.55	-	-	2.55	2.55	2.55	-	2.55
	C406 ILO7015	OR	2.05	2.11	2.05	2.01	-	-	-	-	2.11	2.11	2.05	2.05
	C407 CSL701	DSIP Lab	3.00	3.00	3.00	-	3.00	3.00	3.00	-	3.00	-	3.00	3.00

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	C408 CSL702	Mob App Dev Lab	2.90	2.90	-	2.90	2.90	2.90	-	2.90	-	-	-	-
	C409 CSL703	AI SC Lab	2.93	2.93	2.93	2.93	2.93	2.93	-	2.93	2.93	-	2.93	2.93
	C410 CSL704	BDA Lab	2.96	2.96	-	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
		Project	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
			2.75	**2.75**	**2.73**	**2.73**	**2.79**	**2.81**	**2.79**	**2.79**	**2.80**	**2.76**	**2.81**	**2.77**

Course Outcome Attainment
2019-20 EVEN SEM
Course Outcome- PO Mapping

Year	Courses	SUB	Program Outcome											
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
SE	CSC401	AMIV	3.00	3.00	-	2.00	-	-	-	-	-	-	-	1.00
	CSC402	AOA	3	3	2	2	-	-	-	-	-	-	-	2
	CSC403	COA	2	1	2	-	1	-	-	-	2	-	-	-
	CSC404	CG	3	3	3	3	-	-	-	-	-	-	-	3
	CSC405	OS	3	3	3	1	3	1	2	1	2	2	-	3
	CSL401	AOAL	3	3	3	3	-	-	-	-	-	1	-	2
	CSL402	CGL	2	2	3	3	3	3	-	-	3	2	2	2
	CSL403	PAL	2	1	2	-	2	-	-	-	3	-	-	-
	CSL404	OSL	2	2	3	1	1	-	-	1	1	1	-	3
	CSL405	OSTL	2	2	2	2	-	-	-	-	2	-	2	1
TE	CPC601	SE	3	3	3	2	3	2	2	2	2	3	2	2
	CPC602	SPCC	3	3	2	-	3	-	-	-	-	3	-	3
	CPC603	DWM	2.00	3.00	2.00	3.00	3.00	-	-	2	2	2	-	3.00
	CPC604	CSS	3	3	3	3	2	1	-	1	-	1	-	1
	CSDLO6011	ML	3	3	3	3	2	2	2	-	-	-	3	3
	CSL601	Software Engineering Lab	3	3	3	2	3	2	2	2	2	3	2	2

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	CSL602	System software Lab	3	3	2	-	3	-	-	-	-	3	-	2
	CSL603	DWM Lab	1	3	3	3	3	-	-	1	2	2	-	3
	CSL604	System Security Lab	2	3	3	2	3	3	-	3	-	-	-	3
	CSP605	Mini-Project	3	3	3	3	3	2	2	2	3	3	2	3
	CSC801	HMI	3	3	3	3	3	2	1	2	2	2	2	2
	CSC802	DC	2	2	2	2	2	-	-	-	1	-	2	2
	CSL801	HMI Lab	2	3	3	3	3	2	1	2	2	2	2	2
	CSL802	DL Lab	2	2	2	2	2	-	-	-	2	-	-	2
	CSL803	CC Lab	2	3	-	2	3	2	-	-	2	1	-	-
	CSDLO801X	NLP	2	2	3	3	3	2	1	1	2	2	2	2
	CSL804 NLP LAB	NLP Lab	2	2.5	2.17	2	2.17	2	1	1.5	1.83	1.83	1.83	1.83
	CSP805	PRJ-II	2	2	2	2	3	3	2	3	3	3	2	2
	ILO801X	PM	3	-	3	2	3	2	3	-	3	3	-	3
	ILO801X	ERDM	2	3	2	2	3	3	2	-	-	-	-	-
BE	**ILO801X**	RM	3	-	-	3	3	1	1	2	1	2	-	3
		Avg	**2.45**	**2.60**	**2.58**	**2.37**	**2.62**	**2.06**	**1.69**	**1.77**	**2.09**	**2.14**	**2.07**	**2.29**

Course Outcome Attainment

Course Outcome Attainment

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF CMPN

Course Outcome Attainment

Year	Courses		Program Outcome											
		SUB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
SE	CSC401	AMIV	3	3	-	3	-	-	-	-	-	-	-	3
	CSC402	AOA	2.90	2.90	2.90	2.90	-	-	-	-	-	-	-	2.90
	CSC403	COA	3.00	3.00	3.00	-	3.00	-	-	-	3.00	-	-	-
	CSC404	CG	3.00	3.00	3.00	3.00	-	-	-	-	-	-	-	3.00
	CSC405	OS	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	-	3.00
	CSL401	AOAL	3.00	3.00	3.00	3.00	-	-	-	-	-	3.00	-	3.00
	CSL402	CGL	3.00	3.00	3.00	3.00	3.00	3.00	-	-	3.00	3.00	3.00	3.00
	CSL403	PAL	3.00	3.00	3.00	-	3.00	-	-	-	3.00	-	-	-
	CSL404	OSL	3.00	3.00	3.00	3.00	3.00	-	-	3.00	3.00	3.00	-	3.00
	CSL405	OSTL	3.00	3.00	3.00	3.00	-	-	-	-	3.00	-	3.00	3.00
TE	CPC601	SE	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	CPC602	SPCC	2.94	2.94	2.95	-	2.95	-	-	-	-	2.94	-	2.94
	CPC603	DWM	2.97	2.97	2.97	2.97	2.97	-	-	2.97	2.97	2.97	-	2.97
	CPC604	CSS	3.00	2.99	2.99	-	2.99	3	-	2.99	-	2.99		3.00
	CSDLO6011	ML	2.96	2.96	2.96	2.96	2.96	2.96	2.96	-	-	-	2.96	2.96
	CSL601	Software Engineering Lab	3.00	3.00	3.00	3.00	3.00	3	3	3	3	3	3	3.00
	CSL602	System software Lab	3.00	3.00	3.00	-	3.00	-	-	-	-	3.00	-	3
	CSL603	DWM Lab	3.00	3.00	3.00	3.00	3.00	-	-	3.00	3.00	3.00	-	3.00
	CSL604	System Security Lab	3.00	3.00	3.00	3.00	3.00	3.00	-	3.00	-	-	-	3.00
	CSP605	Mini-Project	3.00	3.00	3.00	3.00	3.00	3	3	3	3	3	3	3

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BE	CSC801	HMI	2.74	2.74	2.74	2.74	2.73	2.71	2.71	2.74	2.74	2.74	2.74	2.74
	CSC802	DC	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
	CSL801	HMI Lab	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78
	CSL802	DL Lab	3	3	3	3	3	-	-	-	3	-	-	3
	CSL803	CC Lab	2.99	3	-	3	2.99	3	-	-	3	2.99	-	-
	SDLO801X	NLP	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	L804 NLP L	NLP Lab	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
	CSP805	PRJ-II	3	3	3	3	3	3	3	3	3	3	3	3
	ILO801X	PM	--	-	3	-	3	3	3	3	3	-	3	3
	ILO801X	ERDM	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	-	-	-
	ILO801X	RM	2.9	-	-	2.91	2.93	2.9	2.9	2.9	2.9	2.92	-	2.92
CO attainment-2.95			**2.96**	**2.96**	**2.96**	**2.95**	**2.95**	**2.93**	**2.92**	**2.94**	**2.95**	**2.96**	**2.94**	**2.96**

Program Specific Outcome Attainment
2019-20 ODD SEM

Course Outcome- PSO Mapping

Year	Courses	Subject	PSO	
			PSO1	PSO2
SE	C201	AMIII	-	3
	C202	DLDA	2	-
	C203	DM	2	-
	C204	ECCF	3	-
	C205	DS	1	-
	C206	Digital system lab	3	-
	C207	Basics electronics lab	2	-
	C208	Data structure lab	1	-

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V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF CMPN

	C209	OOPM lab	1	-
TE	C301	MP	3.00	3.00
	C302	DBMS	2.00	1.00
	C303	CN	3.00	2.00
	C304	TCS	3.00	-
	C305	BCE	-	1.00
	C306	MP Lab	3.00	3.00
	C307	CN Lab	2.00	2.00
	C308	DB and INFO lab	2.00	-
	C309	WEB Design lab	2.00	-
	C310	AOA	3.00	-
	C311	AOS	-	1.00
BE	C401 CSC701	DSIP	2.00	1.00
	C402 CSC702	MCC	2.00	2.00
	C403 CSC703	AISC	3.00	3.00
	C404 CSCDLO7032	BDA	-	-
	C405 ILO7013	MIS	1.00	1.00
	C406 ILO7015	OR	-	3.00
	C407 CSL701	DSIP Lab	2.00	1.00
	C408 CSL702	Mob App Dev Lab	3.00	1.00
	C409 CSL703	AI SC Lab	2.00	3.00
	C410 CSL704	BDA Lab	2.00	2.00
		Project	2.00	2.00

Program Specific Outcome Attainment

Year	Courses	Subject	PSO	
			PSO1	PSO2
SE	C201	AMIII	-	2.69
	C202	DLDA	2.78	-
	C203	DM	2.5	-

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	C204	ECCF	2.61	-
	C205	DS	2.79	-
	C206	Digital system lab	3	-
	C207	Basics electronics lab	2.8	-
	C208	Data structure lab	3	-
	C209	OOPM lab	3	-
TE	C301	MP	2.59	2.59
	C302	DBMS	2.52	2.76
	C303	CN	2.66	2.59
	C304	TCS	2.69	-
	C305	BCE	-	2.40
	C306	MP Lab	2.96	2.96
	C307	CN Lab	2.99	2.99
	C308	DB and INFO lab	3.00	-
	C309	WEB Design lab	3.00	-
	C310	AOA	2.72	-
	C311	AOS	-	1.43
BE	C401 CSC701	DSIP	2.77	2.77
	C402 CSC702	MCC	2.72	2.72
	C403 CSC703	AISC	2.8	2.8
	C404 CSCDLO7032	BDA	-	-
	C405 ILO7013	MIS	2.55	2.55
	C406 ILO7015	OR	-	2.05
	C407 CSL701	DSIP Lab	3	3
	C408 CSL702	Mob App Dev Lab	2.9	2.9
	C409 CSL703	AI SC Lab	2.93	2.93
	C410 CSL704	BDA Lab	2.96	2.96
		Project	3	3
Direct attainment 18-19_PSO(Odd Sem)-2.74			**2.82**	**2.67**

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF CMPN

Program Specific Outcome Attainment
2019-20 EVEN SEM
Course Outcome- PSO Mapping

Year	Courses	Subject	PSO	
			PSO1	PSO2
SE	CSC401	AMIV	1.00	3.00
	CSC402	AOA	2.00	-
	CSC403	COA	2.00	-
	CSC404	CG	3.00	-
	CSC405	OS	3.00	2.00
	CSL401	AOAL	2.00	-
	CSL402	CGL	3.00	-
	CSL403	PAL	2.00	-
	CSL404	OSL	3.00	2.00
	CSL405	OSTL	1.00	-
TE	CPC601	SE	2	2
	CPC602	SPCC	3	-
	CPC603	DWM	2	3
	CPC604	CSS	1	1
	CSDLO6011	ML	2	-
	CSL601	Software Engineering Lab	2	2
	CSL602	System software Lab	2.00	-
	CSL603	DWM Lab	2	3
	CSL604	System Security Lab	1	1
	CSP605	Mini-Project	2	2
BE	CSC801	HMI	2	2
	CSC802	DC	1	2
	CSL801	HMI Lab	3	2

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	CSL802	DCLab	2	2
	CSL803	CC Lab	1	3
	CSDLO801X	NLP	2	2
	CSL804 NLP LAB	NLP Lab	2	2
	CSP805	PRJ-II	3	3
	ILO801X	PM	3	3
	ILO801X	ERDM	3	1
	ILO801X	RM	1	2

Program Specific Outcome Attainment

Year	Courses	Subject	PSO	
			PSO1	PSO2
SE	**CSC401**	AMIV	**3.00**	**3.00**
	CSC402	AOA	2.90	-
	CSC403	COA	3.00	-
	CSC404	CG	3.00	-
	CSC405	OS	3.00	3.00
	CSL401	AOAL	3.00	-
	CSL402	CGL	3.00	-
	CSL403	PAL	3.00	-
	CSL404	OSL	3.00	3.00
	CSL405	OSTL	3.00	-
TE	**CPC601**	SE	3.00	3.00
	CPC602	SPCC	2.94	-
	CPC603	DWM	2.97	2.97
	CPC604	CSS	3	3
	CSDLO6011	ML	2.99	-
	CSL601	Software Engineering Lab	3.00	3.00
	CSL602	System software Lab	2.99	-

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	CSL603	DWM Lab	3.00	3.00
	CSL604	System Security Lab	3.00	3.00
	CSP605	Mini-Project	3.00	3.00
BE	**CSC801**	HMI	2.74	2.74
	CSC802	DC	2.98	2.98
	CSL801	HMI Lab	2.78	2.78
	CSL802	DCLab	3	3
	CSL803	CC Lab	2.99	3
	CSDLO801X	NLP	2.8	2.8
	CSL804 NLP LAB	NLP Lab	2	1.67
	CSP805	PRJ-II	3	3
	ILO801X	PM		3
	ILO801X	ERDM	2.7	2.7
	ILO801X	RM	2.92	2.92

V.E.S. INSTITUTE OF TECHNOLOGY
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Department Of Computer Engineering

PO attainment for Batch 2016-2020

Academic Year	Year	Semester	Attainment Goal	Weightage	PO1 (a)	PO2 (b)	PO3 (c)	PO4 (d)	PO5 (e)	PO6 (f)	PO7 (g)	PO8 (h)	PO9 (i)	PO10 (j)	PO11 (k)	PO12 (l)
2016-17	F.E	PO Attainment through CO	50.00%	80.00%	1.47	1.46	1.37	1.63	1.46	1.53	1.32	1.37	1.50	1.42	1.80	1.45
2017-18	S.E.	PO Attainment through CO			2.71	2.69	2.84	2.74	2.67	2.50	1.00	2.00	2.87	2.45	2.93	2.75
2018-19	T.E.	PO Attainment through CO			2.82	2.79	2.77	2.76	2.80	2.88	2.86	2.80	2.79	2.81	2.89	2.81
2019-20	B.E.	PO Attainment through CO			2.82	2.82	2.81	2.81	2.87	2.87	2.86	2.84	2.83	2.80	2.84	2.82
Average PO Attainment through CO of F.E.,S.E., T.E., B.E. (2016-2020)(Direct assessment)					2.45	2.44	2.45	2.49	2.45	2.45	2.01	2.25	2.50	2.37	2.62	2.46
PO Attainment through Student Portfolio for batch (2017-2020)				20.00%	3	3	3	3	3	3	3	3	3	3	3	3

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Abla Tewari

V.E.S. INSTITUTE OF TECHNOLOGY DEPT OF CMPN

PO Attainment through Student Exit Forms			3	3	3	3	3	3	3	3	3	3	3	3
PO Attainment through Placements			3	3	3	3	3	3	3	3	3	3	3	3
PO Attainment through Higher Education			2	2	-	2	-	--	-	-	2	-	-	2
Indirect Attainment			2.75	2.75	3.00	2.75	3.00	3.00	3.00	3.00	2.75	3.00	3.00	2.75
Departmental PO Attainment for Batch 2016-2020	>=70%		2.51	2.50	2.56	2.54	2.56	2.56	2.21	2.40	2.55	2.50	2.69	2.52

Departmental PO Attainment for Batch 2016-2020 Attainment Level- 2.51

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF CMPN

Department Of Computer Engineering

PO Attainment for Last 3 batches

Batch	PO1 (a)	PO2 (b)	PO3 (c)	PO4 (d)	PO5 (e)	PO6 (f)	PO7 (g)	PO8 (h)	PO9 (i)	PO10 (j)	PO11 (k)	PO12 (l)
2016-2020	2.51	2.50	2.56	2.54	2.56	2.56	2.21	2.40	2.55	2.50	2.69	2.52
2015-2019	2.55	2.59	2.56	2.67	2.59	2.55	2.40	2.49	2.55	2.60	2.64	2.54
2014-2018	2.39	2.43	2.43	2.31	2.37	2.61	2.50	2.57	2.63	2.39	2.56	2.53

V.E.S. INSTITUTE OF TECHNOLOGY ★ DEPT. OF CMPN

Department Of Instrumentation Engineering

CO-PO-PSO mapping for Year 2019-2020

Sem III

Sr. No.	Name of the course	CO code	Program Outcomes													
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Applied Mathematics III	ISC 301.1	3	3	3	2	-	1	1	1	-	-	-	2	-	-	1
		ISC 301.2	3	3	3	2	-	1	1	1	-	-	-	2	-	-	1
		ISC 301.3	3	3	3	2	-	1	1	1	-	-	-	2	-	-	1
		ISC 301.4	3	3	3	2	-	-	-	-	-	-	-	2	-	-	1
		ISC 301.5	3	3	3	2	-	-	-	-	-	-	-	2	-	-	1
		ISC 301.6	3	3	3	2	-	-	-	-	-	-	-	2	-	-	1
2	Analog Electronics	ISC 302.1	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISC 302.2	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISC 302.3	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISC 302.4	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISC 302.5	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISC 302.6	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
3	Transducer I	ISC 303.1	3	3	1	-	-	-	-	-	-	1	-	1	3	-	1
		ISC 303.2	3	-	1	1	-	-	-	-	-	1	-	1	3	-	1
		ISC 303.3	3	3	1	1	-	-	-	-	-	1	-	1	3	-	1
		ISC 303.4	3	3	1	1	-	-	-	-	-	1	-	1	3	-	1
		ISC 303.5	3	3	1	1	-	-	-	-	-	1	-	1	3	-	1

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		ISC 303.6	3	3	1	1	-	-	-	-	-	1	-	1	3		1
4	Digital electronics	ISC 304.1	3	3	1	1	-	-	-	-	-	-	-	3	-	-	2
		ISC 304.2	3	3	2	3	1	-	-	-	-	-	-	3	-	-	2
		ISC 304.3	3	3	2	2	2	-	-	-	-	-	-	3	-	-	2
		ISC 304.4	3	3	2	2	2	-	-	-	-	-	-	3	-	-	2
		ISC 304.5	3	3	2	2	2	-	-	-	-	-	-	3	-	-	2
		ISC 304.6	3	3	2	2	2	-	-	-	-	-	-	3	-	-	2
5	Electrical Networks and Measurements	ISC 305.1	3	3	-	-	1	-	-	-	-	-	-	3	-	3	1
		ISC 305.2	3	3	-	-	1	-	-	-	-	-	-	3	-	1	1
		ISC 305.3	3	3	-	-	1	-	-	-	-	-	-	3	-	1	1
		ISC 305.4	3	3	-	-	1	-	-	-	-	-	-	3	-	1	1
		ISC 305.5	3	3	-	-	1	-	-	-	-	-	-	3	-	1	1
		ISC 305.6	3	3	-	-	1	-	-	-	-	-	-	3	-	1	1
6	Object Oriented programming and Methodology	ISL301.1	1	2	2	0	2	0	0	0	1	1	0	1	-	-	-
		ISL301.2	1	0	0	0	0	0	0	0	1	1	0	1	-	-	-
		ISL301.3	1	2	2	0	2	0	0	0	1	1	0	1	-	-	-
		ISL301.4	1	2	2	2	2	0	0	0	1	1	0	1	-	-	-
		ISL301.5	1	2	2	2	2	0	0	0	1	1	0	1	-	-	-
		ISL301.6	1	2	2	2	2	0	0	0	1	1	0	1	-	-	-
7	Analog Electronics Lab practice	ISL 302.1	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISL 302.2	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISL 302.3	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISL 302.4	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISL 302.5	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3
		ISL 302.6	3	3	-	-	1	-	-	-	-	-	-	1	-	1	3

8	Transducer-I Lab Practice	ISL 303.1	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL 303.2	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL 303.3	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL 303.4	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL 303.5	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL 303.6	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
9	Digital Electronics Lab practice	ISL 304.1	1	1	1	-	-	-	-	-	1	1	-	1	-	-	3
		ISL 304.2	1	1	1	-	1	-	-	-	1	1	-	1	-	-	3
		ISL 304.3	1	1	1	-	-	-	-	-	1	1	-	1	-	-	3
		ISL 304.4	1	1	1	-	-	-	-	-	1	1	-	1	-	-	3
		ISL 304.5	1	1	1	-	-	-	-	-	1	1	-	1	-	-	3
		ISL 304.6	1	1	1	-	-	-	-	-	1	1	-	1	-	-	3

Sem IV

Sr. No.	Name of the course	CO code	Program Outcomes														
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Applied Mathematics IV	ISC401.1	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
		ISC401.2	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
		ISC401.3	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
		ISC401.4	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
		ISC401.5	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
		ISC401.6	3	3	-	2	-	-	-	-	-	-	-	2	-	-	1
2	Transducers –II	ISC402.1	3	3	3	-	-	-	-	-	-	3	-	1	3	-	-
		ISC402.2	3	-	3	3	-	-	-	-	-	3	-	1	3	-	-

		ISC402.3	3	3	3	3	-	-	-	-	-	3	-	1	3	-	-
		ISC402.4	3	3	3	3	-	-	-	-	-	3	-	1	3	-	-
		ISC402.5	3	3	3	3	-	-	-	-	-	3	-	1	3	-	-
		ISC402.6	3	3	3	3	-	-	-	-	-	3	-	1	3	-	-
3	Feedback Control system	ISC403.1	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
		ISC403.2	3	3	-	-	-	-	-	-	-	-	-	-	1	2	2
		ISC403.3	1	1	-	-	1	-	-	-	-	-	-	-	-	2	-
		ISC403.4	2	2	-	-	2	-	-	-	-	-	-	-	-	2	-
		ISC403.5	2	2	-	-	3	-	-	-	-	-	-	-	-	2	-
		ISC403.6	2	2	-	-	3	-	-	-	-	-	-	-	-	2	-
4	Analytical Instrumentation	ISC404.1	3	3	3	3	1	-	1	-	1	-	1	1	2	1	3
		ISC404.2	3	3	3	3	1	-	1	-	1	-	1	1	2	1	3
		ISC404.3	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISC404.4	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISC404.5	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISC404.6	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
5	Signal Conditioning Circuit Design	ISC 405.1	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
		ISC 405.2	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
		ISC 405.3	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
		ISC 405.4	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
		ISC 405.5	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
		ISC 405.6	3	3	3	1	-	-	1	1	3	3	-	1	3	-	3
6	Application Software Practices	ISL401.1	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1
		ISL401.2	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1
		ISL401.3	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1
		ISL401.4	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1

		ISL401.5	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1
		ISL401.6	-	1	1	-	3	-	-	-	-	-	-	-	-	-	1
7	Transducer-II Lab Practice	ISL402.1	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL402.2	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL402.3	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL402.4	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL402.5	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
		ISL402.6	3	3	1	1	1	-	-	-	-	1	-	1	3	-	1
8	Feedback Control systems Lab Practice	ISL403.1	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
		ISL403.2	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
		ISL403.3	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
		ISL403.4	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
		ISL403.5	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
		ISL403.6	2	1	-	-	3	-	-	-	-	-	-	1	-	1	-
9	Analytical Instrumentation Lab Practice	ISL404.1	3	3	3	3	1	-	1	-	1	-	1	1	2	1	3
		ISL404.2	3	3	3	3	1	-	1	-	1	-	1	1	2	1	3
		ISL404.3	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISL404.4	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISL404.5	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
		ISL404.6	3	3	3	3	-	-	1	-	1	-	1	1	2	1	3
10	Signal Conditioning Circuit Design Lab Practice	ISL405.1	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3
		ISL405.2	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3
		ISL405.3	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3
		ISL405.4	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3
		ISL405.5	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3
		ISL405.6	3	3	3	1	3	-	1	1	3	3	-	1	3	-	3

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Sem V																
Sr. No.	Name of the course	CO code	Program Outcomes													
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Signals and System	ISC 501.1	3	3	3	-	-	-	1	1	-	-	-	-	3		1
		ISC 501.2	3	-	3	3	-	-	1	1	-	-	-	-	3		1
		ISC 501.3	3	3	3	3	-	-	1	1	-	-	-	-	3		1
		ISC 501.4	3	3	3	3	-	-	-	-	-	-	-	-	3		1
		ISC 501.5	3	3	3	3	-	-	-	-	-	-	-	-	3		1
		ISC 501.6	3	3	3	3	-	-	-	-	-	-	-	-	3		1
2	Application of Microcontroller I	ISC 502.1	3	3	3	3	-	-	-	-	-	3	-	1	1	1	1
		ISC 502.2	3	3	3	3	-	-	-	-	-	3	-	1	-	-	1
		ISC 502.3	3	3	3	3	-	-	-	-	-	3	-	1	-	-	1
		ISC 502.4	3	3	3	3	-	-	-	-	-	3	-	1	-	1	1
		ISC 502.5	3	3	3	3	-	-	-	-	-	3	-	1	2	2	2
		ISC 502.6	3	3	3	3	-	-	-	-	-	3	-	1	3	3	3
3	Control System Design	ISC 503.1	1	-	-	-	2	-	-	-	-	-	-	3	-	3	2
		ISC 503.2	3	3	-	-	2	-	-	-	-	-	-	3	-	3	-
		ISC 503.3	1	1	3	-	3	-	-	-	-	-	-	-	-	3	2
		ISC 503.4	2	2	-	-	3	-	-	-	-	-	-	-	-	3	-
		ISC 503.5	2	2	3	-	3	-	-	-	-	-	-	-	1	3	2
		ISC 503.6	2	2	3	-	3	-	-	-	-	-	-	-	1	3	2
4	Control System Components	ISC 504.1	1	2	2	1	1	2	1	1	1	1	1	2	2	1	2
		ISC 504.2	1	1	2	1	1	2	1	1	1	1	1	2	2	1	2
		ISC 504.3	2	1	2	1	3	2	1	1	1	2	1	3	3	3	3
		ISC 504.4	2	2	2	1	3	2	1	1	1	2	1	3	3	3	3

		ISC 504.5	1	1	2	1	2	2	2	1	1	2	1	2	3	3	2
		ISC 504.6	1	1	2	1	2	2	2	1	1	1	1	2	3	3	2
5	Advanced Sensors	ISC 505.1	2	-	-	-	-	-	-	-	-	1	-	1	3	-	-
		ISC 505.2	2	-	-	-	-	-	-	-	-	1	-	1	3	-	-
		ISC 505.3	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISC 505.4	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISC 505.5	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISC 505.6	2	-	-	-	-	-	-	-	-	1	-	1	3	-	-
6	Database management system	ISDLO 5013.1	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
		ISDLO 5013.2	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
		ISDLO 5013.3	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
		ISDLO 5013.4	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
		ISDLO 5013.5	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
		ISDLO 5013.6	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
7	Business Communication and Ethics	ISL 501.1	-	-	-	-	-	2	2	2	2	3	2	3	-	-	-
		ISL 501.2	-	-	-	-	-	2	2	3	3	3	2	3	-	-	-
		ISL 501.3	-	-	-	-	-	3	3	3	3	3	3	3	-	-	-
		ISL 501.4	-	-	-	-	-	2	2	1	1	3	1	1	-	-	-
		ISL 501.5	-	-	-	-	-	3	3	3	3	3	3	3	-	-	-
		ISL 501.6	-	-	-	-	-	3	3	3	3	3	3	3	-	-	-

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8	Applications of Microcontroller- Lab Practice	ISL 502.1	1	2	2	-	2	-	-	-	1	1	-	1	1	1	1
		ISL 502.2	1	-	-	-	-	-	-	-	1	1	-	1	-	-	1
		ISL 502.3	1	2	2	-	2	-	-	-	1	1	-	1	-	-	1
		ISL 502.4	1	2	2	2	2	-	-	-	1	1	-	1	-	1	1
		ISL 502.5	1	2	2	2	2	-	-	-	1	1	-	1	2	2	2
		ISL 502.6	1	2	2	2	2	-	-	-	1	1	-	1	3	3	3
9	Control System Design-Lab Practice	ISL 503.1	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-
		ISL 503.2	2	2	1	-	2	-	-	-	-	-	-	-	-	-	-
		ISL 503.3	2	2	3	-	3	-	-	-	-	-	-	-	-	-	-
		ISL 503.4	3	3	-	-	2	-	-	-	-	-	-	-	-	-	-
		ISL 503.5	2	2	3	-	3	-	-	-	-	-	-	-	-	-	-
		ISL 503.6	2	2	3	-	3	-	-	-	-	-	-	-	-	-	-
10	Control System Components-Lab Practice	ISL 504.1	1	2	2	1	1	1	0	1	1	1	1	2	2	1	2
		ISL 504.2	1	1	2	1	1	1	0	1	1	1	1	2	2	1	2
		ISL 504.3	2	1	2	1	3	1	1	1	1	2	1	3	3	3	3
		ISL 504.4	2	2	2	1	3	1	1	1	1	2	1	3	3	3	3
		ISL 504.5	1	1	2	1	2	1	1	1	1	1	1	2	3	3	2
		ISL 504.6	1	1	2	1	2	1	1	1	1	1	1	2	3	3	2
11	Advances Sensors-Lab Practice	ISL 505.1	2	-	-	-	-	-	-	-	-	1	-	1	3	-	-
		ISL 505.2	2	-	-	-	-	-	-	-	-	1	-	1	3	-	-
		ISL 505.3	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISL 505.4	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISL 505.5	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
		ISL 505.6	2	1	1	1	-	-	-	-	-	1	-	1	3	-	-
12	Database Manageemen	ISL 5052.1	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
		ISL 5052.2	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-

	t System-Lab Practice	ISL 5052.3	1	2	-	-	-	-	-	-	-	-	-	1	-	-	-
		ISL 5052.4	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
		ISL 5052.5	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
		ISL 5052.6	1	2	1	1	-	-	-	-	-	-	-	1	-	-	-
13	Mini-Project-I	ISL 506.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL 506.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL 506.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL 506.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL 506.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL 506.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Sem VI

Sr. No.	Name of the course	CO code	Program Outcomes												PSO 1	PSO 2	PSO 3
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12			
1	Process Instrumentation system	ISC 601.1	3	2	-	2	1	-	-	-	-	-	-	-	3	2	2
		ISC 601.2	3	2	1	2	-	-	-	-	-	-	-	-	3	2	1
		ISC 601.3	3	2	2	2	-	-	-	-	-	-	-	-	3	3	2
		ISC 601.4	3	2	-	2	-	-	-	-	-	-	-	-	3	3	3
		ISC 601.5	3	2	1	2	1	-	-	-	-	-	-	-	3	2	1
		ISC 601.6	3	2	2	2	-	-	-	-	-	-	-	-	3	3	1
2	Industrial Data Communication	ISC 602.1	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISC 602.2	3	2	1	-	3	-	-	-	1	-	-	3	1	-	3
		ISC 602.3	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISC 602.4	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISC 602.5	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3

		ISC 602.6	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
3	Electrical Machines and Drives	ISC 603.1	1	-	-	1	1	1	-	-	-	-	-	3	1	2	2
		ISC 603.2	3	1	-	-	1	1	-	-	-	-	-	3	-	2	2
		ISC 603.3	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-
		ISC 603.4	2	2	-	-	1	1	-	-	-	-	-	-	-	-	-
		ISC 603.5	2	2	1	-	2	1	-	-	-	-	-	-	1	-	-
		ISC 603.6	2	-	1	-	-	2	2	-	-	-	-	2	-	1	1
4	Digital signal Processing	ISC 604.1	3	3	1	3	1	-	-	-	-	-	1	1	1	2	2
		ISC 604.2	3	3	1	3	1	-	-	-	-	-	1	1	1	2	2
		ISC 604.3	3	3	1	3	-	-	-	-	-	-	1	1	-	2	2
		ISC 604.4	3	3	1	3	-	-	-	-	-	-	1	1	1	3	1
		ISC 604.5	3	3	1	3	-	-	-	-	-	-	1	1	1	3	1
		ISC 604.6	3	3	1	3	-	-	-	-	-	-	1	1	1	3	1
5	Advances Control System	ISC 605.1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		ISC 605.2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		ISC 605.3	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		ISC 605.4	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-
		ISC 605.5	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-
		ISC 605.6	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-
6	Bio-sensors and signal Processing	ISDLO6023.1	2	3	1	1	1	2	2	1	1	1	1	1	3	1	2
		ISDLO6023.2	2	3	1	1	1	2	2	1	1	1	1	1	3	1	2
		ISDLO6023.3	2	3	1	1	1	2	2	1	1	1	1	1	3	1	2
		ISDLO6023.4	2	3	1	1	1	2	2	1	1	1	1	1	3	1	2
		ISDLO6023.5	2	3	1	1	1	2	2	1	1	1	1	1	3	1	2
		ISDLO6023.6	2	3	2	1	1	3	2	1	1	1	1	1	3	1	2

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7	Nuclear Instrumentation	ISDLO6024.1	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
		ISDLO6024.2	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
		ISDLO6024.3	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
		ISDLO6024.4	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
		ISDLO6024.5	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
		ISDLO6024.6	3	3	1	1	-	3	1	1	1	1	-	1	-	-	3
8	Process Instrumentation system- Lab Practice	ISL601.1	2	3	2	2	1	1	1	1	-	1	1	1	2	3	2
		ISL601.1	3	3	3	2	1	1	1	1	1	1	1	2	2	3	1
		ISL601.1	3	3	3	2	3	1	2	2	1	2	1	3	3	3	2
		ISL601.1	3	2	2	2	2	1	1	1	1	1	1	3	3	3	2
		ISL601.1	2	2	1	2	3	1	2	1	-	1	1	2	2	3	2
		ISL601.1	3	3	3	2	3	1	2	1	1	1	1	2	2	3	2
9	Industrial Data Communication- Lab Practice	ISL602.1	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISL602.2	3	2	1	-	3	-	-	-	1	-	-	3	1	-	3
		ISL602.3	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISL602.4	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISL602.5	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
		ISL602.6	3	2	1	-	-	-	-	-	1	-	-	3	1	-	3
10	Electrical Machines and Drives-Lab Practice - Lab Practice	ISL603.1	1	-	-	1	1	1	-	-	-	-	-	3	-	-	1
		ISL603.2	3	1	-	-	1	1	-	-	-	-	-	3	-	-	1
		ISL603.3	1	1	-	-	1	1	-	-	-	-	-	-	-	-	1
		ISL603.4	2	2	-	-	1	1	-	-	-	-	-	-	-	-	1
		ISL603.5	2	2	1	-	2	1	-	-	-	-	-	-	-	1	1
		ISL603.6	2	-	1	-	-	2	2	-	-	-	-	2	-	1	1
11	Digital Signal Processing- Lab Practice	ISL604.1	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1
		ISL604.2	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1
		ISL604.3	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1

		ISL604.4	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1
		ISL604.5	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1
		ISL604.6	3	3	-	3	-	-	-	-	-	-	1	1	-	-	1
12	Advanced Control System-Lab Practice	ISL605.1	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
		ISL605.2	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
		ISL605.3	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
		ISL605.4	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
		ISL605.5	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
		ISL605.6	3	3	3	1	1	-	-	-	-	1	-	1	3	-	1
13	Mini-Project II	ISL606.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL606.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL606.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL606.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL606.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL606.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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Sr. No.	Name of the course	CO code	Program Outcomes														
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Industrial Process control	ISC 701.1	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.2	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.3	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.4	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.5	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2

		ISC 701.6	1		1			2	2	-	-	-	-	2	2	2	2
2	Biomedical Instrumentation	ISC 702.1	3	3	3	-	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.2	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.3	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.4	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.5	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.6	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
3	Industrial Automation	ISC 703.1	3	2	3	-	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.2	3		3	2	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.3	3	2	3	2	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.4	3	2	3	2	-	-	3	-	3	2	2	3	2	2	3
		ISC 703.5	3	2	3	2	3	2	3	-	3	2	2	3	2	2	3
		ISC 703.6	3	2	3	2	3	2	3	-	3	2	2	3	2	2	3
4	Image Processing	ISDLO7031.1	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.2	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.3	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.4	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.5	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.6	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
5	Digital Control System	ISDLO7032.1	2	2	-	1	2	-	-	-	-	-	-	2	1	2	2
		ISDLO7032.2	2	2	-	1	2	-	-	-	-	-	-	2	1	2	2
		ISDLO7032.3	2	2	-	1	2	-	-	-	-	-	-	2	-	2	2
		ISDLO7032.4	2	3	2	3	2	-	-	-	-	-	-	2	1	3	1
		ISDLO7032.5	2	2	3	3	3	-	-	-	-	-	-	2	-	3	-
6	Industrial Process	ISL701.1	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.2	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2

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	Control-Lab Practice	ISL701.3	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.4	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.5	1	1	1	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.6	1	-	1	-	-	2	2	-	-	-	-	2	2	2	2
7	Biomedical Instrumentation-Lab Practice	ISL702.1	1	2	2	-	2	-	-	-	1	1	-	1	1	1	1
		ISL702.2	1	-	-	-	-	-	-	-	1	1	-	1	-	-	1
		ISL702.3	1	2	2	-	2	-	-	-	1	1	-	1	-	-	1
		ISL702.4	1	2	2	2	2	-	-	-	1	1	-	1	1	1	1
		ISL702.5	1	2	2	2	2	-	-	-	1	1	-	1	2	2	2
		ISL702.6	1	2	2	2	2	-	-	-	1	1	-	1	3	3	3
8	Industrial Automation-Lab Practice	ISL703.1	3	2	3	3	2	2	2	-	2	2	2	2	2	2	2
		ISL703.2	3	3	3	3	3	3	3	1	3	3	3	3	3	2	3
		ISL703.3	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.4	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.5	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.6	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
9	Image Processing Lab Practice	ISL704.1	1	2	2	-	2	-	-	-	1	1	-	1	1	1	1
		ISL704.2	1	-	-	-	-	-	-	-	1	1	-	1	-	-	1
		ISL704.3	1	2	2		2	-	-	-	1	1	-	1	-	-	1
		ISL704.4	1	2	2	2	2	-	-	-	1	1	-	1	-	1	1
		ISL704.5	1	2	2	2	2	-	-	-	1	1	-	1	2	2	2
		ISL704.6	1	2	2	2	2	-	-	-	1	1	-	1	3	3	3
10	Digital Control System-Lab Practice	ISL704.1	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.2	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.3	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.4	1	1	1	-	-	-	-	-	-	2	-	-	2	3	2

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		ISL704.5	1	1	1	-	-	-	-	-	-	2	-	-	2	3	2
		ISL704.6	1	1	1	-	-	1	1	-	-	-	-	-	2	3	2
11	Project 1	ISL704.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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Sr. No.	Name of the course	CO code	Program Outcomes												PSO 1	PSO 2	PSO 3
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12			
1	Industrial Process control	ISC 701.1	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.2	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.3	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.4	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.5	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISC 701.6	1	-	1	-	-	2	2	-	-	-	-	2	2	2	2
2	Biomedical Instrumentation	ISC 702.1	3	3	3	-	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.2	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.3	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.4	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.5	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3
		ISC 702.6	3	3	3	2	-	1	1	-	1	2	1	3	1	1	3

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3	Industrial Automation	ISC 703.1	3	2	3	-	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.2	3		3	2	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.3	3	2	3	2	-	-	3	-	3	2	3	3	2	2	3
		ISC 703.4	3	2	3	2	-	-	3	-	3	2	2	3	2	2	3
		ISC 703.5	3	2	3	2	3	2	3	-	3	2	2	3	2	2	3
		ISC 703.6	3	2	3	2	3	2	3	-	3	2	2	3	2	2	3
4	Image Processing	ISDLO7031.1	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.2	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.3	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.4	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.5	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
		ISDLO7031.6	3	3	1	-	-	-	-	-	-	-	-	1	-	-	3
5	Digital Control System	ISDLO7032.1	2	2	-	1	2	-	-	-	-	-	-	2	1	2	2
		ISDLO7032.2	2	2	-	1	2	-	-	-	-	-	-	2	1	2	2
		ISDLO7032.3	2	2	-	1	2	-	-	-	-	-	-	2	-	2	2
		ISDLO7032.4	2	3	2	3	2	-	-	-	-	-	-	2	1	3	1
		ISDLO7032.5	2	2	3	3	3	-	-	-	-	-	-	2	-	3	-
7	Industrial Process Control-Lab Practice	ISL701.1	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.2	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.3	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.4	1	1	3	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.5	1	1	1	1	1	1	1	-	-	-	-	1	2	2	2
		ISL701.6	1	-	1	-	-	2	2	-	-	-	-	2	2	2	2
8	Biomedical Instrumentati	ISL702.1	1	2	2	-	2	-	-	-	1	1	-	1	1	1	1
		ISL702.2	1	-	-	-	-	-	-	-	1	1	-	1	-	-	1
		ISL702.3	1	2	2	-	2	-	-	-	1	1	-	1	-	-	1

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	on-Lab Practice	ISL702.4	1	2	2	2	2	-	-	-	1	1	-	1	1	1	1
		ISL702.5	1	2	2	2	2	-	-	-	1	1	-	1	2	2	2
		ISL702.6	1	2	2	2	2	-	-	-	1	1	-	1	3	3	3
9	Industrial Automation-Lab Practice	ISL703.1	3	2	3	3	2	2	2	-	2	2	2	2	2	2	2
		ISL703.2	3	3	3	3	3	3	3	1	3	3	3	3	3	2	3
		ISL703.3	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.4	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.5	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
		ISL703.6	3	3	3	3	3	3	3	1	3	3	3	3	3	3	3
10	Image Processing Lab Practice	ISL704.1	1	2	2	-	2	-	-	-	1	1	-	1	1	1	1
		ISL704.2	1	-	-	-	-	-	-	-	1	1	-	1	-	-	1
		ISL704.3	1	2	2		2	-	-	-	1	1	-	1	-	-	1
		ISL704.4	1	2	2	2	2	-	-	-	1	1	-	1	-	1	1
		ISL704.5	1	2	2	2	2	-	-	-	1	1	-	1	2	2	2
		ISL704.6	1	2	2	2	2	-	-	-	1	1	-	1	3	3	3
11	Digital Control System-Lab Practice	ISL704.1	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.2	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.3	1	1	2	-	-	1	1	-	2	-	-	-	2	3	2
		ISL704.4	1	1	1	-	-	-	-	-	-	2	-	-	2	3	2
		ISL704.5	1	1	1	-	-	-	-	-	-	2	-	-	2	3	2
		ISL704.6	1	1	1	-	-	1	1	-	-	-	-	-	2	3	2
12	Project 1	ISL704.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL704.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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		ISL704.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

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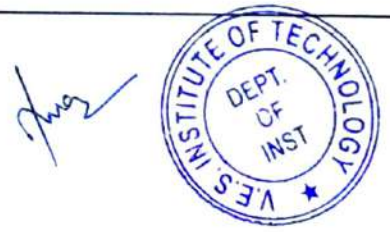
Sr. No.	Name of the course	CO code	Program Outcomes														
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Instrumentation project documentation and execution	ISC 801.1	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISC 801.2	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISC 801.3	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISC 801.4	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISC 801.5	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISC 801.6	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
2	Instrument and System design	ISC802.1	3	2	3	2	2	2	1	1	1	1	1	2	2	3	3
		ISC802.2	3	1	2	2	2	1	1	2	2	1	2	2	3	3	3
		ISC802.3	3	1	2	2	2	2	2	2	2	1	2	2	3	2	3
		ISC802.4	3	1	2	2	2	2	2	2	2	1	2	2	3	2	3
		ISC802.5	3	1	2	2	2	2	2	2	2	1	2	2	3	2	3
		ISC802.6	3	1	2	2	2	2	2	2	2	1	2	2	3	2	3
3	Expert system	ISDLO8041.1	1	1	1	2	3	1	-	-	-	-	-	2	1	1	1
		ISDLO8041.2	2	1	1	1	2	1	-	-	-	-	-	2	1	1	1
		ISDLO8041.3	1	2	1	2	1		-	-	-	-	-	2	1	1	1
		ISDLO8041.4	2	1	1	2	2	1	-	-	-	-	-	2	1	3	1
		ISDLO8041.5	1	1	1	2	-	1	-	-	-	-	-	2			1
		ISDLO8041.6	1	1	1	2	-	1	-	-	-	-	-	2	1	1	1



4	Functional safety	ISDLO8045.1	1	1	1	-	2	1	-	-	-	-	-	3	1	1	1
		ISDLO8045.2	1	-	-	-	-	1	-	2	-	-	-	3	1	1	1
		ISDLO8045.3	2	-	-	2	-	1	2	-	-	-	-	3	1	1	1
		ISDLO8045.4	2	2	2	1	1	1	-	-	-	-	-	3	2	2	2
		ISDLO8045.5	2	2	2	2	-	2	2	2	-	-	-	3	2	2	2
		ISDLO8045.6	2	2	2	2	1	2			-	-	-	3	2	2	2
5	Instrumentation project documentation and execution-Lab Practice	ISL801.1	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISL801.2	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISL801.3	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISL801.4	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISL801.5	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
		ISL801.6	1	1	3	-	3	-	-	-	3	2	3	3	3	1	1
6	Instrument and System design- Lab practice	ISL802.1	2	3	2	2	1	1	1	1	0	1	1	1	2	3	2
		ISL802.2	3	3	3	2	1	1	1	1	1	1	1	2	2	3	1
		ISL802.3	3	3	3	2	3	1	2	2	1	2	1	3	3	3	2
		ISL802.4	3	2	2	2	2	1	1	1	1	1	1	3	3	3	2
		ISL802.5	2	2	1	2	3	1	2	1	1	1	1	2	2	3	2
		ISL802.6	3	3	3	2	3	1	1	1	1	1	1	2	2	3	2
7	Expert system Lab Practice	ISL803.1	1	1	1	2	3	1	-	-	-	-	-	2	1	1	1
		ISL803.2	2	1	1	1	2	1	-	-	-	-	-	2	1	1	1
		ISL803.3	1	2	1	2	1	-	-	-	-	-	-	2	1	1	1
		ISL803.4	2	1	1	2	2	1	-	-	-	-	-	2	1	3	1
		ISL803.5	1	1	1	2	-	1	-	-	-	-	-	2	-	-	1
		ISL803.6	1	1	1	2	-	1	-	-	-	-	-	2	1	1	1
8	Functional safety Lab Practice	ISL803.1	1	1	1	-	2	1	-	-	-	-	-	3	1	1	1
		ISL803.2	1	-	-	-	-	1	-	2	-	-	-	3	1	1	1
		ISL803.3	2	-	-	2	-	1	2	-	-	-	-	3	1	1	1

		ISL803.4	2	2	2	1	1	1	-	-	-	-	-	3	2	2	2
		ISL803.5	2	2	2	2	-	2	2	2	-	-	-	3	2	2	2
		ISL803.6	2	2	2	2	1	2			-	-	-	3	2	2	2
9	Research Methodology	ILO8026.1	3	-	-	2	-	1	1	2	-	-	-	3	1	1	1
		ILO8026.2	-	-	-	3	-	-	-	-	1	2	-	3	1	1	1
		ILO8026.3	-	-	-	3	3	-	-	-		2	-	3	1	1	1
		ILO8026.4	-	-	-	-	2	-	-	-	-	-	-	3	1	1	1
10	Project II	ISL804.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL804.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL804.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL804.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL804.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		ISL804.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

INSTITUTE OF TECHNOLOGY V.E.S. DEPT. OF INST

Department Of Instrumentation Engineering

PO attainment for Year 2019-2020

	SUBJECT NAME	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Applied Mathematics III	3.86	3.86	3.86	3.86	-	3.86	3.86	3.86	-	-	-	3.86	-	-	3.86
2	Analog Electronics	2.92	2.92	-	-	2.92	-	-	-	-	-	-	2.92	-	2.92	2.92
3	Transducer I	4	4	4	4	0	-	-	-	-	4	-	4	4	-	4
4	Digital electronics	3.36	3.36	3.31	3.35	3.2	-	-	-	-	-	-	3.36	-	-	3.36
5	Electrical Network and machines	4	4	-	-	4	-	-	-	-	-	-	4	-	4	4
6	Object Oriented programming and Methodology	1.47	1.57	1.57	1.65	1.57	-	-	-	1.47	1.47	-	1.47	-	-	-
7	Analog Electronics Lab practice	3.13	3.13	-	-	3.13	-	-	-	-	-	-	3.13	-	3.13	3.13
8	Transducer-I Lab Practice	3.74	3.74	3.74	3.74	3.74	-	-	-	-	3.74	-	3.74	3.74	-	3.74
9	Digital Electronics Lab practice	3.53	3.53	3.53	-	4	-	-	-	3.53	3.53	-	3.53	-	-	3.53
10	Applied Mathematics IV	4	4	-	4	-	-	-	-	-	-	-	4	-	-	4
11	Transducer II	4	4	4	4	-	-	-	-	-	4	-	4	4	-	-
12	Feedback control System	2.78	2.75	-	-	2.62	-	-	-	-	-	-	-	3.05	2.76	3.05
13	Analytical Instrumentation	3.12	3.12	3.12	3.12	3.12	-	3.12	-	3.12	-	3.12	3.12	3.12	3.12	3.12
14	Signal conditioning Circuit Design	3.72	3.72	3.72	3.72	-	-	3.72	3.72	3.72	3.72	-	3.72	3.72	-	3.72
15	Application Software Practices	-	2.22	2.22	-	2.22	-	-	-	-	-	-	-	-	-	2.22
16	Transducer-II Lab Practice	4	4	4	4	4	-	-	-	-	4	-	4	4	-	4
17	Feedback Control systems Lab Practice	2.8	2.8	-	-	2.8	-	-	-	-	-	-	2.8	-	2.8	-

(Nilima Warlee)

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF INST

18	Analytical Instrumentation Lab Practice	2	2	2	2	2.52	-	2	-	2	-	2	2	2	2	2
19	Signal Conditioning Circuit Design Lab Practice	3.19	3.19	3.19	3.19	3.19	-	3.19	3.19	3.19	3.19	-	3.19	3.19	-	3.19
20	Signals and System	2.88	2.88	2.88	2.88	-	-	2.88	2.88	-	-	-	-	2.88	-	2.88
21	Application of Microcontroller I	3.61	3.61	3.61	3.61	-	-	-	-	-	3.61	-	3.61	3.46	3.50	3.57
22	Control System Design	1.49	1.49	1.51	-	1.50	-	-	-	-	-	-	1.46	1.52	1.49	1.503
23	Control System Components	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.86	3.84	3.86	3.86	3.86	3.86	3.86
24	Advanced Sensors	3.81	3.81	3.81	3.81	-	-	-	-	-	3.81	-	3.81	3.81	-	-
25	Database Management System	3.25	3.23	3.18	3.18	-	-	-	-	-	-	-	3.18	-	-	-
26	Business Communication and Ethics	3.46	3.46	3.46	-	3.46	3.46	3.46	-	3.46	3.46	3.46	3.46	-	-	3.46
27	Application of Microcontroller I-Lab Practice	3.60	3.52	3.52	3.60	3.52	-	-	-	3.60	3.60	-	3.60	3.20	3.31	3.47
28	Control System Design -Lab Practice	3.50	3.56	3.52	-	3.44	-	-	-	-	-	-	-	-	-	-
29	Control System Components- Lab	2.74	2.71	2.68	2.68	2.71	2.68	2.65	2.68	2.68	2.74	2.68	2.71	2.67	2.66	2.71
30	Advanced Sensors-lab	4.00	4.00	4.00	4.00	-	-	-	-	-	4.00	-	4.00	4.00	-	-
31	Database Management System-Lab Practice	3.12	2.83	2.75	2.75	-	-	-	-	-	-	-	2.95	-	-	-
32	Miniproject	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
33	Process Instrumentation system	1.41	1.41	1.37	1.41	1.46	-	-	-	-	-	-	-	1.41	1.41	1.41
34	Industrial Data Communication	3.86	3.86	3.86	0.00	3.86	-	-	-	3.86	-	-	3.86	3.86	-	3.86
35	Eelctrical Machines and Drives	4.00	4.00	4.00	4.00	4.00	4.00	4.00	-	-	-	-	4.00	4.00	4.00	4.00
36	Digital Signal Processing	2.51	2.51	2.51	2.51	2.88	-	-	-	-	-	2.51	2.51	-	-	-
37	Advanced control system	3.81	3.79	3.68	3.68	-	-	-	-	-	-	-	-	-	-	-
38	Bio-sensors and Signal Processing	3.91	3.91	3.84	3.91	3.91	3.87	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91

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39	Nuclear Instrumentation	4.00	4.00	4.00	4.00	-	4.00	4.00	4.00	4.00	4.00	-	4.00	-	-	4.00
40	Process Instrumentation system-Lab Practice	2.34	2.43	2.38	2.39	2.24	2.39	2.31	2.35	2.19	2.35	2.39	2.26	2.34	2.39	2.38
41	Industrial Data Communication-Lab Practice	3.52	3.52	3.52	-	4.00	-	-	-	3.52	-	-	3.52	3.52	-	3.52
42	Electrical Machines and Drives-Lab Practice	2.42	2.10	2.10	2.80	2.10	2.40	2.80	-	-	-	-	2.80	-	2.10	2.33
43	Digital Signal Processing-Lab Practice	3.58	3.58	-	3.58	-	-	-	-	-	-	3.58	3.58	-	-	3.58
44	Advanced control system-Lab Practice	2.96	2.96	2.96	2.96	2.96	-	-	-	-	2.96	-	2.96	2.96	-	2.96
45	mini project	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
46	Industrial Process control	3.57	3.51	3.53	3.51	3.51	3.61	3.61	-	-	-	-	3.61	3.57	3.57	3.57
47	Biomedical Instrumentation	3.79	3.79	3.79	3.78	-	3.79	3.79	-	3.79	3.79	3.79	3.79	3.79	3.79	3.79
48	Industrial Automation	3.60	3.58	3.60	3.64	3.55	3.55	3.60	-	3.60	3.60	3.60	3.60	3.60	3.60	3.60
49	Image Processing	3.77	3.77	3.77	-	-	-	-	-	-	-	-	3.77	-	-	3.77
50	Digital control System	3.79	3.76	3.88	3.80	3.83	-	-	-	-	-	-	3.79	3.65	3.79	3.80
51	Operation Research	2.80	2.80	2.80	2.80	-	-	-	-	2.80	2.80	2.80	2.80	2.80	2.80	2.80
52	Industrial Process control- lab Practice	4	4	4	4	4	4	4	-	-	-	-	4	4	4	4
53	Biomedical Instrumentation- Lab Practice	2	2	2	2	2	-	-	-	2	2	-	2	1	1	2
54	Industrial Automation-Lab Practice	3.62	3.59	3.62	3.62	3.59	3.59	3.59	3.54	3.59	3.59	3.59	3.59	3.59	3.57	3.59
55	Image Processing-Lab Practice	3.56	3.71	3.71	3.80	3.71	-	-	-	3.56	3.56	-	3.56	3.86	3.83	3.68
56	Digital control System-Lab Practice	4	4	4	-	-	4	4	-	4	4	-	-	4	4	4
57	Project 1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

58	Instrumentation project documentation and execution	2.30	2.30	2.30	-	2.30	-	-	-	2.30	2.30	2.30	2.30	2.30	2.30	2.30
59	Instrument and System design	3.41	3.41	3.41	3.41	3.41	3.39	3.39	3.41	3.41	3.41	3.41	3.41	3.41	3.43	3.41
60	Expert System	4	4	4	4	4	4	-	-	-	-	-	4	4	4	4
61	Functional safety	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	-	-	-	3.92	3.92	3.92	3.92
62	Instrumentation project documentation and execution-Lab practice	4.00	4.00	4.00	-	4.00	-	-	-	4.00	4.00	4.00	4.00	4.00	4.00	4.00
63	Instrument and System design- Lab Practice	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
64	Expert System-Lab practice	3.83	3.83	3.83	3.83	3.83	3.83	-	-	-	-	-	3.83	3.83	3.83	3.83
65	Functional safety-Lab Practice	3.37	3.4	3.4	3.4	3.3	3.39	3.48	3.48	-	-	-	3.36	3.38	3.38	3.38
66	Research Methodology	3.76	-	-	3.55	3.30	3.76	3.76	3.76	3.76	3.48	-	3.54	3.54	3.54	3.54
67	Project II	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Overall PO Attainment(2019-20)	**3.3**	**3.3**	**3.3**	**3.3**	**3.1**	**3.5**	**3.4**	**3.5**	**3.3**	**3.5**	**3.3**	**3.4**	**3.4**	**3.1**	**3.3**

Department Of Instrumentation Engineering

PO Attainment for Last 3 batches

Batch	PO1 (a)	PO2 (b)	PO3 (c)	PO4 (d)	PO5 (e)	PO6 (f)	PO7 (g)	PO8 (h)	PO9(i)	PO10 (j)	PO11(k)	PO12(l)
2016-2020	3.16	3.16	3.23	3.16	3.09	3.51	3.37	3.44	3.51	3.51	3.16	3.16
2015-2019	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.23	3.16	3.23	3.16
2014-2018	3.02	2.95	2.95	2.95	2.88	3.09	2.95	2.88	2.88	3.09	3.09	2.95

Warlce
(Nilima Warlce)

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF INST

4. Bachelor of Electronics and telecommunication Engineering

4.1: CO-PO-PSO Mapping (2019-2020)

Semester-III _ CBCS

CO PO PSO mapping (Strength: S=3, M=2, W=1) Revised in- A.Y. 2017-18

Name of the course	CO code	Course outcome	Program Outcomes												PSOs	
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
Applied Mathematics - III	ECC301.1	Students will demonstrate basic knowledge of Laplace Transform. Fourier series, Bessel Functions, Vector Algebra and Complex Variable.	3	3	-	2	-	-	-	-	-	-	-	1	-	2
	ECC301.2	Students will demonstrate an ability to identify and Model the problems of the field of Electronics and Telecommunication and solve it.	3	3	-	2	-	-	-	-	-	-	-	1	-	2
	ECC301.3	Students will be able to apply the application of Mathematics in Telecommunication Engineering	3	3	-	2	-	-	-	-	-	-	-	1	-	2
	ECC 301		**3**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**2**
Electronic Devices and Circuits I	ECC302.1	Understand the current voltage characteristics of semiconductor devices,	3	2	2	2	2	-	-	-	2	-	3	1	2	2
	ECC302.2	Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation.	3	3	-	2	-	-	-	-	3	-	3	1	3	2
	ECC302.3	Design and analyze of electronic circuits,	3	3	3	2					3		3	1	3	2
	ECC302.4	Evaluate Frequency response to understand behaviour of electronics circuits.	3	-	-	-	2	-	-	-	-	-	3	1	2	2
	ECC 302		**3**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**3**	**1**	**3**	**2**

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF EXTC

(Neeta Chavan)

Digital System Design	ECC303.1	Develop a digital logic and apply it to solve real life problems.	3	3	3	2	2	2	2	-	-	1	1	3	3	3
	ECC303.2	Analyze, design and implement combinational logic circuits.	3	3	3	3	2	2	2	-	-	1	1	3	3	3
	ECC303.3	Analyze, design and implement sequential logic circuits, classification of memory	3	3	3	3	2	2	2	-	-	1	1	3	3	3
	ECC303.4	Analyze, simulate and implement digital system design using PLD,VHDL	3	3	3	3	3	2	2	-	-	1	1	3	3	3
	ECC 303		**3**	**3**	**3**	**3**	**2**	**2**	**2**			**1**	**1**	**3**	**3**	**3**
Circuit Theory and Networks	ECC304.1	Apply their knowledge in analysing Circuits by using network theorems.	3	3	3	3	3	2	2	--	--	--	1	1	3	3
	ECC304.2	Apply the time and frequency method of analysis.	3	3	3	3	3	2	2	--	--	--	1	1	3	3
	ECC304.3	Find the various parameters of two port network.	3	3	3	3	3	2	2	--	--	--	1	1	3	3
	ECC304.4	Apply network topology for analyzing the circuit	3	3	3	3	3	2	2	--	--	--	1	1	3	3
	ECC304.5	Synthesize the network using passive elements.	3	3	3	3	3	2	2	--	--	--	1	1	3	3
	ECC 304		**3**	**3**	**3**	**3**	**3**	**2**	**2**				**1**	**1**	**3**	**3**
Electronic Instrumentation and Control	ECC305.1	Students will be able to explain the principle of operation for various sensors.	3	3	3	3	3	2	2	--	--	1	1	1	3	3
	ECC305.2	Students will be able to describe functional blocks of data acquisition systems.	3	3	3	3	3	2	2	--	--	1	1	1	3	3
	ECC305.3	Students will be able to find transfer functions for a given system.	3	3	3	3	3	2	2	--	--	1	1	1	3	3
	ECC305.4	Students will be able to calculate time domain and frequency domain parameter for given system	3	3	3	3	3	2	2	--	--	1	1	1	3	3

V.E.S. INSTITUTE OF TECHNOLOGY
DEPT. OF EXTC

	ECC305.5	Students will be able to predict the stability of a given system using appropriate criteria.	3	3	3	3	3	2	2	--	--	1	1	1	3	3
	ECC 305		**3**	**3**	**3**	**3**	**3**	**2**	**2**	**—**	**--**	**1**	**1**	**1**	**3**	**3**
Electronic Devices and Circuits I Laboratory	ECL301.1	Understand the current voltage characteristics of semiconductor devices,	3	2	2	2	2	-	-	-	2	-	3	1	2	2
	ECL301.2	Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation,	3	3	-	2	-	-	-	-	3	-	3	1	3	2
	ECL301.3	Design and analyze of electronic circuits,	3	3	3	2	-	-	-	-	3	-	3	1	3	2
	ECL301.4	Evaluate Frequency response to understand behaviour of electronics circuits.	3	-	-	-	2	-	-	-	-	-	3	1	2	2
	ECL301		**3**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**3**	**1**	**3**	**2**
Digital System Design Laboratory	ECL302.1	Develop a digital logic and apply it to solve real life problems.	3	3	3	2	2	2	2	-	2	1	3	3	3	3
	ECL302.2	Analyze, design and implement combinational logic circuits.	3	3	3	3	2	2	2	-	2	1	3	3	3	3
	ECL302.3	Analyze, design and implement sequential logic circuits, classification of memory	3	3	3	3	2	2	2	-	2	1	3	3	3	3
	ECL302.4	Analyze, simulate and implement digital system design using PLD,VHDL	3	3	3	3	3	2	2	-	2	1	3	3	3	3
	ECL302		**3**	**3**	**3**	**3**	**3**	**2**	**2**	**-**	**2**	**1**	**3**	**3**	**3**	**3**
OOP using JAVA Laboratory	ECL303.1	Students will be able to code a program using JAVA constructs.	3	3	3	3	2	2	2	-	2	1	3	3	3	-
	ECL303.2	Students will be able to understand fundamental features of an object oriented language: object classes and interfaces, exceptions and libraries of object	3	3	3	3	2	2	2	-	2	1	3	3	3	-

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		collections.														
	ECL303.3	Students will be able to develop a program that efficiently implements the algorithm for given tasks.	3	3	3	3	2	2	2	-	2	1	3	3	3	-
	ECL303.4	Students will be able to utilize the knowledge acquired in this course to develop higher level algorithms.	3	3	3	3	2	2	2	-	2	1	3	3	3	-
	ECL 303		**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**2**	**1**	**3**	**3**	**3**	**-**
Applied Mathematics - IV	ECC401.1	Demonstrate basic knowledge of Calculus of variation, Vector Spaces, Matrix Theory, Random Variables, Probability Distributions, Correlation and Complex Integration.	3	3	-	2	-	-	-	-	-	-	-	1	1	3
	ECC401.2	Demonstrate an ability to identify and Model the problems in the field of Electronics and Telecommunication and solve it.	3	3	-	2	-	-	-	-	-	-	-	1	1	3
	ECC401.3	Apply the application of Mathematics in Telecommunication Engineering.	3	3	-	2	-	-	-	-	-	-	-	1	1	3
	ECC 401		**3**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**3**
Electronic Devices and Circuits II	ECC402.1	Design and analyse the basic operations of MOSFET.	3	3	-	2	-	-	-	-	-	1	2	3	3	1
	ECC402.2	Know about the multistage amplifier using BJT and FET in various configuration to determine frequency response and concept of voltage gain.	3	3	3	3	2	-	-	-	2	1	3	3	3	2
	ECC402.3	Know about different power amplifier circuits, their design and use in electronics and communication circuits.	3	3	3	3	2	-	-	-	2	1	2	3	3	2
	ECC402.4	Know the concept of feedback amplifier and their characteristics.	3	3	2	2	-	-	-	-	2	1	2	3	3	2

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	ECC402.5	Design the different oscillator circuits for various frequencies	3	3	3	3	-	-	-	-	2	1	3	3	3	2
	ECC 402		**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**2**	**1**	**3**	**3**	**3**	**2**
Linear Integrated Circuits	ECC403.1	Understand the fundamentals and areas of applications for the integrated circuits.	3	3	-	-	2	1	1	-	-	-	-	1	2	1
	ECC403.2	Demonstrate the ability to design practical circuits that perform the desired operations.	-	-	3	-	3	3	-	-	1	1	1	2	2	3
	ECC403.3	Select appropriate integrated circuits, modules to build the given application for understanding the differences between theoretical, practical and simulated results.	-	-	1	3	3	3	3	-	3	3	3	3	2	3
	ECC 403		**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**
Signals & Systems	ECC404.1	Students will be able to understand various types of signals and systems, classify them, analyze them and perform various operations on them.	3	3	1	1	1	-	1	-	-	2	-	1	2	-
	ECC404.2	Students will be able to understand the use of transforms in analysis of signals and systems in continuous and discrete time domain.	3	3	3	2	1	1	3	-	-	2	-	2	2	2
	ECC404.3	Students will be able to observe the effect of various properties and operations of signals and systems.	3	3	3	2	1	1	3	-	-	2	-	2	2	2
	ECC404.4	Students will be able to evaluate the time and frequency response of continuous and discrete time systems which are useful to understand the behavior of electronic circuits and communication systems.	3	3	3	2	1	1	3	-	-	2	-	2	2	2
	ECC 404		**3**	**3**	**3**	**2**	**1**	**1**	**3**	**-**	**-**	**2**	**-**	**2**	**2**	**2**
Principles of Communicati	ECC405.1	Use of different modulation and demodulation techniques used in analog	3	2	2	3	3	-	-	-	3	2	2	2	2	

on Engineering		communication.														
	ECC405.2	Identify and solve basic communication problems	3	3	3	3	3	1	1	-	3	2	2	2	3	3
	ECC405.3	Analyze transmitter and receiver circuits	3	3	3	2	3	-	-	-	3	2	2	2	2	2
	ECC405.4	Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems	3	3	3	3	3	1	1	-	3	2	2	2	3	3
	ECC 405		**3**	**3**	**3**	**3**	**3**	**1**	**1**		**3**	**2**	**2**	**2**	**3**	**3**
Electronic Devices and Circuits II Laboratory	ECL401.1	Design and analyse the basic operations of MOSFET.	-	-	-	-	-	-	-	-	-	-	2	3	3	1
	ECL401.2	Know about the multistage amplifier using BJT and FET in various configuration to determine frequency response and concept of voltage gain.	3	3	3	3	2	-	-	-	2	1	3	3	3	2
	ECL401.3	Know about different power amplifier circuits, their design and use in electronics and communication circuits.	3	3	3	3	2	-	-	-	2	1	2	3	3	2
	ECL401.4	Know the concept of feedback amplifier and their characteristics.	3	3	2	2	-	-	-	-	2	1	2	3	3	2
	ECL401.5	Design the different oscillator circuits for various frequencies	3	3	3	3	-	-	-	-	2	1	3	3	3	2
	ECL 401		**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**2**	**1**	**3**	**3**	**3**	**2**
Linear Integrated Circuits Laboratory	ECL402.1	Understand the fundamentals and areas of applications for the integrated circuits.	3	3	-	-	2	1	1	-	-	-	-	1	2	3
	ECL402.2	Demonstrate the ability to design practical circuits that perform the desired operations.	-	-	3	-	3	3	-	-	1	1	1	2	3	3
	ECL402.3	Select appropriate integrated circuits, modules to build the given application for understanding the differences between theoretical, practical and simulated results.	-	-	1	3	3	3	3	-	3	3	3	3	3	3

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	ECL 402		**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**
Principles of Communication Engineering Laboratory	ECL403.1	Use of different modulation and demodulation techniques used in analog communication.	3	2	2	3	3	-	-	-	3	2	2	2	2	2
	ECL403.2	Identify and solve basic communication problems	3	3	3	3	3	1	1	-	3	2	2	2	3	3
	ECL403.3	Analyze transmitter and receiver circuits	3	3	3	2	3	-	-	-	3	2	2	2	2	2
	ECL403.4	Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems	3	3	3	3	3	1	1	-	3	2	2	2	3	3
	ECL 403		**3**	**3**	**3**	**3**	**3**	**1**	**1**	-	3	2	2	2	3	3

Microprocessor & Peripherals Interfacing	ECC501.1	Understand basic concepts of microcomputer systems	3	2	1	-	-	-	-	-	3	-	-	3	3	1
	ECC501.2	Understand the architecture & software aspects of microprocessor 8086	3	2	1	-	-	-	-	-	3	-	-	3	3	2
	ECC501.3	Write Assembly language program in 8086	3	3	3	3	3	3	-	-	3	3	-	3	3	3
	ECC501.4	Know the co-processor configurarions	3	1	-	-	-	-	-	-	2	-	-	3	2	2
	ECC501.5	Interface peripherals for 8086	3	3	3	3	3	3	-	-	3	3	-	3	3	3
	ECC501.6	Design elementy aspects of microprocessor based systems	3	2	2	-	1	1	-	-	3	-	-	3	2	3
	ECC501		**3**	**2**	**1**	**3**	**3**	**3**	**-**	**-**	**3**	**3**	**-**	**3**	**3**	**3**
Digital Communication	ECC502.1	Understand random variables and random processes of signal,	3	3	-	-	3	-	-	-	3	2	3	3	3	3
	ECC502.2	Apply the concepts of Information Theory in source coding,	3	3	3	3	1	1	-		3	2	3	3	3	3
	ECC502.3	Evaluate different methods to eliminate Inter-symbol interference	3	3	1	3	-	-	-	-	3	2	3	3	3	3

	ECC502.4	Compare different band-pass modulation techniques.	3	3	3	3	2	1	-	-	3	2	3	3	3	3
	ECC502.5	Evaluate performance of different error control codes.	3	3	3	3	3	-	-	-	3	2	3	3	3	3
	ECC502		**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**2**	**3**	**3**	**3**	**3**
Electromagnetic Engineering	ECC503.1	Fields and energies in simple planar, cylindrical, and spherical geometries, Fields within conducting and anisotropic media	3	3	3	1	-	-	-	-	3	1	-	3	3	3
	ECC503.2	Electric and magnetic forces on charges, wires, and media	3	3	3	1	-	-	-	-	3	1	-	3	3	3
	ECC503.3	Sinusoids and transients on TEM lines with mismatched impedances and tuning	3	3	3	1	-	1	-	-	3	1	-	3	3	3
	ECC503		**3**	**3**	**3**	**1**	**-**	**1**	**-**	**-**	**3**	**1**	**-**	**3**	**3**	**3**
Discrete Time Signal Processing	ECC504.1	Understand the concepts of discrete-time Fourier transform and fast Fourier transform.	3	3	3	3	1	3	1	-	2	-	2	-	-	3
	ECC504.2	Apply the knowledge of disign of IIR digital filters to meet arbitrary specifications.	3	3	3	3	1	3	1	-	2	-	2	-	-	3
	ECC504.3	Apply the knowledge of disign of FIR digital filters to meet arbitrary specifications..	3	3	3	3	1	3	1	-	2	-	2	-	-	3
	ECC504.4	Analyze the effect of hardware limitations on performance of digital filters.	3	3	3	3	1	3	1	-	2	-	2	-	-	3
	ECC504.5	Apply knowledge of DSP prpocessors for various applications.	3	3	3	3	1	3	3	-	2	-	2	-	-	3
	ECC504		**3**	**3**	**3**	**3**	**1**	**3**	**1**	**-**	**2**	**-**	**2**	**-**	**-**	**3**
Microelectronics (Department level optional	ECCDLO5011.1	Analyze various constant current source circuit using MOS	3	3	-	-	3	2	-	-	-	-	-	-	3	2
	ECCDLO5011.2	Design and implement active load MOS amplifier.	3	3	3	3	3	2	-	-	-	-	-	-	3	3

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course 1)	ECCDLO5011.3	Design and implement active load differential amplifier	3	3	3	3	3	2	-	-	-	-	-	-	3	3
	ECCDLO5011.4	Understand basics of passive device IC fabrication and Power amplifiers	3	-	2	-	2	1	1	-	-	-	-	-	3	1
	ECCDLO5011		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
TV & Video Engineeing (Department level optional course 2)	ECCDLO5012.1	Understand overview of TV systems	3	2	-	3	-	-	-	-	-	-	-	3	1	3
	ECCDLO5012.2	Understand details of compression technique	3	-	-	-	-	-	3	-	-	-	-	3	1	3
	ECCDLO5012.3	Know about different DVB standards	3	-	-	-	-	-	3	-	-	-	-	3	1	3
	ECCDLO5012.4	Understand Advanced Digital Systems	3	2	-	3	-	-	3	-	-	-	-	3	2	3
	ECCDLO5012		**3**	**2**	**-**	**3**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**3**	**1**	**3**
Data Compression & Encryption (Department level optional course 3)	ECCDLO5014.1	Implement text, audio and video compression technique	3	2	2	3	3	3	3	3	3	2	1	2	3	3
	ECCDLO5014.2	Analyze and apply the symmetric and asymmetric key cryptography algorithms	2	1	1	3	3	3	2	3	2	2	1	2	3	3
	ECCDLO5014.3	Explain network security and ethical hacking procedures	-	2	1	1	3	3	3	3	3	2	1	2	2	3
	ECCDLO5014		**3**	**2**	**1**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**1**	**2**	**3**	**3**
Microprocessor & Peripherals Interfacing Lab	ECL501.1	Understand basic concepts of microcomputer systems	3	2	1	-	-	-	-	-	3	-	-	3	3	1
	ECL501.2	Understand the architecture & software aspects of microprocessor 8086	3	2	1	-	-	-	-	-	3	-	-	3	3	2
	ECL501.3	Write Assembly language program in 8086	3	3	3	3	3	3	-	-	3	3	-	3	3	3
	ECL501.4	Know the co-processor configurarions	3	1	-	-	-	-	-	-	2	-	-	3	2	2
	ECL501.5	Interface peripherals for 8086	3	3	3	3	3	3	-	-	3	3	-	3	3	3
	ECL501.	Design elementy aspects of	3	2	2	-	1	1	-	-	3	-	-	3	2	3

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	6	microprocessor based systems														
	ECC501		**3**	**2**	**1**	**3**	**3**	**3**	**-**	**-**	**3**	**3**	**-**	**3**	**3**	**3**
Digital Communication Lab	ECL502.1	Understand random variables and random processes of signal,	3	3	-	-	3	-	-	-	3	2	3	3	3	3
	ECL502.2	Apply the concepts of Information Theory in source coding,	3	3	3	3	1	1	-	-	3	2	3	3	3	3
	ECL502.3	Evaluate different methods to eliminate Inter-symbol interference	3	3	1	3	-	-	-	-	3	2	3	3	3	3
	ECL502.4	Compare different band-pass modulation techniques,	3	3	3	3	2	1	-	-	3	2	3	3	3	3
	ECL502.5	Evaluate performance of different error control codes.	3	3	3	3	3	-	-	-	3	2	3	3	3	3
	ECL502		**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**3**	**2**	**3**	**3**	**3**	**3**
Business Communication & Ethics Lab	ECL503.1	Design a technical document using precise language, suitable vocabulary and apt style	-	2	1	3	-	3	3	3	3	3	2	3	2	2
	ECL503.2	Develop the life skills/ interpersonal skills to progress professionally by building stronger relationships.	-	2	-	-	-	2	2	3	3	3	3	3	2	2
	ECL503.3	Demonstrate awareness of contemporary issues knowledge of professional and ethical responsibilities.	-	1	2	1	1	3	3	3	3	3	3	3	-	2
	ECL503.4	Apply the traits of a suitable candidate for a job/higher education, upon being trained in the techniques of holding a group discussion, facing interviews and writing resume/SOP.	2	2	2	2	2	2	2	2	3	3	3	3	3	3
	ECL503.5	Deliver formal presentations effectively implementing the verbal and non-verbal skills.	-	-	-	3	3	3	3	3	3	3	3	3	1	2
	ECL503		**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**

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Open Source Technology for Communication Lab	ECL504.1	1. Learn open source programming tools for communication technology.	3	3	3	3	3	1	1	1	3	1	-	3	3	3
	ECL504.2	2. Simulate and analyze the performance of communication system	3	3	3	3	3	1	1	1	3	1	-	3	3	3
	ECL504.3	3. Implement the communication system/subsystem.	3	3	3	3	3	1	1	1	3	1	-	3	3	3
	ECL504		**3**	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**3**	**1**	**-**	**3**	**3**	**3**
Microelectronics Lab(Department level optional course 1)	ECLDLO5011.1	Analyze various constant current source circuit using MOS	3	3	-	-	3	2	-	-	-	-	-	-	3	2
	ECLDLO5011.2	Design and implement an active load MOS amplifier.	3	3	3	3	3	2	-	-	-	-	-	-	3	3
	ECLDLO5011.3	Design and implement active load differential amplifier	3	3	3	3	3	2	-	-	-	-	-	-	3	3
	ECLDLO5011.4	Understand basics of passive device IC fabrication and Power amplifiers	3	-	2	-	2	1	1	-	-	-	-	-	3	1
	ECLDLO5011		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
TV & Video Engineeing Lab (Department level optional course 2)	ECLDLO5012.1	Understand overview of TV systems	3	2	-	3	-	-	-	-	-	-	-	3	1	3
	ECLDLO5012.2	Understand details of compression technique	3	-	-	-	-	-	3	-	-	-	-	3	1	3
	ECLDLO5012.3	Know about different DVB standards	3	-	-	-	-	-	3	-	-	-	-	3	1	3
	ECLDLO5012.4	Understand Advanced Digital Systems	3	2	-	3	-	-	3	-	-	-	-	3	2	3
	ECCDLO5012		**3**	**2**	**-**	**3**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**3**	**1**	**3**
Data Compression & Encryption Lab (Department level optional	ECLDLO5014.1	Implement text, audio and video compression technique	3	2	2	3	3	3	3	3	3	2	1	2	3	3
	ECLDLO5014.2	Analyze and apply the symmetric and asymmetric key cryptography algorithms	2	1	1	3	3	3	2	3	2	2	1	2	3	3
	ECLDLO5014.3	Explain network security and ethical hacking procedures	-	2	1	1	3	3	3	3	3	3	2	1	2	2	3
	ECLDLO5014		**3**	**2**	**1**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**1**	**2**	**3**	**3**

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course 3																	
Name of the course	CO code	Course outcome	Program Outcomes												PSOs	
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Microcontrollers & Applications	ECC601.1	Understand the detailed architecture of 8051 and ARM7 microcontroller	3	3	2	2	-	3	-	-	3	2	3	3	2	2
	ECC601.2	Study the in-depth working of the microcontrollers and their Instruction set.	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECC601.3	Interface various peripheral devices to the microcontrollers.	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECC601.4	Write Assembly language and Embedded C program for microcontrollers	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECC601		**3**	**3**	**2**	**2**	**3**	**3**	**-**	**-**	**3**	**2**	**3**	**3**	**3**	**2**
Computer Communication Networks	ECC602.1	Learn to simulate computer networks and analyse the simulation results and Troubleshoot connectivity problems in a host occurring at multiple layers of the OSI model	-	-	-	3	3	-	1	-	3	3	2	3	3	3
	ECC602.2	Study media types, end devices, and interconnecting devices to design a small or medium sized computer network.	-	-	-	3	3	-	1	-	3	3	2	3	3	3
	ECC602.3	Understand and simulate frame structure of Data Link layer and medium access control layer and protocols	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECC602.4	Implemente Routing algorithms and design subnet and supernet using IPv4 addressing.	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECC602.5	Study and implement Transport Layer protocols.	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECC602		**-**	**-**	**1**	**3**	**3**	**-**	**1**	**-**	**3**	**3**	**2**	**3**	**3**	**3**
Antenna & Radio Wave Propagation	ECC603.1	Define Basic antenna parameters like radiation pattern, directivity and gain	3	3	3	3	3	-	1	-	3	3	2	3	3	3

	ECC6032	Derive the field equations for the basic radiating elements like linear wire antenna and loop antenna.	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECC6033	Design of uniform linear and planar antenna arrays using isotropic and directional Sources	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECC6034	Implement special types of Antennas like microstrip antennas and reflectors.	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECC6035	To understand the basics of wave propagation, to select proper parameters for propagation of the waves by considering the factors affecting and to find conditions for loss of signal and to identify and solve problems related to the propagations required for the study of antennas.	3	3	1	1	3	-	1	-	3	1	1	3	3	3
	ECC603		**3**	**3**	**3**	**3**	**3**	-	**1**	-	**3**	**3**	**2**	**3**	**3**	**3**
Image Processing & Machine Vision	ECC6041	Understand theory and models in image processing	3	2	3	3	3	-	-	-	-	-	-	-	3	1
	ECC6042	Interpret and analyze 2D signals in Spatial and frequency domain through image transforms	3	3	3	1	3	1	-	-	-	-	-	-	3	3
	ECC6043	Apply quantitative models of image processing for segmentation and restoration for various applications	3	3	3	3	3	2	-	-	-	-	-	-	3	3
	ECC6044	Find shape using various representation techniques and classify the object using different classification methods.	3	3	3	3	3	3	-	-	-	-	-	-	3	3
	ECC604		**3**	**3**	**3**	**3**	**3**	**2**	-	-	-	-	-	-	**3**	**3**
Department Level Objective Courses																

Digital VLSI Design	ECCDLO 6021.1	Realize logic circuits with different design styles and its layouts	3	3	2	-	3	-	-	-	-	-	-	-	3	3
	ECCDLO 6021.2	To understand operation of memory, storage circuits and data path elements.	3	3	3	3	3	-	-	-	-	-	-	-	3	3
	ECCDLO 6021.3	Demonstrate an understanding of system level design issues such as protection, clocking, and routing.	3	3	3	-	3	-	-	-	-	-	-	-	3	3
	ECCDLO 6021.4	Simulate and synthesize digital circuits using HDL language and learn the RTL design techniques and methodologies	3	3	3	3	3	-	-	-	3	-	1	3	2	2
	ECCDLO 6021		**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**3**	**-**	**1**	**3**	**3**	**3**
Radar Engineering	ECCDLO 6022.1	Explain generalized concept of RADAR	3	2	3	1	-	2	-	-	2	-	1	1	1	1
	ECCDLO 6022.2	Solve problems using radar equations.	3	3	3	2	-	2	-	-	1	-	1	1	2	2
	ECCDLO 6022.3	Describe different types of radar for specific application.	3	3	3	2	-	2	-	-	2	-	1	1	2	3
	ECCDLO 6022.4	Explain concept of tracking radar	3	2	2	2	-	2	-	-	1	-	1	1	2	2
	ECCDLO 6022.5	Evaluate the design constraints for transmitter	1	1	1	2	-	1	-	-	1	-	1	1	1	1
	ECCDLO 6022.6	Evaluate the design constraints for receiver.	1	1	1	2	-	1	-	-	1	-	1	1	1	1
	ECCDLO 6022		**2**	**2**	**2**	**2**	**-**	**2**	**-**	**-**	**1**	**-**	**1**	**1**	**2**	**2**

Database Management System	ECCDLO 6023.1	Understand the different issues involved in the design and implementation of a database system.	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECCDLO 6023.2	Transform an information model into a relational database schema and to use a data definition language and/or utility to implement the schema using a DBMS	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECCDLO 6023.3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECCDLO 6023.4	Understand the concepts of constraints, views, concurrency control, deadlock	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECCDLO 6023		**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**2**	**-**	**-**
Microcontrollers & Applications Laboratory	ECL601.1	Understand the detailed architecture of 8051 and ARM7 microcontroller	3	3	2	2	-	3	-	-	3	2	3	3	2	2
	ECL601.2	Study the in-depth working of the microcontrollers and their Instruction set.	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECL601.3	Interface various peripheral devices to the microcontrollers.	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECL601.4	Write Assembly language and Embedded C program for microcontrollers	3	3	2	2	3	3	-	-	3	2	3	3	3	2
	ECL601		**3**	**3**	**2**	**2**	**3**	**3**	**-**	**-**	**3**	**2**	**3**	**3**	**3**	**2**
Computer Communication Networks Laboratory	ECC602.1	Learn to simulate computer networks and analyse the simulation results and Troubleshoot connectivity problems in a host occurring at multiple layers of the OSI model	-	-	-	3	3	-	1	-	3	3	2	3	3	3

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	ECC602.2	Study media types, end devices, and interconnecting devices to design a small or medium sized computer network.	-	-	-	3	3	-	1	-	3	3	2	3	3	3
	ECC602.3	Understand and simulate frame structure of Data Link layer and medium access control layer and protocols	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECC602.4	Implemente Routing algorithms and design subnet and supernet using IPv4 addressing.	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECC602.5	Study and implement Transport Layer protocols.	-	-	1	3	3	-	1	-	3	3	2	3	3	3
	ECL602		**-**	**-**	**1**	**3**	**3**	**-**	**1**	**-**	**3**	**3**	**2**	**3**	**3**	**3**
Antenna & Radio Wave Propagation Laboratory	ECL603.1	Define Basic antenna parameters like radiation pattern, directivity and gain	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECL603.2	Derive the field equations for the basic radiating elements like linear wire antenna and loop antenna	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECL603.3	Design of uniform linear and planar antenna arrays using isotropic and directional Sources	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECL603.4	Implement special types of Antennas like microstrip antennas and reflectors.	3	3	3	3	3	-	1	-	3	3	2	3	3	3
	ECC603.5	To understand the basics of wave propagation, to select proper parameters for propagation of the waves by considering the factors affecting and to find conditions for loss of signal and to identify and solve problems related to the propagations required for the study of antennas.	3	3	1	1	3	-	1	-	3	1	1	3	3	3
	ECCL603		**3**	**3**	**3**	**3**	**3**	**-**	**1**	**-**	**3**	**3**	**2**	**3**	**3**	**3**

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Image Processing & Machine Vision Laboratory	ECL604.1	Understand theory and models in image processing.	3	2	3	3	3	-	-	-	-	-	-	-	3	1
	ECL604.2	Interpret and analyze 2D signals in Spatial and frequency domain through image transforms	3	3	3	1	3	1	-	-	-	-	-	-	3	3
	ECL604.3	Apply quantitative models of image processing for segmentation and restoration for various application	3	3	3	3	3	2	-	-	-	-	-	-	3	3
	ECL604.4	Find shape using various representation techniques and classify the object using different classification method	3	3	3	3	3	3	-	-	-	-	-	-	3	3
	ECL604		**3**	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**
Department Level Objective Courses Laboratory																
Digital VLSI Design	ECCDLO6021.1	Realize logic circuits with different design styles and its layouts	3	3	2	-	3	-	-	-	-	-	-	-	3	3
	ECCDLO6021.2	To understand operation of memory, storage circuits and data path elements.	3	3	3	3	3	-	-	-	-	-	-	-	3	3
	ECCDLO6021.3	Demonstrate an understanding of system level design issues such as protection, clocking, and routing.	3	3	3	-	3	-	-	-	-	-	-	-	3	3
	ECCDLO6021.4	Simulate and synthesize digital circuits using HDL language and learn the RTL design techniques and methodologies	3	3	3	3	3	-	-	-	3	-	1	3	2	2
	ECLDLO6021		**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**3**	**-**	**1**	**3**	**3**	**3**
Radar Engineering Laboratory	ECLDLO6022.1	Explain generalized concept of RADAR	2	2	3	3	-	2	-	-	2	-	1	1	2	1
	ECLDLO6022.2	Solve problems using radar equations.	2	3	2	1	3	-	-	-	2	-	1	-	2	1

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	ECLDLO 6022.3	Describe different types of radar for specific application.	2	3	2	1	-	2	-	-	2	-	-	-	2	1
	ECLDLO 6022.4	Explain concept of tracking radar	2	2	3	3	-	2	-	-	2	-	1	1	2	1
	ECLDLO 6022.5	Evaluate the design constraints for transmitter	2	2	3	3	-	2	-	-	2	-	1	1	2	1
	ECLDLO 6022.6	Evaluate the design constraints for receiver.	2	2	3	3	-	2	-	-	2	-	1	1	2	1
	ECLDLO 6022		**2**	**2**	**3**	**2**	**3**	**2**	**-**	**-**	**2**	**-**	**1**	**1**	**2**	**1**
Database Management System Laboratory	ECLDLO 6023.1	Understand the different issues involved in the design and implementation of a database system.	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECCDLO 6023.2	Transform an information model into a relational database schema and to use a data definition language and/or utility to implement the schema using a DBMS	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECLDLO 6023.3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECLDLO 6023.4	Understand the concepts of constraints, views, concurrency control, deadlock	3	3	3	3	3	-	-	-	2	-	1	2	-	-
	ECLDLO 6023		**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**2**	**-**	**-**

Microwave	ECC701.	Characterize devices at higher	3	3	3	3	3	1	1	-	2	3	2	2	3	3

Engineering	1	frequencies.															
	ECC701.2	Design and analyze microwave circuits.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECC701.3	Design and analyze amplifiers and oscillators at microwave frequencies.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECC701.4	Demonstrate skills of planning, design and deployment of microwave networks.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECC701		**3**	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**2**	**3**	**2**	**2**	**3**	**3**
Mobile Communication System	ECC702.1	Explain the cellular fundamentals and estimate the coverage and capacity of cellular systems	-	3	3	-	-	1	-	-	-	-	-	-	-	-
	ECC702.2	Classify different types of propagation models and analyze the link budget	-	3	3	-	-	2	-	-	-	-	-	1	2	2
	ECC702.3	Illustrate the fundamentals and system architecture of GSM, 2.5G and IS-95	-	3	-	-	-	1	-	-	-	-	-	1	2	2
	ECC702.4	Apply the concepts of 3G technologies of UMTS and CDMA 2000	-	3	-	-	-	1	-	-	-	-	-	1	2	2
	ECC702.5	Elaborate the principles of 3GPP LTE	-	3	-	-	-	1	-	-	-	-	-	1	2	2
	ECC702.6	Identify the emerging technologies for upcoming mobile communication systems	-	-	2	-	-	1	-	-	-	-	-	1	2	2
	ECC702		**-**	**3**	**3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	2	2
Optical Communication	ECC703.1	List, write and explain fundamentals and transmission characteristics of optical fiber Communication	3	3	3	3	-	2	1	3	3	3	-	3	2	2
	ECC703.2	List, write and explain principles and characteristics of various sources ,detectors and various fiber optic components various fiber optic components	3	3	3	3	3	2	1	3	3	3	2	3	2	2
	ECC703.3	Calculate parameters for optical link budgeting and analyze the link	3	3	3	3	3	2	1	3	3	3	2	3	2	2
	ECC703		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**3**	**3**	**3**	**2**	**3**	**2**	**2**

**** Department level Optional courses ****																
Neural networks & Fuzzy Logic	ECCDL O7031.1	Comprehend the concepts of biological neurons and artificial neurons	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECCDL O7031.2	Analyze the feed-forward and feedback neural networks and their learning algorithms.	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECCDL O7031.3	Calculate Comprehend the neural network training and design concepts	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECCDL O7031.4	Analyze the application of neural networks to non linear real world problem	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECCDL O7031.5	Comprehend the concept of fuzziness involved in various systems, fuzzy set theory and fuzzy logic	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECCDL O7031.6	Apply fuzzy logic to real world problems	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECCDLO7031		**3**	**3**	**2**	**2**	**3**	**2**	**2**	**1**	**1**	**2**	**1**	**2**	**3**	**3**
Big Data Analytics	ECCDL O 7032.1	Understand the key issues in big data management	3	2	2	2	2	2	1	1	-	-	-	2	2	2
	ECCDL O 7032.2	Acquire fundamental enabling techniques using tools in big data analytics.	3	3	3	3	3	2	1	1	2	-	-	2	2	3
	ECCDL O 7032.3	Achieve adequate perspectives of big data analytics in various applications like sensor, recommender systems, social media applications etc.	2	3	3	3	3	3	1	1	2	2	2	2	2	3
	ECCDLO 7032		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**3**
Embedded Systems	ECCDL O 7035.1	Understand the detailed processor design techniques and methods of communication	**3**	**3**	**3**	**3**	**3**	-	**2**	-	-	-	**1**	**1**	-	-
	ECCDL O 7035.2	Study the in-depth program modelling concepts	**3**	3	3	3	-	-	1	-	-	-	-	-	-	-
	ECCDL O 7035.3	· Study the concepts of Real time operating systems and write programs	**3**	3	3	3	3	-	-	-	-	-	-	-	-	-

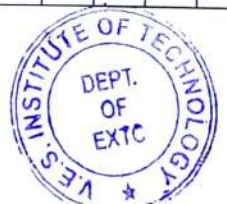
	ECCDLO 7035.4	· Design embedded system applications using RTOS	3	3	3	3	3	-	3	-	-	-	-	-	-	-
	ECCDLO 7035		**2**	**3**	**3**	**3**	**3**	-	**1**	-	-	-	**1**	1	-	-
****** Institute level Optional courses ******																
Management Information System	ECCILO 7013.1	Explain how information systems Transform Business	1	3	-	-	-	-	-	-	-	-	-	-	-	2
	ECCILO 7013.2	Identify the impact information systems have on an organization	--	3	-	2	-	-	-	-	-	-	-	-	-	2
	ECCILO 7013.3	Describe IT infrastructure and its components and its current trends	--	2	-	-	-	-	-	-	-	-	-	-	-	2
	ECCILO 7013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making	--	3	-	-	-	-	-	-	-	-	-	-	-	3
	ECCILO 7013.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses	2	3	-	-	-	-	-	-	-	-	-	-	-	3
	ECCILO 7013		**2**	**3**	-	**2**	-	-	-	-	-	-	-	-	-	**2**
Operations Research	ECCILO 7015.1	Formulate and solve LP problems and its dual using simplex method and Dynamic Programming and perform sensitivity analysis.	3	3	3	-	-	-	-	-	2	2	3	3	-	3
	ECCILO 7015.2	Study different types of Queuing and Inventory Models.	3	-	2	3	-	-	-	-	-	-	3	3	-	2
	ECCILO 7015.3	Solve specialized linear programming problems like the transportation and assignment Problems, Travelling Salesman problem and Sequencing Problems.	3	3	3	3	-	-	-	-	2	2	3	3	-	3
	ECCILO 7015.4	Study simulation of a real time system using Monte Carlo Simulation and solving a game using pure and mixed	3	3	3	2	-	-	-	-	2	2	2	3	-	2

		strategies.														
	ECCILO 7015		**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**3**	**-**	**3**
Cyber Security and Laws	ECCILO 7016.1	Understand the concept of cybercrime and its effect on outside world	1	-	-	-	-	-	-	-	-	-	-	3	1	-
	ECCILO 7016.2	Interpret and apply IT law in various legal issues	2	-	-	2	2	3	-	1	-	2	2	3	2	2
	ECCILO 7016.3	Distinguish different aspects of cyber law	1	1	-	-	-	-	-	-	-	2	2	3	-	-
	ECCILO 7016.4	Apply Information Security Standards compliance during software design and development	3	2	3	2	2	3	-	1	-	2	2	3	3	3
	ECCILO 7016		**2**	**2**	**1**	**2**	**2**	**2**	**-**	**1**	**-**	**2**	**2**	**3**	**2**	**2**
Microwave Engineering Laboratory	ECL701.1	Characterize devices at higher frequencies.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECL701.2	Design and analyze microwave circuits.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECL701.3	Design and analyze amplifiers and oscillators at microwave frequencies.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECL701.4	Demonstrate skills of planning, design and deployment of microwave networks.	3	3	3	3	3	1	1	-	2	3	2	2	3	3
	ECL701		**3**	**3**	**3**	**3**	**3**	**1**	**1**	**-**	**2**	**3**	**2**	**2**	**3**	**3**
Mobile Communication System Laboratory	ECL702.1	Explain the cellular fundamentals and estimate the coverage and capacity of cellular systems	-	3	3	-	-	1	-	-	-	-	-	-	-	-
	ECL702.2	Classify different types of propagation models and analyze the link budget	-	3	3	-	-	2	-	-	-	-	-	1	2	2
	ECL702.3	Illustrate the fundamentals and system architecture of GSM, 2.5G and IS-95	-	3	-	-	-	1	-	-	-	-	-	1	2	2
	ECL702.4	Apply the concepts of 3G technologies of UMTS and CDMA 2000	-	3	-	-	--	1	-	-	-	-	-	1	2	2
	ECL702.5	Elaborate the principles of 3GPP LTE	-	3	-	-	--	1	-	-	-	-	-	1	2	2

	ECL702.6	Identify the emerging technologies for upcoming mobile communication systems	-	-	2	-	--	1	-	-	-	-	-	1	2	2
	ECL702		-	**3**	**3**	-	--	**1**	-	-	-	-	-	**1**	2	2
Optical Communication Laboratory	ECL703.1	List, write and explain fundamentals and transmission characteristics of optical fiber Communication	3	3	3	3	-	2	1	3	3	3	-	3	2	2
	ECL703.2	List, write and explain principles and characteristics of various sources ,detectors and various fiber optic components various fiber optic components	3	3	3	3	3	2	1	3	3	3	2	3	2	2
	ECL703.3	Calculate parameters for optical link budgeting and analyze the link	3	3	3	3	3	2	1	3	3	3	2	3	2	2
	ECC703		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**3**	**3**	**3**	**2**	**3**	**2**	**2**
*** Department Level Optional Courses Labs ***																
Neural networks & Fuzzy Logic Laboratory	ECLDLO7031.1	Comprehend the concepts of biological neurons and artificial neurons	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECLDLO7031.2	Analyze the feed-forward and feedback neural networks and their learning algorithms.	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECLDLO7031.3	Calculate Comprehend the neural network training and design concepts	3	3	2	2	3	2	2	1	1	2	1	2	3	3
	ECLDLO7031.4	Analyze the application of neural networks to non linear real world problem	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECLDLO7031.5	Comprehend the concept of fuzziness involved in various systems, fuzzy set theory and fuzzy logic	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECLDLO7031.6	Apply fuzzy logic to real world problems	3	3	2	2	2	2	2	1	1	2	1	2	3	3
	ECLDLO7031		**3**	**3**	**2**	**2**	**3**	**2**	**2**	**1**	**1**	**2**	**1**	**2**	**3**	**3**
Big Data Analytics	ECLDLO 7032.1	Understand the key issues in big data management	3	2	2	2	2	2	1	1	-	-	-	2	2	2

Laboratory	ECLDLO 7032.2	Acquire fundamental enabling techniques using tools in big data analytics.	3	3	3	3	3	2	1	1	2	-	-	2	2	3
	ECLDLO 7032.3	Achieve adequate perspectives of big data analytics in various applications like sensors, recommender systems, social media applications etc.	2	3	3	3	3	3	1	1	2	2	2	2	2	3
	ECLDLO 7032		**3**	**3**	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**3**
Embedded Systems Laboratory	ECLDLO 7035.1	Understand the detailed processor design techniques and methods of communication	3	3	3	3	3	-	2	-	-	-	1	1	-	-
	ECLDLO 7035.2	Study the in-depth program modelling concepts	**3**	3	3	3	-	-	1	-	-	-	-	--	-	-
	ECLDLO 7035.3	· Study the concepts of Real time operating systems and write programs	**3**	3	3	3	3	-	-	-	-	-	-	--	-	-
	ECLDLO 7035.4	· Design embedded system applications using RTOS	**3**	3	3	3	3	-	3	-	--	-	-	-	-	-
	ECLDLO 7035		**2**	**3**	**3**	**3**	**3**	-	**1**	-	-	-	1	**1**	-	-
RF Design	ECC801.1	Design impedance matching networks and passive RF filters.	3	3	3	3	-	-	-	-	-	-	-	3	3	3
	ECC801.2	Design and appraise RF amplifiers and oscillators.	3	3	3	3	-	-	-	--	--	-	-	3	3	3
	ECC801.3	Analyze EMI and EMC in RF circuits	3	3	3	3	-	3	-	--	-	--	-	3	3	3
	ECC801		**3**	**3**	**3**	**3**	-	**3**	-	—	-	—	-	**3**	**3**	**3**
Wireless Networks	ECC802.1	Explain the fundamentals, architecture, design issues and standards of wireless networks	3	3	3	-	-	3	-	--	-	-	--	3	3	3
	ECC802.2	List and compare Body area network (BAN) and personal area network (PAN) technologies such as Zigbee, Bluetooth, UWB, RFID, NFC etc.	3	3	3	3	-	3	2	--	-	-	-	3	3	3
	ECC802.3	Classify different LAN topologies and technologies	3	3	3	-	-	3	-	--	-	-	-	3	3	3

	ECC802.4	Illustrate the fundamentals and architecture of wireless Metropolitan Area Networks (WMAN) and describe the phases of planning and design of wireless networks	3	3	3	3	-	3	2	-	-	-	-	3	3	3
	ECC802.5	Discuss various wireless adhoc networks architecture, traffic related protocols and transmission technology	3	3	3	-	-	3	-	-	-	-	-	3	3	3
	ECC802.6	Understand the basic architecture and working of IOT	3	3	3	3	-	3	2	-	-	-	-	3	3	3
	ECC802		**3**	**3**	**3**	**3**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**3**
Department Level Optional courses																
Satellite Communication	ECCDLO8043.1	Explain basics of satellite communication, space segment and earth segment	3	3	3	-	-	-	-	-	-	-	-	3	3	3
	ECCDLO8043.2	Understand different satellite orbits and orbital parameters	3	3	3	-	-	-	-	-	-	-	-	3	3	3
	ECCDLO8043.3	Explain and analyze link budget of satellite signal for proper communication	3	3	3	3		3	2	-	-	-	-	3	3	3
	ECCDLO8043.4	Understand various applications of satellite communications	3	3	3	-	-	3	2	-	-	-	-	3	3	3
			-	-	-	-	-	-	-	-	-	-	-	-	-	-
	ECCDLO8043		3	3	3	3	-	3	2	-	-	-	-	3	3	3
Network Management for Telecommunication	ECCDLO8044.1	Explain the need for interoperable network management & analyze the trends and development of the Telecommunications Network Management.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECCDLO8044.2	Demonstrate broad knowledge of fundamental principles and technical standards underlying	3	3	3	2	3	3	3	-	-	-	-	3	3	3



	ECCDLO8044.3	Describe the concepts and architecture behind standards based network management associated with SNMP and CMIP.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECCDLO8044.4	Apply basic of telecommunication, networking and information technologies and architect and implement networked informative systems	3	3	3		3	3	3	-	-	-	-	3	3	3
	ECCDLO8044.5	Continuously improve their technology knowledge and communication skills.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECCDLO8044		**3**	**3**	**3**	**2**	**3**	**3**	**3**	-	-	-	--	**3**	**3**	**3**
Institute Level Optional Courses																	
Research Methodology	ILO8026.1	Prepare a preliminary research design for projects in their subject matter areas	3	-	-	2	-	1	1	2	-	-	-	3	-	2
	ILO8026.2	Accurately collect, analyze and report data	-	-	-	3	-	-	-	-	1	2	-	3	-	2
	ILO8026.3	Present complex data or situations clearly	-	-	-	3	3	-	-	-	-	2	-	3	-	2
	ILO8026.4	Review and analyze research findings	-	-	-		2	-	-	-	-	-	-	3	-	2
	ILO8026		**3**	**-**	**-**	**3**	**3**	**1**	**1**	**2**	**1**	**2**	**-**	**3**	**-**	**2**
Environmental Management	ILO8029.1	Understand the concept of environmental management	3	1	-	1	1	3	3	3	3	2	2	3	-	2
	ILO8029.2	Understand ecosystem and interdependence, food chain etc	3	1	-	1	1	3	3	3	3	2	2	3	-	2
	ILO8029.3	Understand and interpret environment related legislations	3	-	-	-	-	3	3	3	3	2	2	3	-	2
	ILO8029		**3**	**1**	**-**	**1**	**1**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**-**	**2**
Finance Management	ILO8022.1	Understand Indian finance system and corporate finance	2	-	-	-	-	2	1	2	-	-	3	3	-	1
	ILO8022.2	Take investment, finance as well as dividend decisions	2	-	-	-	-	2	1	2	-	-	3	3	-	1

				-	-	-	-	-	-	-	-	-	-			--	-
	ILO8022		**2**	-	-	-	-	**2**	**1**	**2**	-	-	**3**	**3**	-	**1**
Project Management	ILO 8021.1	Apply selection criteria and select an appropriate project from different options	-	-	3	-	3	2	3	2	2	-	2	2	-	2
	ILO 8021.2	Write work breakdown structure for a project and develop a schedule based on it	-	-	3	-	3	2	3	1	2	-	3	3	-	2
	ILO 8021.3	Identify opportunities and threats to the project and decide an approach to deal with them strategically	-	-	3	-	3	2	2	1	2	-	3	2	-	2
	ILO 8021.4	Use Earned value technique and determine & predict status of the project	-	-	2	-	2	2	2	1	2	-	2	3	-	2
	ILO 8021.5	Capture lessons learned during project phases and document them for future reference	-	-	2	-	2	2	3	2	2	-	3	2	-	3
	ILO 8021.6	Introduction to project leadership, ethics in projects, Multicultural and virtual projects	-	-	2	-	2	2	3	3	3	-	3	3	-	3
	ILO 8021		-	-	**3**	-	**3**	2	**3**	**2**	**2**	-	**3**	**3**		**2**
RF Design Laboratory	ECL801.1	Design impedance matching networks and passive RF filters.	-	-	-	-	3	3	2	2	2	2	-	3	3	3
	ECL801.2	Design and appraise RF amplifiers and oscillators.	-	-	-	-	3	3	2	2	2	2	-	3	3	3
	ECL801.3	Analyze EMI and EMC in RF circuits	-	-	-	-	3	3	3	2	2	2	-	3	3	3
	ECL801		-	-	-	-	**3**	**3**	**2**	**2**	**2**	**2**	-	**3**	**3**	**3**
Wireless Networks Laboratory	ECL802.1	Explain the fundamentals, architecture, design issues and standards of wireless networks	-	-	-	-	3	3	2	2	2	2	-	3	3	3
	ECL802.2	List and compare Body area network (BAN) and personal area network (PAN) technologies such as Zigbee, Bluetooth, UWB, RFID, NFC etc.	-	-	-	-	3	3	2	2	2	2	-	3	3	3

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	ECL802.3	Classify different LAN topologies and technologies	-	-	-	-	3	3	2	2	2	2	-	3	3	-
	ECL802.4	Illustrate the fundamentals and architecture of wireless Metropolitan Area Networks (WMAN) and describe the phases of planning and design of wireless networks	-	-	-	-	3	3	2	2	2	2	-	3	3	3
	ECL802.5	Discuss various wireless adhoc networks architecture, traffic related protocols and transmission technology	-	-	-	-	3	3	2	2	2	2	-	3	3	3
	ECL802.6	Understand the basic architecture and working of IOT	-	-	-	-	3	3	2	2	2	2	1	3	3	3
	ECL802		-	-	-	-	3	3	2	2	2	2	1	3	3	3
Satellite Communication Laboratory	ECLDLO 8043.1	Explain basics of satellite communication, space segment and earth segment	3	3	-	-	3		2	2	2	2	-	3	3	3
	ECLDLO 8043.2	Understand different satellite orbits and orbital parameters	3	3	2	-	3		2	2	2	2	-	3	3	3
	ECLDLO 8043.3	Explain and analyze link budget of satellite signal for proper communication	3	3	2		3	-	2	2	2	2	-	3	3	3
	ECLDLO 8043.4	Understand various applications of satellite communications	3	3	2	-	3	-	2	2	2	2	-	3	3	3
	ECLDLO 8043		**3**	**3**	**2**	-	**3**	-	**2**	**2**	**2**	**2**	-	**3**	**3**	**3**
Network Management in TeleCommunication Laboratory	ECLDLO 8044.1	Explain the need for interoperable network management & analyze the trends and development of the Telecommunications Network Management.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECLDLO 8044.2	Demonstrate broad knowledge of fundamental principles and technical standards underlying	3	3	3	2	3	3	3	-	-	-	-	3	3	3

	ECLDLO 8044.3	Describe the concepts and architecture behind standards based network management associated with SNMP and CMIP.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECLDLO 8044.4	Apply basic of telecommunication, networking and information technologies and architect and implement networked informative systems	3	3	3	-	3	3	3	-	-	-	-	3	3	3
	ECLDLO 8044.5	Continuously improve their technology knowledge and communication skills.	3	3	3	2	3	3	3	-	-	-	-	3	3	3
	ECLDLO 8044		**3**	**3**	**3**	**2**	**3**	**3**	**3**	-	-	-	-	**3**	**3**	**3**

CO direct and indirect attainment

SEM III

PO Attainment(Direct)												
Course	**POs**											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
ECC301	2.6	2.6	-	1.56	-	-	-	-	-	-	-	1.04
ECC302	1	1	1	0.6	0.6	-	-	-	1	-	1	0.6
ECC303	3	3	3	3	1.8	1.8	1.8	-	-	1.2	1.2	3
ECC304	2.3	2.3	2.3	2.3	2.3	1.38	1.38	-	-		0.92	0.92
ECC305	2.7	2.7	2.7	2.7	2.7	1.62	1.62	-	-	1.08	1.08	1.08
ECL301	2.95	2.95	2.95	1.77	1.77	-	-	-	2.95	-	2.95	1.18
ECL302	3	3	3	3	3	1.8	1.8	-	1.8	1.2	3	3
ECL303	3	3	3	3	2	2	2	-	2	1	3	3
Average	**2.5687**	**2.5687**	**2.5642**	**2.24125**	**2.0242**	**1.72**	**1.72**	-	**1.9375**	**1.12**	**1.878**	**1.7275**

PO Attainment(Indirect)	
Course	**POs**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECC301	3	3	-	1.8	-	-	-	-	-	-	-	1.2
ECC302	3	3	3	2	2	-	-	-	3		3	1.2
ECC303	3	3	3	3	1.8	1.8	1.8	-	-	1.2	1.2	3
ECC304	3	3	3	3	3	1.8	1.8	-	-		1.2	1.2
ECC305	3	3	3	3	3	1.8	1.8	-	-	1.2	1.2	1.2
Average(Indirect)	3	3	3	2.56	2.45	1.8	1.8	-	3	1.2	1.65	1.56
Average(Direct)	2.5688	2.5688	2.5643	2.2413	2.0243	1.72	1.72	-	1.9375	1.12	1.8786	1.7275

30% indirect+70% direct	2.69816	2.69816	2.69501	2.33691	2.15201	1.744	1.744	-	2.25625	1.144	1.81002	1.67725

SEM IV

Course	PO Attainment(Direct) POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECC401	3	3	-	1.8	-	-	-	-	-	-	-	1.2
ECC402	3	3	3	3	1.8	-	-	-	1.8	1.2	3	3
ECC403	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.68
ECC404	2.75	2.75	2.75	1.65	1.1	1.1	2.75	-	-	1.65	-	1.65
ECC405	3	3	3	3	3	1.2	1.2	-	3	1.8	1.8	1.8
ECL401	3	3	3	3	1.8	-	-	-	1.8	1.2	3	3
ECL402	3	3	3	3	3	3	3	3	3	3	3	1.8
ECL403	3	3	3	3	3	1.2	1.2	-	3	1.8	1.8	1.8
Average	2.94375	2.94375	2.935714	2.65625	2.357142	1.86	2.19	2.9	2.566666	1.9214	2.566666	1.99125

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Course	PO Attainment(Indirect) POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECC401	3	3	-	1.8	-	-	-	-	-	-	-	1.2
ECC402	3	3	3	3	1.8	-	-	-	1.8	-1.2	3	3
ECC403	3	3	3	3	3	3	3	3	3	3	3	1.8
ECC404	3	3	3	1.8	1.2	1.2	3	-	-	1.2	-	1.8
ECC405	3	3	3	3	3	1.2	1.2	-	3	1.8	1.8	1.8
Average(Indirect)	**3**	**3**	**3**	**2.52**	**2.25**	**1.8**	**2.4**	**3**	**2.6**	**1.8**	**2.6**	**1.92**
Average(Direct)	**2.9438**	**2.9438**	**2.9357**	**2.6563**	**2.3571**	**1.86**	**2.19**	**2.9**	**2.5667**	**1.921**	**2.5667**	**1.9913**
30% indirect+70% direct	**2.96066**	**2.96066**	**2.95499**	**2.61541**	**2.32497**	**1.842**	**2.253**	**2.93**	**2.57669**	**1.8847**	**2.57669**	**1.96991**

SEM V

Course	PO Attainment(Direct) Pos											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECC501	2.93	1.758	1.172	2.93	2.93	2.93	-	-	2.93	2.93	-	2.93
ECC502	3	3	3	3	1.8	1.2	-	-	3	1.8	3	3
ECC503	1.98	1.98	1.98	0.792	-	0.792	-	-	1.98	0.792	-	1.98
ECC504	2.52	2.52	2.52	2.52	1.008	2.52	1.008	-	1.512	-	1.512	-
ECCDLO5011	2	2	2	2	2	1.2	0.8	-	-	-	-	-
ECCDLO5012	2.8	1.68	-	2.8	-	-	2.8	-	-	-	-	2.8
ECCDLO5014	3	1.8	1.2	3	1.8	3	3	3	3	1.8	1.2	1.8
ETL501	3	1.8	1.2	3	3	3	-	-	3	3	-	3
ETL502	3	3	3	3	1.8	1.2	-	-	3	1.8	3	3
ETL503						2.8	2.8	2.8	2.8	2.8	2.8	2.8

ETL504	3	3	3	3	3	1.2	1.2	1.2	3	1.2		3
ECLDLO5011	3	3	3	3	3	1.8	1.2					
ECLDLO5012	3	1.8		3			3					3
ECLDLO5014	3	1.8	1.2	3	3	3	3	3	3	1.8	1.2	1.8
Average	**2.787**	**2.241**	**2.116**	**2.696**	**2.334**	**2.054**	**2.090**	**2.500**	**2.722**	**1.991**	**2.119**	**2.646**
70% of Direct	**1.951**	**1.569**	**1.481**	**1.887**	**1.634**	**1.437**	**1.463**	**1.750**	**1.906**	**1.394**	**1.483**	**1.852**

Indirect PO attainment

Course	PO's											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
ECC501	3	2	1.2	3	3	3	-	-	3	3	-	3
ECC502	3	3	3	3	1.8	1.2	-	-	3	1.8	3	3
ECC503	3	3	3	1.2	-	1.2	-	-	3	1.2	-	3
ECC504	3	3	3	3	1.2	3	1.2	-	1.8	-	1.8	-
ECCDLO5011	3	3	3	3	3	1.8	1.2	-	-	-	-	-
ECCDLO5012	3	1.8	-	3	-	-	3	-	-	-	-	3
ECCDLO5014	3	1.8	1.2	3	3	3	3	3	3	1.8	1.2	1.8
ETL501	3	1.8	1.2	3	3	3	-	-	3	3	-	3
ETL502	3	3	3	3	1.8	1.2	-	-	3	1.8	3	3
ETL503	1.8	1.8	1.8	1.8	1.8	3	3	3	3	3	3	3
ETL504	2	2	2	2	2	0.8	0.8	0.8	2	0.8	-	2
ECLDLO5011	3	3	3	3	3	1.8	1.2	-	-	-	-	-
ECLDLO5012	3	1.8	-	3	-	-	3	-	-	-	-	3
ECLDLO5014	3	1.8	1.2	3	3	3	3	3	3	1.8	1.2	1.8
Average (Indirect)	**2.843**	**2.343**	**2.217**	**2.714**	**2.418**	**2.167**	**2.156**	**2.450**	**2.780**	**2.022**	**2.200**	**2.691**
30% of Indirect	**0.853**	**0.703**	**0.665**	**0.814**	**0.725**	**0.650**	**0.647**	**0.735**	**0.834**	**0.607**	**0.660**	**0.807**
70% of Direct	**1.951**	**1.569**	**1.481**	**1.887**	**1.634**	**1.437**	**1.463**	**1.750**	**1.906**	**1.394**	**1.483**	**1.852**

30% indirect+70% direct	2.804	2.272	2.146	2.701	2.359	2.087	2.110	2.485	2.740	2.001	2.143	2.660

SEM VI

PO Attainment(Direct)												
Course	POs											
CO's/PO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECC601	3	3	1.8	1.8	3	3	-	-	3	1.8	3	3
ECC602	-	-	1.2	3	3	-	1.2	-	3	3	1.8	3
ECC603	3	3	3	3	3	3	1.2	3	3	3	1.8	3
ECC604	3	3	3	3	3	1.8	-	-	-	-	-	-
ECCDLO 6021	3	3	3	3	3	-	-	-	3	-	1.2	3
ECCDLO 6022	2.4	2.4	2.4	0.96	-	1.44	-	-	1.44	-	0.96	0.96
ECCDLO 6023	3	3	3	3	3	-	-	-	1.8	-	1.2	1.8
ETL601	3	3	1.8	1.8	3	3	-	-	3	1.8	3	3
ETL602	-	-	1.2	3	3	-	1.2	-	3	3	1.8	3
ETL603	3	3	3	3	3	-	1.2	-	3	3	1.8	3
ETL604	3	3	3	3	3	1.8	-	-	-	-	-	-
ECCDLO 6021	3	3	3	3	3	-	-	-	3	-	1.2	3
ECCDLO 6022	1.8	1.8	3	3	-	1.8	-	-	1.8	-	1.2	1.2
ECCDLO 6023	3	3	3	3	3	-	-	-	1.8	-	1.2	1.8
Avearage(Direct)	2.850	2.850	2.529	2.683	3.000	2.263	1.200	3.000	2.570	2.600	1.680	2.480
70% of Direct	**1.995**	**1.995**	**1.770**	**1.878**	**2.100**	**1.584**	**0.840**	**2.100**	**1.799**	**1.820**	**1.176**	1.736

PO Attainment(Indirect)												
Course	Pos											
CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

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ECC601	3	3	1.8	1.8	3	3	-	-	3	1.8	3	3
ECC602	-	-	1.2	3	3	-	1.2	-	3	3	1.8	3
ECC603	3	3	3	3	3	-	1.2	-	3	3	1.8	3
ECC604	3	3	3	3	3	1.8	-	-	-	-	-	-
ECCDLO 6021	3	3	3	3	3	-	-	-	3	-	1.2	3
ECCDLO 6022	3	3	3	1.2	-	1.2	-	-	1.8	-	1.2	1.2
ECCDLO 6023	3	3	3	3	3	-	-	-	1.8	-	1.2	1.8
ETL601	3	3	1.8	1.8	3	3	-	-	3	1.8	3	3
ETL602	-	-	1.2	3	3	-	1.2	-	3	3	1.8	3
ETL603	3	3	3	3	3	-	1.2	-	3	3	1.8	3
ETL604	3	3	3	3	3	1.8	-	-	-	-	-	-
ECCDLO 6021	3	3	3	3	3	-	-	-	3	-	1.2	3
ECCDLO 6022	1.8	1.8	3	3	-	1.8	-	-	1.8	-	1.2	1.2
ECCDLO 6023	3	3	3	3	3	-	-	-	1.8	-	1.2	1.8
Average (Indirect)	**2.900**	**2.900**	**2.571**	**2.700**	**3.000**	**2.100**	**1.200**		**2.600**	**2.600**	**1.700**	**2.500**
Average(30% of indirect average)	**0.870**	**0.870**	**0.771**	**0.810**	**0.900**	**0.630**	**0.360**	**0.000**	**0.780**	**0.780**	**0.510**	**0.750**
70% of Direct	**1.995**	**1.995**	**1.770**	**1.878**	**2.100**	**1.584**	**0.840**	**2.100**	**1.799**	**1.820**	**1.176**	**1.736**
30% indirect+70% direct	**2.865**	**2.865**	**2.541**	**2.688**	**3.000**	**2.214**	**1.200**	**2.100**	**2.579**	**2.600**	**1.686**	**2.486**

SEM VII

PO Attainment(Direct)	
Course	**POs**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C701	2.6	2.6	2.6	2.6	2.6	1.04	1.04	-	1.56	2.6	1.56	1.56
C702	-	2.8	2.8	-	-	1.12	-	-	-	-	-	1.12
C703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
C7031	3	3	1.8	1.2	3	1.8	1.8	1.2	1.2	1.8	1.2	1.8
C7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
C7035	1.8	3	3	3	3	-	1.2	-	-	-	1.2	1.2
C7013	1.08	2.7		1.08	-	-	-	-	-	-	-	1.08
C7015	0	0	0	0	-	-	-	-	0	0	0	0
C7016	1.44	1.44	0.96	1.44	1.44	1.44	-	0.96	-	1.44	1.44	2.4
ECL701	3	3	3	3	3	1.2	1.2	-	1.8	3	1.8	1.8
ECL702	-	2.97	2.97	-	-	1.19	-	-	-	-	-	1.19
ECL703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
ECL7031	3	3	1.8	1.2	3	1.2	1.8	1.2	1.2	1.8	1.2	1.8
ECL7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
ECL7035	1.8	3	3	3	3		1.2		-		1.2	1.2
Average	2.286	2.634	2.423	2.88	2.82	1.471	1.304	1.68	1.706	2.024	1.4	1.65

Course	PO Attainment(Indirect) POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C701	3	3	3	3	3	1.2	1.2	-	1.8	3	1.8	1.8
C702	-	3	3	-	-	1.2	-	-	-	-	-	1.2
C703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
C7031	3	3	1.8	1.8	3	1.8	1.8	1.2	1.2	1.8	1.2	1.8
C7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
C7035	1.8	3	3	3	3	-	1.2	-	-	-	1.2	1.2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C701	2.6	2.6	2.6	2.6	2.6	1.04	1.04	-	1.56	2.6	1.56	1.56
C702	-	2.8	2.8	-	-	1.12	-	-	-	-	-	1.12
C703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
C7031	3	3	1.8	1.2	3	1.8	1.8	1.2	1.2	1.8	1.2	1.8
C7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
C7035	1.8	3	3	3	3	-	1.2	-	-	-	1.2	1.2
C7013	1.08	2.7		1.08	-	-	-	-	-	-	-	1.08
C7015	0	0	0	0	-	-	-	-	0	0	0	0
C7016	1.44	1.44	0.96	1.44	1.44	1.44	-	0.96	-	1.44	1.44	2.4
ECL701	3	3	3	3	3	1.2	1.2	-	1.8	3	1.8	1.8
ECL702	-	2.97	2.97	-	-	1.19	-	-	-	-	-	1.19
ECL703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
ECL7031	3	3	1.8	1.2	3	1.2	1.8	1.2	1.2	1.8	1.2	1.8
ECL7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
ECL7035	1.8	3	3	3	3		1.2		-		1.2	1.2
Average	**2.286**	**2.634**	**2.423**	**2.88**	**2.82**	**1.471**	**1.304**	**1.68**	**1.706**	**2.024**	**1.4**	**1.65**

Course	PO Attainment(Indirect)											
	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C701	3	3	3	3	3	1.2	1.2	-	1.8	3	1.8	1.8
C702	-	3	3	-	-	1.2	-	-	-	-	-	1.2
C703	3	3	3	3	3	1.8	1.2	3	3	3	1.8	3
C7031	3	3	1.8	1.8	3	1.8	1.8	1.2	1.2	1.8	1.2	1.8
C7032	3	3	3	3	3	1.8	1.2	1.2	1.8	1.8	1.8	1.8
C7035	1.8	3	3	3	3	-	1.2	-	-	-	1.2	1.2

C7016	1.8	1.8	1.2	1.8	1.8	1.8	-	1.2	-	1.8	1.8	3
Average(Indirect)	2.6	2.828	2.5714	2.6	2.8	1.6	1.32	1.65	1.95	2.28	1.6	1.97
Average(Direct)	2.2862	2.634	2.423	2.88	2.821	1.4718	1.304	1.68	1.706	2.024	1.4	1.65
30% indirect +70% direct	2.3803	2.69	2.467	2.796	2.815	1.510	1.3088	1.671	1.779	2.100	1.46	1.746

SEM VIII

PO Attainment(Direct)												
Course	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C801	-	1.8	1.8	1.8	3	3	1.8	3	1.8	1.2	1.2	3
C802	1.76	2.94	2.94	2.94	2.94	2.94	2.94	1.76	1.76	1.17	1.76	1.76
C803	3	3	3	3	3	1.8	1.8	-	1.2	1.2	1.8	3
C804	2.4	2.4	2.4	2.4	1.44	2.4	0.96	0.96	1.44	0.96	0.96	1.44
C805	2.4	2.4	2.4	2.4	2.4	2.4	-	1.44	-	1.44	2.4	2.4
ETL801	-	1.8	1.8	1.8	3	3	1.8	3	1.8	1.2	1.2	3
ETL802	1.8	3	3	3	3	3	3	1.8	1.8	1.2	1.8	1.8
ETL803	3	3	3	3	3	1.8	1.8	-	1.2	1.2	1.2	3
ETEL801	3	3	3	3	1.8	3	1.2	1.2	1.8	1.2	1.2	1.8
ETEL802	3	3	3	3	3	3	-	1.8	-	1.8	3	3
Average	2.545	2.634	2.634	2.634	2.658	2.634	1.9125	1.87	1.6	1.257	1.652	2.42

PO Attainment(Indirect)												
Course	POs											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

C801	-	1.8	1.8	1.8	3	3	1.8	3	1.8	1.2	1.2	3
C802	1.8	3	3	3	3	3	3	1.8	1.8	1.2	1.8	1.8
C803	3	3	3	3	3	1.8	1.8	-	1.2	1.2	1.8	3
C804 EL-1	3	3	3	3	1.8	3	1.2	1.2	1.8	1.2	1.2	1.8
C805 EL-2	3	3	3	3	3	3	-	1.8	-	1.8	3	3
Average(Indirect)	**2.7**	**2.76**	**2.76**	**2.76**	**2.76**	**2.76**	**1.95**	**1.95**	**1.65**	**1.32**	**1.8**	**2.52**
Average(Direct)	**2.545**	**2.634**	**2.634**	**2.634**	**2.658**	**2.634**	**1.9125**	**1.87**	**1.6**	**1.257**	**1.625**	**2.42**
30% indirect+70% direct	**2.5915**	**2.6718**	**2.6718**	**2.6718**	**2.6886**	**2.6718**	**1.92375**	**1.894**	**1.615**	**1.2759**	**1.6775**	**2.45**

Summary of PO attainent

		POs											
Sr. No.	Semester	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	III	2.594	2.594	2.6467	2.2386	1.9642	1.669	1.669	-	2.177	1.140	1.813	1.6314
1	IV	2.96	2.96	2.96	2.62	2.33	1.84	2.25	2.93	2.58	1.88	2.58	1.97
2	V	2.804	2.272	2.146	2.701	2.359	2.087	2.110	2.485	2.740	2.001	2.143	2.660
2	VI	2.865	2.865	2.541	2.688	3.000	2.214	1.200	2.100	2.579	2.600	1.686	2.486
3	VII	2.912	2.626	2.312	2.856	2.828	1.924	1.846	1.963	2.208	2.134	1.758	2.102
3	VIII	2.82	2.68	2.85	2.32	2.57	2.65	2.13	2.10	2.23	1.80	2.19	3.00
Average		**2.799**	**2.483**	**2.323**	**2.66**	**2.451**	**1.929**	**1.913**	**2.221**	**2.411**	**1.863**	**1.917**	**2.214**

PSO Attainment		
Course	PSOs	
CO's	PSO1	PSO2
Final Year		

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sem-VII 30% indirect+70% direct	2.0425	2.2126
sem-VIII 30% indirect+70% direct	2.8811	2.5158
	2.4618	**2.3642**
Third Year		
sem-V 30% indirect + 70% direct	2.491	2.603
sem-VI 30% indirect + 70% direct	2.779	2.529
AVERAGE	**2.635**	**2.566**
Second Year		
sem-III 30% indirect + 70% direct	2.635	2.229
sem-IV 30% indirect + 70% direct	2.2448	2.5016
	2.4399	**2.3653**
Average	**2.512**	**2.432**

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4.2: PO Attainment for Batch 2016-2020

Batch (2016-2020)

Admission Year: 2016-2017 Pass out Year: 2019-2020

From Academic Year 2017-2018 students were in Department of Electronics and Telecommunication

Sr. No.	Assessment Tools	Attainment of Program Outcomes (in %)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Direct Assessment Tools (70%)	1.82	1.792	1.722	1.757	1.743	1.358	1.148	1.561	1.505	1.288	1.337	1.519
2	Indirect Assessment Tools (30%)	0.741	0.72	0.708	0.687	0.69	0.633	0.591	0.708	0.717	0.597	0.594	0.66
Total		**2.561**	**2.512**	**2.43**	**2.444**	**2.433**	**1.991**	**1.739**	**2.269**	**2.222**	**1.885**	**1.931**	**2.179**

Sr. No.	Assessment Tools	Attainment of Program Outcomes (in %)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Direct Assessment Tools	2.6	2.56	2.46	2.51	2.49	1.94	1.64	2.23	2.15	1.84	1.91	2.17
2	Indirect Assessment Tools	2.47	2.4	2.36	2.29	2.3	2.11	1.97	2.36	2.39	1.99	1.98	2.2

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PO Attainment by Direct Assessment Tool

Batch (2016-2020)

Sr. No	Direct Assessment tool	Semester	Attainment of Program Outcomes (in %)											
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	End semester results	III	2.53	2.53	2.55	2.22	1.88	1.74	1.62	-	1.62	1.15	1.75	1.67
		IV	2.56	2.56	2.49	2.42	2.15	1.62	1.66	2.7	2.47	1.64	2.45	1.76
		V	2.68	2.19	2.098	2.61	2.43	2.088	2.042	2.48	2.69	1.96	2.13	2.53
		VI	2.75	2.74	2.44	2.59	2.89	2.11	1.13	2.3	2.51	2.48	1.645	2.42
		VII	2.29	2.63	2.42	2.88	2.82	1.47	1.304	1.68	1.71	2.024	1.4	1.65
		VIII	2.83	2.695	2.78	2.35	2.775	2.59	2.11	1.97	1.9	1.8	2.1	3
	Average		**2.6**	**2.56**	**2.46**	**2.51**	**2.49**	**1.94**	**1.64**	**2.23**	**2.15**	**1.84**	**1.91**	**2.17**

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PO Attainment by Indirect Assessment Tools
Batch (2016-2020)

Sr.No.	Indirect assessment tool	Expected Level of PO attainment (in %)	Actual PO attainment (in %)	Attainment of Program Outcomes (in %)											
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Placement	85	45.91	54.01	54.01	54.01	54.01	54.01	54.01	54.01	54.01	54.01	54.01	54.01	54.01
2	Higher Studies	15	2.86	19.06	19.06	19.06	19.06	19.06	19.06	19.06	19.06	19.06	19.06	19.06	19.06
3	Student Exit Survey	--	--	77.49	74.95	74.95	74.95	75.24	74..48	75.33	74.48	73.24	74.48	75.33	78.9
4	Professional Societies	--	10.02	100	100	100	100	100	100	100	100	100	100	100	100
5	Co-curricular activities (Technology day / Praxis / edifice / other technical events)	--	25.52	100	100	100	100	100	100	100	100	100	100	100	100
6	Looking Beyond Syllabus(LBS)	--	4.51	100	100	100	100	100	100	100	100	100	100	100	100
7	Course Exit/evaluation survey	--	--	2.94	2.8	2.72	2.58	2.59	2.21	1.93	2.72	2.78	1.98	1.96	2.4
Average (1 to 6)				**75.09**	**74.67**	**74.67**	**74.67**	**74.72**	**74.61**	**74.73**	**74.59**	**74.39**	**74.59**	**74.73**	**75.33**
				2	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
	Overall Average (1 to 7)	--	--	**2.47**	**2.4**	**2.36**	**2.29**	**2.3**	**2.11**	**1.97**	**2.36**	**2.39**	**1.99**	**1.98**	**2.2**

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PO attainment by Course Evaluation Survey for 3 years

Sr. No.	Academic Year/Indirect assessment tool	Attainment of Program Outcomes (in %)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Academic Year 2019-2020 (Final Year)												
	Course Exit/evaluation survey	2.9	2.72	2.75	2.525	2.55	2.4	2.08	2.25	2.7	2	2.1	2.65
2	Academic Year 2018-2019 (Third Year)												
	Course Exit/evaluation survey	2.97	2.715	2.45	2.63	2.685	2.165	1.63	3	2.655	2.275	1.81	2.63
3	Academic Year 2017-2018 (Second Year)												
	Course Exit/evaluation survey	2.95	2.95	2.95	2.59	2.5325	2.078	2.078	2.91	2.98	1.65	1.97	1.91
	Average	**2.94**	**2.8**	**2.72**	**2.58**	**2.59**	**2.21**	**1.93**	**2.72**	**2.78**	**1.98**	**1.96**	**2.4**

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PO attainment by Professional Society, Co-curricular activities and Looking Beyond Syllabus(LBS) for 3 years

Sr. No.	Academic Year/Indirect assessment tool	Participation of students (%)	Average of participation in %
1	Professional Societies (in %)		
	Academic Year 2019-2020 (Final Year)	9.5	10.02
	Academic Year 2018-2019 (Third Year)	11.26	
	Academic Year 2017-2018 (Second Year)	9.3	
2	Co-curricular activities (Technology day / Praxis / edifice / other technical events)		
	Academic Year 2019-2020 (Final Year)	42.38	25.51666667
	Academic Year 2018-2019 (Third Year)	24.41	
	Academic Year 2017-2018 (Second Year)	9.76	
3	Looking Beyond Syllabus(LBS) (Academic Year 2013-2014)*	Avg(7.11, 1.90)	4.505

*Initially for LBS only third year students were allowed. (LBS 2013-14)

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PO Attainment for Last 3 batches

PO Attainment for Last 3 batches

Batch	PO1 (a)	PO2 (b)	PO3 (c)	PO4 (d)	PO5 (e)	PO6 (f)	PO7 (g)	PO8 (h)	PO9(i)	PO10 (j)	PO11(k)	PO12(l)
2016-2020	2.561	2.512	2.43	2.444	2.433	1.991	1.739	2.269	2.222	1.885	1.931	2.179
2015-2019	2.571	2.688	2.606	2.741	2.626	2.455	2.421	2.462	2.422	2.232	2.384	2.449
2014-2018	2.579	2.611	2.547	2.627	2.613	2.335	2.203	2.3	2.338	2.111	2.202	2.39

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(Neeta Chavan)

5. Bachelor of Information Technology

5.1: CO-PO-PSO Mapping (2019-2020)

Subject	COs	CO Description	Sem III (Rev 2016)													
			POs													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
AM III	CO1	Demonstrate basic knowledge of Laplace Transform	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO2	Apply the Inverse Laplace transform to different applications.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO3	Check for analytical functions and find the analytical function and also identify the mapping	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO4	Apply the Set theory and Relation concepts.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO5	Apply the Functions and define the recursive functions.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO6	Identify the permutations and combinations	3	3	-	2	-	-	-	-	-	-	-	2	-	3
DSA	CO1	Select appropriate data structures as applied to specified problem definition	2	3	3	2	-	-	-	-	2	-	-	-	3	-
	CO2	Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.	2	3	3	2	-	-	-	-	2	-	-	-	3	-
	CO3	Students will be able to implement Linear and Non-Linear data structures	2	3	3	2	-	-	-	-	2	-	-	2	3	-
	CO4	Implement appropriate sorting/searching technique	2	3	3	2	-	-	-	-	2	-	-	2	3	-

mrs Charusheela Nehete

		for a given problem.														
	CO5	Design advance data structure using Non-Linear data structure	2	3	-	2	-	-	-	-	2	-	-	2	3	-
	CO6	Determine and analyze the complexity of given Algorithms.	3	3	-	2	-	-	-	-		-	-	2	3	-
LD	CO1	Understand the concepts of various components to design stable analog circuits and represent numbers and perform arithmetic operations	2	-	2	-	-	2	2	-	3	-	-	3	-	-
	CO2	Minimize the Boolean expression using Boolean algebra and design it using logic gates	2	-	2	-	-	2	2	-	3	-	-	3	-	-
	CO3	Analyze and design combinational	2	-	2	-	2	3	3	2	3	-	-	3	-	-
	CO4	Design and develop sequential circuits	2	-	3	-	2	3	3	2	3	-	-	3	-	-
	CO5	Translate real world problems into digital logic formulations using VHDL.	2	2	3	-	3	3	3	2	3	-	-	3	3	3
Principles of Communications	CO1	Differentiate analog and digital cmmunication systems	2	1	-	-	-	-	-	-	2	-	-	2	-	2
	CO2	Identify different types of noise occured, its minimization and able to apply Fourier analysis in frequency and time domain to quantify bandwidth requirement of variety of analog and digital communication system	2	1	-	-	-	-	-	-	-	-	-	2	-	2
	CO3	Design generation & detection AM, DSB, SSB, FM transmitter and receiver	2	1	-	-	-	-	-	-	2	-	-	2	-	2
	CO4	Apply sampling theorem to quantify the fundamental relationship between channel bandwidth, digital symbol	2	1	-	-	-	-	-	-	2	-	-	2	-	2

		rate and bit rate														
	CO5	Explain different types of line coding techniques for generation and detection of signals	2	1	-	-	-	-	-	-	2	-	-	2	-	2
	CO6	Describe Electromagnetic radiation and propagation of waves	2	1	-	-	-	-	-	-	-	-	-	2	-	2
DBMS	CO1	Explain the features of database management systems and Relational database	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	CO2	Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	CO3	Create and populate a RDBMS for a real life application, with constraints and keys, using SQL	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	CO4	Retrieve any type of information from a data base by formulating complex queries in SQL	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	CO5	Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	CO 6	Build indexing mechanisms for efficient retrieval of information from a database	3	3	3	3	3	-	-	-	-	-	-	3	3	3
SQL Lab	LO1	Construct problem definition statements for real life applications and implement a database for the same	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	LO2	Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra	3	3	3	3	3	-	-	-	-	-	-	3	3	3

	LO3	Create and populate a RDBMS, using SQL.	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	LO4	Write queries in SQL to retrieve any type of information from a data base.	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	LO5	Analyze and apply concepts of normalization to design an optimal database	3	3	3	3	3	-	-	-	-	-	-	3	3	3
	LO6	Implement indexes for a database using techniques like B or B+ trees.	3	3	3	3	3	-	-	-	-	-	-	3	3	3
JPL	LO1	Use Object Oriented Paradigm Principles while Writing Solutions	2	3	3	-	3	-	-	2	2	-	-	-	-	3
	LO2	Draw UML diagrams for implemented solutions.	1	3	3	-	3	-	-	2	2	-	-	-	-	-
	LO3	Set up an environment for java programming and use tools such as Netbeans.	1	-	-	-	3	-	-	-	-	-	-	-	-	-
	LO4	Utilize basic language constructs like operators, variables,constants etc. while writing programs and implementing solutions.	1	2	2	-	-	-	-	2	2	-	-	-	-	-
	LO5	Implement solutions using java constructs.	1	3	3	-	3	-	-	2	2	-	-	-	-	-
	LO6	Incorporate application level features such as exception handling,collection classes,multi-threading,and applets while writing programs.	1	3	3	-	3	-	-	2	2	-	-	3	-	3
Digital Design Lab	LO1	Minimize the Boolean algebra and design it using logic gates.	2	-	2	-	-	2	2	-	3	-	-	3	-	-
	LO2	Analyse and design combinational circuit and realize the given function	2	-	2	-	2	3	3	2	3	-	-	3	-	-
	LO3	Design and develop sequential circuits	2	-	2	-	2	3	3	2	3	-	-	3	-	-
	LO4	Implement digital systems using programmable logic devices	2	-	3	-	3	3	3	2	3	-	-	3	3	3

	LO5	Translate real world problems into digital logic formulations using VHDL	2	2	3	-	3	3	3	2	3	-	-	3	3	3
Data Structure Lab	LO1	Select appropriate data structures as applied to specified problem definition	2	3	3	2	-	-	-	-	2	-	-	-	3	-
	LO2	Implement operations like searching, insertion, and deletion, traversing mechanism etc on various data structures.	2	3	3	2	-	-	-	-	2	-	-	-	3	-
	LO3	Students will be able to implement Linear and Non-Linear data structures	2	3	3	2	-	-	-	-	2	-	-	2	3	-
	LO4	Implement appropriate sorting/searching techniques for given problems.	2	3	3	2	-	-	-	-	2	-	-	2	3	-
	LO5	Design advance data structure using Non-Linear data structure	2	3	-	2	-	-	-	-	2	-	-	2	3	-
	LO6	Determine and analyze the complexity of given Algorithms.	3	3	-	2	-	-	-	-	-	-	-	2	3	-
		Average values for POs mapped	**2.3**	**2.7**	**2.8**	**2.4**	**2.8**	**2.7**	**2.7**	**2.0**	**2.3**	**-**	**-**	**2.5**	**3.0**	**2.8**

			Sem IV (Rev 2016)													
Subject	**COs**	**CO Description**	**POs**													
			PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
AM IV	CO1	Apply probability and understand PDF	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO2	Understand sampling theory and correlation.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO3	Apply the Number Theory to different applications using theorems.	3	3	-	2	-	-	-	-	-	-	-	2	-	3

	CO4	Apply the graphs and trees concepts to different applications.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
	CO6	Understand the Lattice theory.	3	3	-	2	-	-	-	-	-	-	-	2	-	3
COA	CO1	To explain the basic structure of computers and various I/O Organizations.	-	-	-	-	-	-	-	-	3	-	-	3	3	3
	CO2	To execute computer arithmetic operations.	3	3	-	-	3	3	-	-	3	-	-	3	3	3
	CO3	To analyze and design control unit operations and memory organizations.	3	3	-	-	3	3	-	-	3	-	-	3	3	3
	CO4	To design and Compare various cache mapping techniques.	3	3	3	2	3	3	-	-	3	-	-	3	3	3
	CO5	To describe and differentiate various instruction level parallelism.	3	3	3	2	3	3	-	-	3	-	-	3	3	3
AT	CO1	Understand, design, construct, analyze and interpret Regular languages, Expression and grammar	3	3	2	2	-	-	-	-	2	-	-	3	3	3
	CO2	Understand and Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator.	3	3	2	2	-	-	-	-	2	-	-	3	3	3
	CO3	Understand, design, analyze and interpret Context Free languages, Expression and Grammars.	3	3	2	2	-	-	-	-	2	-	-	3	3	3
	CO4	Design different types of Push down Automata as Simple Parser.	3	3	2	2	-	-	-	-	2	-	-	3	3	3
	CO5	Design different types of Turing Machines as Acceptor, Verifier, Translator and Basic computing machine.	3	3	2	2	-	-	-	-	2	-	-	3	3	3

	CO6	Compare, understand and analyze different languages, grammars, Automata and Machines and appreciate their power and convert Automata to Programs and Functions	3	3	-	2	-	-	-	-	2	-	-	3	2	3
OS	CO1	Describe the important computer system resources and the role of operating systems in their management policies and algorithms.	-	-	-	-	-	-	-	-	2	-	-	3	-	-
	CO2	Understand the process management policies and scheduling of processes by CPU	2	3	3	2	-	-	-	-	2	-	-	3	3	1
	CO3	Evaluate the requirement for process synchronization and coordination handled by operating system	2	3	3	2	-	-	-	-	2	-	-	3	3	1
	CO4	Describe and analyze the memory management and its allocation policies.	2	2	2	2	-	-	-	-	2	-	-	3	3	1
	CO5	Identify use and evaluate the storage management policies with respect to different storage management technologies	2	2	2	2	-	-	-	-	2	-	-	3	3	1
	CO6	Identify the need to create a special purpose operating system.	2	2	2	2	-	-	-	-	-	-	-	3	3	1
CN	CO1	Describe the functions of each layer in OSI and TCP/IP model.	3	2	-	-	-	-	-	-	-	-	-	2	3	3
	CO2	Explain the functions of Application layer and Presentation layer paradigms and Protocols.	3	2	-	2	-	-	-	-	-	-	-	2	3	3

	CO3	Describe the Session layer design issues and Transport layer services.	3	2	-	2	-	-	-	-	-	-	-	2	3	3
	CO4	Classify the routing protocols and analyze how to assign the IP addresses for the given network.	3	2	-	2	-	-	-	-	-	-	-	2	3	3
	CO5	Describe the functions of the data link layer and explain the protocols.	3	2	-	2	-	-	-	-	-	-	-	2	3	3
	CO6	Explain the types of transmission media with real time applications.	3	2	-	2	-	-	-	-	-	-	-	2	3	3
Networking Lab	LO1	Execute and evaluate network administration commands and demonstrate their use in different network scenarios	-	-	-	2	3	-	-	-	2	-	-	3	2	3
	LO2	Demonstrate the installation and configuration of a network simulator.	-	-	-	-	3	-	-	-	2	-	-	3	2	3
	LO3	Demonstrate and measure different network scenarios and their performance behavior.	-	2	-	3	3	-	-	-	2	-	-	3	2	3
	LO4	Analyze the contents of the packet contents of different protocols.		2	-	3	3	-	-	-	2	-	-	3	2	3
	LO5	Implement the socket programming for client server architecture.	-	-	-	-	-	-	-	-	2	-	-	3	2	3
UNIX Lab	LO1	To introduce Basic Unix general purpose Commands	-	-	-	-	-	-	-	-	2	-	-	3	-	-
	LO2	To learn network Unix commands.	2	3	3	2	-	-	-	-	2	-	-	3	3	1
	LO3	To learn C programming in the Unix editor environment.	2	3	3	2	-	-	-	-	2	-	-	3	3	1
	LO4	To learn shell script and sed concepts.	2	2	2	2	-	-	-	-	2	-	-	3	3	1

	LO5	To learn file management and permission advance commands.	2	2	2	2	-	-	-	-	2	-	-	3	3	1
	LO6	To learn awk, grap, perl scripts.	2	2	2	2	-	-	-	-	-	-	-	3	3	1
Microprocessor Programming Lab	LO1	Learn assembling and disassembling a PC.	-	-	-	-	-	-	-	-	2	-	-	3		2
	LO2	Get hands-on experience with Assembly Language Programming.	2	2	2	3	2	-	-	-	2	-	-	2	3	2
	LO3	Study interfacing of peripheral devices with 8086 microprocessors.	-	-	-	-	-	-	-	-	2	-	-	2	1	1
	LO4	Learn techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.	2	2	2	3	2	-	-	-	2	-	-	2	3	2
	LO5	Learn the fundamentals of designing embedded systems.	2	2	3	3	2	-	-	-	2	-	-	2	3	2
	LO6	Write and debug programs in TASM/MASM/hardware kits.	2	2	2	3	2	-	-	-	2	-	-	2	3	2
Python Lab	LO1	Understand the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python	3	3	2	3	2	-	-	-	3	3	3	3	3	2
	LO2	Expressing different Decision Making statements and Functions	-	3	-	3	2	-	-	-	3	3	3	3	3	2
	LO3	Interpret Object oriented programming in Python	-	3	-	3	2	-	-	-	3	3	3	3	3	2
	LO4	Understand and summarize different File handling operations	-	-	-	3	3	-	-	-	3	3	3	3	3	2
	LO5	Explain how to design GUI Applications in Python and evaluate different database operations	-	3	3	3	3	-	-	-	3	3	3	3	3	3

	LO6	Design and develop Client Server network applications using Python	-	3	3	3	3	-	-	-	3	3	3	3	3	3
		Average values for POs mapped	**2.6**	**2.6**	**2.4**	**2.3**	**2.6**	**3**	**-**	**-**	**2.3**	**3**	**3**	**2.7**	**2.8**	**2.4**

Sem V (Rev 2016)																
Subject	**COs**	**CO Description**	**POs**													
			PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
Microcontroller and Embedded Programming	CO1	Explain the embedded system concepts and architecture of embedded systems	3	-	-	3	-	-	-	-	-	-	-		3	3
	CO2	Describe the architecture of 8051 microcontroller and write embedded program for 8051 microcontroller.	3	3	-	3	-	-	-	-	-	-	-	3	3	3
	CO3	Design the interfacing for 8051 microcontroller.	-	-	3		-	2	-	-	-	-	-		3	
	CO4	Understand the concepts of ARM architecture.	3	-	-	3	-	-	-	-	-	-	-	3	3	3
	CO5	Demonstrate the open source RTOS and solve the design issues for the same.	3	-	-	3	-	-	-	-	-	-	-	2	3	3
	CO6	Select elements for an embedded systems tool.	-	-	-	3	-	-	-	-	-	-	-		3	3
Internet Programming	CO1	Implement interactive web page(s) using HTML,CSS and JavaScript.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	CO2	Design a responsive web site using HTML5 and CSS3.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	CO3	Demonstrate Rich Internet Application	-	-	-	2	2	-	-	-	3	-	-	3	3	3

	CO4	Build Dynamic web site using server side PHP Programming and Database connectivity.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	CO5	Describe and differentiate different Web Extensions and Web Services.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	CO6	Demonstrate web application using Python web Framework-Django	-	-	-	2	3	-	-	-	3	-	-	3	3	3
Advanced Data Management Technology	CO1	Explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occur in a database	-	-	-	-	-	-	-	-	3	-	-	-	3	3
	CO2	Explain concurrent transaction occur in a database	-	-	3	2	3	-	-	-	3	-	-	3	-	3
	CO3	Apply sophisticated access protocols to control access to the database.	-	-	-	-	-	-	-	2		-	-	-	-	3
	CO4	Implement alternate models like Distributed databases and Design applications using advanced models like mobile, spatial databases.	-	-	3	2	3	-	-	-	3	-	-	3	3	3
	CO5	Organize strategic data in an enterprise and build a data Warehouse.	-	2	3	2	-	-	-	-	3	-	-	3		3
	CO6	Analyze data using OLAP operations so as to take strategic decisions	-	2	3	2	3	-	-	-	3	-	-	3	3	3
Cryptography & Network Security	CO1	Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory	-	-	-	-	-	-	-	-	3	-	-	-	-	-

	CO2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes	3	3	-	-	-	2	-	-	-	3	-	-	3	-
	CO4	Apply different digital signature algorithms to achieve authentication and create secure applications	3	3	-	3	-	-	-	-	-	3	-	-	3	-
	CO5	Apply network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP	3	3	-	3	3	3	-	-	-	3	-	-	-	3
	CO6	Apply the knowledge of cryptographic utilities and authentication mechanisms to design secure applications	3	3	-	3	3	3	-	-	-	3	-	-	-	3
Department Level Optional Course-I (E-Commerce and E-business)	CO1	Understand and differentiate various types of E-commerce.	-	2	2	2	-	-	-	-	2	2	-	2	-	2
	CO2	Describe Hardware and Software Technologies for E-commerce.	-	-	3	-	-	2		3		2	-	2	-	2
	CO3	Explain payment systems for E -commerce	-	-		3	-	3		2	3	3	-	2	-	2
	CO4	Describe the process of Selling and Marketing on the web.	-	-	3	-	-	3	2	2	3	-	-	3	-	3

	CO5	Understand and Describe E-business and its Models.	-	-	3	-	-		3	3	-	-	-	3	-	2
	CO6	Identify various E-business Strategies	-	3	3	-	-	3		3	-	-	-	3	-	2
Department Level Optional Course-I (Advanced Data Structures and Analysis of Algorithms)	CO1	Choose appropriate advanced data structure for a given problem.	3	3	3	3	-	-	-	-	-	-	-	2	3	3
	CO2	Calculate complexity of Algorithms.	3	3	2	3	-	-	-	-	-	-	-	2	3	3
	CO3	Select appropriate design techniques to solve real world problems.	3	3	3	3	-	-	-	-	-	-		2	3	3
	CO4	Apply the dynamic programming technique to solve the problems.	3	3	3	2	-	-	-	-	-	-	-	-	3	2
	CO5	Apply the greedy programming technique to solve the problems.	3	3	3	2	-	-	-	-	-	-	-	-	3	2
	CO6	Select a proper pattern matching algorithm for a given problem.	3	3	3	2	-	-	-	-	-	-	-	-	3	2
Business Communication and Ethics	CO1	Design a technical document using precise language, suitable vocabulary and apt style.	1	1	1	1	3	3	3	3	3	3	3	3	1	3
	CO2	Develop the life skills/ interpersonal skills to progress professionally by building strong relationships	1	1	1	1	3	3	3	3	3	3	3	3	1	3
	CO3	Demonstrate awareness of contemporary issues and knowledge of professional and ethical responsibilities.	1	1	1	1	3	3	3	3	3	3	3	3	1	3
	CO4	Demonstrate awareness of contemporary issues and knowledge of professional and ethical responsibilities.	1	1	1	1	3	3	3	3	3	3	3	3	1	3

	CO5	Apply the traits of a suitable candidate for a job/higher education, upon being trained in the technique	1	1	1	1	3	3	3	3	3	3	3	3	1	3
Internet Programming Lab	LO1	Design a basic website using HTML5 and CSS3 to demonstrate responsive web design.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	LO2	Implement dynamic web pages with validation using JavaScript objects by applying different event handling mechanisms.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	LO3	Use AJAX Programming Technique to develop RIA	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	LO4	Develop simple web applications using server side PHP programing and Database Connectivity using MySQL.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	LO5	Build a well-formed XML Document and implement Web Service using Java.	-	-	-	2	2	-	-	-	3	-	-	3	3	3
	LO6	Demonstrate simple web application using Python Django Framework.	-	-	-	2	3	-	-	-	3	-	-	3	3	3
Security Lab	LO1	Apply the knowledge of symmetric cryptography to implement simple ciphers	3	2	-	-	3	2	-	-	-	3	-	-	3	
	LO2	Analyze and implement public key algorithms like RSA and El Gamal	3	3	2	3	3	2	-	-	-	3	-	-	3	3
	LO3	Analyze and evaluate performance of hashing algorithms	3	3	-	-	3	2	-	-	-	3	-	-	3	-
	LO4	Explore the different network reconnaissance tools to gather information about networks	3	-	3	3	3	2	2	3	-	-	-	-	3	3

	LO5	Use tools like sniffers, port scanners and other related tools for analyzing packets in a network	3	-	3	3	3	2	2	3	-	-	-	-	3	3
	LO6	Apply and set up firewalls and intrusion detection systems using open source technologies and to explore email security	3	-	3	3	3	3	3	3	-	-	-	-	3	3
OLAP Lab	LO1	Implement simple query optimizers and design alternate efficient paths for query execution.	-	-	-	-	-	-	-	-	3	-	-	-	3	3
	LO2	Simulate the working of concurrency protocols, recovery mechanisms in a database	-	-	3	2	3	-	-		3	-	-	3	-	3
	LO3	Design applications using advanced models like mobile, spatial databases.	-	-	-	-	-	-	-	2		-	-	-	-	3
	LO4	Implement a distributed database and understand its query processing and transaction processing mechanisms	-	-	3	2	3	-	-	-	3	-	-	3	3	3
	LO5	Build a data warehouse .	-	2	3	2	-	-	-	-	3	-	-	3	-	3
	LO6	Analyze data using OLAP operations so as to take strategic decisions.	-	2	3	2	3	-	-	-	3	-	-	3	3	3
IOT (Mini Project) Lab	LO1	Identify the requirements for the real world problems.	3	3	-	3	-	3	3	3	2	-	-	3	-	-
	LO2	Conduct a survey of several available literatures in the preferred field of study.	3	3	-	3	-	3	3	3	2	-	-	3	-	-
	LO3	Study and enhance software/ hardware skills.	-	-	3	3	3	-	-	-	3	-	-	-	3	3
	LO4	Demonstrate and build the project successfully by hardware requirements, coding, emulating and	3	3	3		3	-	3	3	3	-	3	3	3	3

		testing.														
	LO5	To report and present the findings of the study conducted in the preferred domain	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	LO6	Demonstrate an ability to work in teams and manage the conduct of the research study.	3	3	3	3	3	2	2	2	3	3	3	-	-	-
		Average	**2.7**	**2.5**	**2.6**	**2.3**	**2.7**	**2.6**	**2.7**	**2.8**	**2.9**	**2.9**	**3**	**2.8**	**2.8**	**2.9**

SEM VI

Subject	COs	CO Description	POs													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Software Engineering with Project Management	CO1	Define various software application domains and remember different process models used in software development.	3	2	3	2	2	-	-	-	2	2	3	2	3	2
	CO2	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.	3	3	3	3	3	-	-	-	3	3	3	2	3	3
	CO3	Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.	3	3	3	3	2	2	-	-	3	3	3	2	3	3
	CO4	Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them.	2	2	3	3	2	-	-	-	3	3	3	2	3	2
	CO5	Justify the role of SDLC in Software Project Development and they can evaluate the importance of Software	2	-	2	2		-	-	-	2	2	3	2	2	2

		Engineering in PLC.														
	CO6	Generate project schedules and can construct, design and develop network diagrams for different types of Projects. They can also organize different activities of the project as per Risk impact factor.	3	3	3	3	3	-	-	-	3	2	3	2	3	2
DMBI	CO1	Demonstrate an understanding of the importance of data mining and the principles of business intelligence	-	2	-	-	-	-	-	-	-	-	-	-	-	2
	CO2	Organize and Prepare the data needed for data mining using pre preprocessing techniques	3	3	-	3	-	-	-	-	-	-	-	-	-	-
	CO3	Perform exploratory analysis of the data to be used for mining.	3	3	-	3	3	-	-	-	-	-	-	-	-	3
	CO4	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.	3	3	3	3	3	2	2	-	-	-	-	-	3	3
	CO5	Define and apply metrics to measure the performance of various data mining algorithms.	3	-	-	3	3	-	-	-	-	-	-	-	-	-
	CO6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise, apply the appropriate data mining technique, interpret and visualize the results and provide decision support.	-	3	3	3	3	3	3	-	-	-	-	-	3	3
Cloud Computing & Services	CO1	Define Cloud Computing and memorize the different Cloud service and deployment models	-	3	3	-	2	2	3	-	3	-	-	3	.	3
	CO2	Describe the importance of virtualization along with their	-	3	3	-	2	2	3	-	3	-	-	3	3	3

		technologies.														
	CO3	Use and Examine different cloud computing services	-	3	3	-	2	2	3	-	3	-	-	3	3	3
	CO4	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing	-	3	3	-	2	2	3	2	3	-	-	3	3	3
	CO5	Describe the key components of Amazon web Service	-	3	3	-	2	2	3	2	3	-	-	3	3	3
	CO6	Design & develop backup strategies for cloud data based on features	-	3	3	-	2	2	3	2	3	-	-	3	3	3
Wireless Networks	CO1	Understand the basic concepts of wireless network and wireless generations	-	-	3	-	-	-	-	-	-	-	-	3	-	-
	CO2	Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc	2	2	3	3	3	2	2	2	3	2	-	3	3	-
	CO3	Analyse the importance of Ad-hoc networks such as MANET and VANET and Wireless Sensor networks	2	2	3	3	3	2	2	2	3	3	3	3	3	-
	CO4	Understand and Analyse the emerging wireless technologies standards such as WLL, WLAN,WPAN, WMAN	2	2	3	3	3	2	2	2	3	3	3	3	3	-
	CO5	Comprehend the design considerations for deploying the wireless network infrastructure	3	2	3	3	3	2	2	2	3	-	3	3	-	3
	CO6	Analyse and Evaluate the security measures, standards. Services and layer wise security considerations	2	2	-	3	3	3	-	2	3	-	2	-	-	-
Departmen t Level Optional	CO1	Explain the design considerations for deploying the wireless network infrastructure	3	-	-	-	-	3	2	3	-	3	-	3	-	-

Course -II Digital Forensics	CO2	Differentiate and support the security measures, standards. Services and layer wise security considerations	3	-	-	-	-	3	2	3	-	3	-	3	-	-
	CO3	Explain the methodology of incident response and various security issues in ICT world, and identify digital forensic tools for data collection	3	-	3	3	3	3	2	3	-	2	-	3	3	3
	CO4	Recognize the importance of digital forensic duplication and various tools for analysis to achieve adequate perspectives of digital forensic investigation in various applications /devices like Windows/Unix system	3	-	3	3	3	3	2	3	-	3	-	3	3	3
	CO5	Apply the knowledge of IDS to secure network and performing router and network analysis	3	-	3	3	3	3	-	3	-	3	-	-	3	3
	CO6	List the method to generate legal evidence and supporting investigation reports and will also be able to use various digital forensic tools	3	2	3	3	3	3	-	3	-	3	-	-	3	3
Software Design Lab	LO1	Sketch a Modeling with UML.	3	3	3	3	3	2	-	2	3	3	3	2	2	2
	LO2	Deploy Structural Modeling.	3	3	3	3	3	2	-	2	3	3	3	2	2	2
	LO3	Deploy Behavioral Modeling.	3	3	3	3	3	2	-	2	3	3	3	2	2	2
	LO4	Deploy Architectural Modeling.	3	3	3	3	3	2	-	2	3	3	3	2	2	2
	LO5	Examine estimation about schedule and cost for project development.	3	3	3	3	3	-	-	2	3	2	3	2	-	2
	LO6	Select project development tool.	3	3	3	3	3	-	-	2	3	2	3	2	2	2
Business Intelligence Lab	LO1	Identify sources of Data for mining and perform data exploration	3	3	-	3	3	-	-	-	3	-	-	-	-	3

	LO2	Organize and prepare the data needed for data mining algorithms in terms of attributes and class inputs, training, validating, and testing files.	3	3	-	3	3	-	-	-	3	-	-	-	-	-
	LO3	Implement the appropriate data mining methods like classification, clustering or association mining on large data sets using open source tools like WEKA.	3	3	3	3	3	2	2	-	3	-	-	-	3	3
	LO4	Implement various data mining algorithms from scratch using languages like Python/ Java etc.	3	3	3	3	3	2	2	-	3	-	-	-	3	3
	LO5	Evaluate and compare performance of some available BI packages.	3	-	-	3	3	-	-	-	3	-	-	-	-	-
	LO6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise, apply the appropriate data mining technique, interpret and visualize the results and provide decision support.	-	3	3	3	3	3	3	-	3	-	-	-	3	3
Cloud Service Design Lab	LO1	Define & implement Virtualization using different types of Hypervisors	-	-	2	2	3	-	-	3	3	-	-	3	-	3
	LO2	Describe steps to perform on demand Application delivery using Ulteo .	-	-	2	2	3	-	-	3	3	-	-	3	-	3
	LO3	Examine the installation and configuration of Open stack cloud	-	-	2	2	3	-	-	3	3	-	-	3	-	3
	LO4	Analyze and understand the functioning of different components involved in Amazon web services cloud platform	-	-	2	2	3	-	-	3	3	-	-	3	-	3
	LO5	Describe the functioning of Platform as a Service	-	-	2	2	3	-	-	3	3	-	-	3	-	3

	LO6	Design & Synthesize Storage as a service using own Cloud	-	-	2	2	3	-	-	3	3	-	-	3	-	3
Sensor Network Lab -	LO1	Identify the requirements for the real world problems.	3	3	-	3	-	3	3	3	2	-	-	3	-	-
	LO2	Conduct a survey of several available literatures in the preferred field of study.	3	3	-	3		3	3	3	2	-	-	3	-	-
	LO3	Study and enhance software/ hardware skills.	-	-	3	3	3	-	-	-	3	-	-	-	3	3
	LO4	Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing	3	3	3	-	3	-	3	3	3	-	3	3	3	3
	LO5	To report and present the findings of the study conducted in the preferred domain	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	LO6	Demonstrate an ability to work in teams and manage the conduct of the research study.	3	3	3	3	3	-	-	-	3	3	3	-	-	-
Mini-Project	LO1	Discover potential research areas in the field of IT	3	3	-	3	-	3	3	3	2	-	-	3	-	-
	LO2	Conduct a survey of several available literature in the preferred field of study	3	3	-	3	-	3	3	3	2	-	-	3	-	-
	LO3	Compare and contrast the several existing solutions for research challenge	3	3	3	3	3	-	-	-	2	-	-	-	-	-
	LO4	Demonstrate an ability to work in teams and manage the conduct of the research study	3	3	3	3	3	-	-	-	3	3	3	-	-	-
	LO5	Formulate and propose a plan for creating a solution for the research problem identified	3	3	3	3	3	-	-	3		3	3	3	3	3

	LO6	To report and present the findings of the study conducted in the preferred domain	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	*: PO6/7 will be mapped based on the application on which students are going to work															
Department Level Optional Course -II Advanced Internet Programming	CO1	Explain search engine optimization technique	2	-	2	-	2	-	-	2	-	-	-	-	-	3
	CO2	Determine SEO Objectives and Develop SEO plan prior to site development	2		2	2	2	-	-	2	-	-	-	-	-	3
	CO3	Keyword Generation	3	2	2	3	3	-	-	2	-	-	-	-	-	3
	CO4	Describe different Web Services Standard	-	-	2	-	-	-	-	2	-	2	-	-	-	3
	CO5	Develop RIA using proper choice of framework	-	-	2	-	3	-	-		-	3	-	-	-	3
	CO6	Apply multiple quantitative and qualitative methods for web analytics 2.0	3	2	2	3	2	-	-	2	-	-	-	-	-	3
	CO7	Explain Web 3.0 and SemanticWeb Standards	-	-	2	2	-	-	-	2	-	2	-	-	-	3
		Average	**2.8**	**2.8**	**2.7**	**2.8**	**2.8**	**3**	**3**	**3**	**2.9**	**2.7**	**3**	**2.7**	**2.8**	**2.8**

Sem VII (Rev 2016)

Subject	COs	CO Description	POs													
			PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Enterprise Network Design	CO1	Understand the customer requirements and Apply a Methodology to Network Design	3	2	2	3	3	-	-	-	3	-	-	3	3	3
	CO2	Structure and Modularize the Network	-	2	2	3	3	-	-	-	3	-	-	3	3	3

	CO3	Design Basic Campus and Data Center Network.	-	2	2	3	3	-	-	-	3	-	-	3	3	3
	CO4	Design Remote Connectivity	-	2	-	-	3	-	-	-	-	-	-	3	3	3
	CO5	Design IP Addressing and Select suitable Routing Protocols for the Network	-	2	2	-	3	-	-	-	-	-	-	3	3	3
	CO6	Compare Openflow controllers and switches with other enterprise networks	-	2	2	-	3	-	-	-	-	-	-	3	3	3
Infrastructure Security	CO1	Understand the concept of vulnerabilities, attacks and protection mechanisms	-	-	-	2	3	-	-	-	-	-	-	3	2	3
	CO2	Analyze and evaluate software vulnerabilities and attacks on databases and operating systems	-	-	-	2	3	-	-	-	2	-	-	3	3	3
	CO3	Explain the need for security protocols in the context of wireless communication	-	-	-	2	3	-	-	-	-	-	-	3	3	3
	CO4	Understand and explain various security solutions for Web and Cloud infrastructure	-	-	-	2	3	-	-	-	2	-	-	3	3	3
	CO5	Understand, and evaluate different attacks on Open Web Applications and Web services	-	-	-	2	3	-	-	-	2	-	-	3	3	3
	CO6	Design appropriate security policies to protect infrastructure components	-	-	-	2	3	-	-	-	2	-	-	3	3	3
DLO : STQA	CO1	Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs	-	2	2	-	-	2	2	2	2	2	-	2	2	2

	CO2	Implement various test processes for quality improvement	-	2	2	-	-	2	2	2	2	2	-	2	2	2
	CO3	Design test planning	-	3	2	-	3	2	2	2	2	2	2	2	2	2
	CO4	Manage the test process	-	3		-	3	2	2	2	2	2	2	2	2	2
	CO5	Apply the software testing techniques in commercial environment	-	2	3	3	3	2	2	2	3	2	2	2	2	2
	CO6	Use practical knowledge of a variety of ways to test software and an understanding of some of the trade-offs between testing techniques	-	2	2	2	2	2	2	2	2	2	2	2	2	2
DLO:SC	CO1	To learn different soft computing methodologies.	3	3	3	3	-	-	-	-	2	-	-	3	-	-
	CO2	To implement the soft computing algorithms using various software tools	-	3	3		3	-	-	-	3	-	-	3	-	3
	CO3	To apply soft computing algorithms to solve real time problems/PROBLEMS.	3	3	3	2	3	-	-	-	3	-	-	3	-	3
ILO: MIS	CO1	To understand how Information Systems Transforms business	-	3	3	3	3	3	2	-	3	3	3	3	3	2
	CO2	To Identify impact of Information systems on organization	-	2	2	2	2	2	2	-	3	2	2	2	2	2
	CO3	To describe IT infrastructure and its components and current trends	-	2	-	2	2	-	-	-	2	2	2	2	2	2
	CO4	To Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making	-	3	3	3	3	3	2	-	3	3	3	3	3	2

	CO5	Design the different types of information systems used for enterprise wide knowledge management and understand how they provide value for businesses	-	3	3	3	3	3	3	-	3	3	3	3	3	2
Artificial Intelligence	CO1	Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents	-	2	-	2	-	-	-	-	-	-	-	2	2	
	CO2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them	-	-	-	-	3	-	-	-	-	-	-	2	2	3
	CO3	Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	CO4	Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	CO5	Formulate and solve problems with uncertain information using Bayesian approaches	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	CO6	Apply the concept Natural Language processing to problems leading to understanding of cognitive computing	-	3	-	3	2	-	-	-	-	-	-	3	3	3
Network Design Lab	LO1	Understand the requirements of an enterprise and outline its major design areas	-	2	3	3	-	-	-	3	-	2	3	3	3	

	LO2	Recognize functional areas to create high level modules for enterprise architecture and analyze them.	-	2	3	3	-	-	-	-	3	-	2	3	3	3
	LO3	Identify the networking devices, prepare a bill of materials and configure the devices as per the Core, Access and Distribution layers	-	2	3	3	-	-	-	-	3	-	3	3	3	3
	LO4	Design the Server Farm for an enterprise network and discuss upgrades if needed.	-	2	3	3	3	-	-	-	3	-	3	3	3	3
	LO5	Identify and select the technology for Remote site Connectivity, suitable IP addressing plan and routing protocol for an enterprise network.	-	2	-	-	-	-	-	-	3	-	-	3	3	3
	LO6	Test and monitor the enterprise network using a tool	-	2	3	3	3	-	-	-	3	-	3	3	3	3
Advanced Security Lab	LO1	Implement and analyze program and database vulnerabilities Buffer overflow and SQL Injection	-	2	3	-	3	-	-	-	-	-	-	3	2	3
	LO2	Explore and analyze different security tools to secure mobile devices, web browser, wireless network and router	-	2	-	-	3	-	-	-	-	-	-	3	3	3
	LO3	Explore reconnaissance, attack and forensics tools in Kali Linux	-	3	-	-	3	-	-	-	-	-	-	3	2	3
	LO4	Learn security of system using personal firewall installation	-	3	3	-	3	-	-	-	-	-	-	3	2	3
	LO5	Understand AAA using RADUIS	-	2	-	-	3	-	-	-	-	-	-	3	3	2

	LO5	Understand AAA using TACACS	-	2	-	-	3	-	-	-	-	-	-	3	3	2
IS Lab	LO1	Design the building blocks of an Intelligent Agent using PEAS representation	-	2	-	2		-	-	-	-	-	-	2	2	-
	LO2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them	-	-	-	-	3	-	-	-	-	-	-	2	2	3
	LO3	Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	LO4	Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	LO5	Formulate and solve problems with uncertain information using Bayesian approaches	-	3	-	3	2	-	-	-	-	-	-	3	3	3
	LO6	Apply concept Natural Language processing and cognitive computing for creation of domain specific ChatBots	-	3	-	3	2	-	-	-	-	-	-	3	3	3
Android App Development Lab	LO1	Experiment on Integrated Development Environment for Android Application Development.	-	-	-	-	3	-	-	-	3	-	3	-	3	3
	LO2	Design and Implement User Interfaces and Layouts of Android App.	-	-	3	3	3	-	-	-	3	-	3	-	3	3

	LO3	Use Intents for activity and broadcasting data in Android App.	-	-	3	3	3	-	-	-	3	-	3	-	3	3
	LO4	Design and Implement Database Application and Content Providers.	-	-	3	3	3	-	-	-	3	-	3	-	3	3
	LO5	Experiment with Camera and Location Based service.	-	-	3	3	3	-	-	-	3	-	3	-	3	3
	LO6	Develop Android Apps with Security features.	-	-	3	3	3	-	-	-	3	-	3	-	3	3
		Average values for POs mapped	**3**	**2.4**	**2.7**	**2.7**	**2.8**	**2.3**	**2.1**	**2**	**2.7**	**2.3**	**2.6**	**2.8**	**2.7**	**2.8**

Final CO attainment (AY2017-18) SEM-III

Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
AM-III	CO1	4	4	4	3.6
	CO2	4	4	4	
	CO3	3.6	4	3.7	
	CO4	4	3	3.8	
	CO5	2.8	4	3	
	CO6	2.8	4	3	
DSA	CO1	4	4	4	3.9
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	2	3.6	
	CO5	4	3	3.8	

PC	CO1	3.2	4	3.4	3.4
	CO2	3.3	3	3.2	
	CO3	3.2	4	3.4	
	CO4	3.3	4	3.4	
	CO5	3.3	4	3.4	
	CO6	3.3	4	3.4	
LD	CO1	4	4	4	3.8
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4		3.2	
DBMS	CO1	3	3	3	3.3
	CO2	3	4	3.2	
	CO3	3	4	3.2	
	CO4	3	3	3	
	CO5	4	3	3.8	
	CO6	4	2	3.6	
Digital Design LAB	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	4	4	
DS LAB	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	3	3.8	
	CO5	4	4	4	

JPL	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	4	4	
	CO6	4	4	4	
Average		3.7	3.7	3.7	3.8

Final CO attainment (AY2017-18) SEM-IV

Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
AM-IV	CO1	3.7	4	3.8	3.6
	CO2	3.6	4	3.7	
	CO3	3.6	4	3.7	
	CO4	3.1	4	3.3	
	CO5	3.9	4	3.9	
	CO6	2.8	4	3	
AT	CO1	2	4	2.4	2.2
	CO2	2	4	2.4	
	CO3	2	3	2.2	
	CO4	2	3	2.2	
	CO5	2	2	2	
	CO6	2	3	2.2	
OS	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	

	CO4	4	4	4	
	CO5	4	4	4	
	CO6	4	4	4	
COA	CO1	3	4	3.2	2.8
	CO2	2.8	2	2.6	
	CO3	2.1	4	2.5	
	CO4	2.1	4	2.5	
	CO5	2.9	4	3.1	
	CO6	2.1	3.5	2.4	
CN	CO1	3.7	4	3.8	3.4
	CO2	3.58	4	3.7	
	CO3	1.6	4	2.1	
	CO4	3.7	4	3.8	
	CO5	3.7	4	3.8	
CN-LAB	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	4	4	
PYTHON LAB	LO1	4	4	4	3.7
	LO2	3	4	3.2	
	LO3	3	4	3.2	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
OS LAB	LO1	4	2	3.6	3.6
	LO2	4	2	3.6	

	LO3	4	2	3.6	
	LO4	4	2	3.6	
	LO5	4	2	3.6	
	LO6	4	2	3.6	
MP LAB	CO1	3	1	2.6	2.6
	CO2	3	1	2.6	
	CO3	3	1	2.6	
	CO4	3	1	2.6	
	CO5	3	1	2.6	
	CO6	3	1	2.6	
Average		3.3	3.3	3.3	3.3

Final CO attainment (AY2018-19) SEM-V

Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
MEP	CO1	2.1	1	1.9	2.4
	CO2	2.6	1	2.3	
	CO3	2.1	1	1.9	
	CO4	3.1	1	2.7	
	CO5	3.3	1	2.8	
	CO6	2.1	4	2.5	
IP	CO1	3.7	4	3.8	3.3
	CO2	4	3	3.8	
	CO3	3.8	3	3.6	
	CO4	4	3	3.8	
	CO5	3	3	3	

	CO6	1.2	3	1.6	
ADMT	CO1	3.8	3	3.6	3.8
	CO2	4	3	3.8	
	CO3	4	3	3.8	
	CO4	3.9	3	3.7	
	CO5	4	3	3.8	
	CO6	4	3	3.8	
CNS	CO1	4	4	4	3.7
	CO2	3.3	4	3.4	
	CO3	3.3	4	3.4	
	CO4	4	4	4	
	CO5	4	4	4	
	CO6	3.3	4	3.4	
ADSAA	CO1	4	4	4	3.8
	CO2	4	3	3.8	
	CO3	4	3	3.8	
	CO4	4	3	3.8	
	CO5	4	3	3.8	
	CO6	4	3	3.8	
ECOM & EBUSINESS	CO1	4	3	3.8	3.8
	CO2	3.9	3	3.7	
	CO3	4	4	4	
	CO4	3.9	4	3.9	
	CO5	4	3	3.8	
	CO6	4	3	3.8	
BCE	CO1	4	4	4	4
	CO2	4	4	4	

	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	3	3.8	
IP LAB	LO1	4	3	3.8	3.7
	LO2	4	3	3.8	
	LO3	3.6	2	3.3	
	LO4	4	4	4	
	LO5	4	3	3.8	
SECURITY LAB	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
OLAP LAB	LO1	4	3	3.8	3.8
	LO2	4	3	3.8	
	LO3	4	3	3.8	
	LO4	4	3	3.8	
	LO5	4	3	3.8	
	LO6	4	3	3.8	
IOT MINI PROJECT	LO1	4	3	3.8	3.7
	LO2	4	3	3.8	
	LO3	4	2	3.6	
	LO4	4	2	3.6	
	LO5	4	2	3.6	
	LO6	4	3	3.8	
Average		3.8	3.1	3.6	3.6

Final CO attainment (AY 2018-19) SEM-VI					
Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
SEPM	CO1	4	4	4	3.9
	CO2	4	4	4	
	CO3	3	4	3.2	
	CO4	4	4	4	
	CO5	4	4	4	
	CO6	4	4	4	
DMBI	CO1	4	4	4	3.6
	CO2	3.7	4	3.8	
	CO3	3.6	3	3.5	
	CO4	4	3	3.8	
	CO5	3.1	3	3.1	
	CO6	3.6	2	3.3	
WN	CO1	3.9	4	3.9	3.7
	CO2	3.9	4	3.9	
	CO3	3.9	4	3.9	
	CO4	3.9	3	3.7	
	CO5	3.1	3	3.1	
	CO6	3.9	3	3.7	
DF	CO1	4	1	3.4	3.3
	CO2	4	1	3.4	
	CO3	4	1	3.4	
	CO4	3.3	1	2.8	

	CO5	4	1	3.4	
	CO6	4	1	3.4	
MINI PROJECT	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
CCS LAB	LO1	3.6	4	3.7	3.9
	LO2	3.7	4	3.8	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
CCS	CO1	4	4	4	3.9
	CO2	3.7	4	3.8	
	CO3	3.9	4	3.9	
	CO4	4	4	4	
	CO5	4	4	4	
SD LAB	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
BI LAB	LO1	3.2	4	3.4	3.7
	LO2	3.1	4	3.3	

	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	3	3.8	
	LO6	3.8	4	3.8	
AIP	CO1	3.8	4	3.8	3.7
	CO2	3.8	4	3.8	
	CO3	3.6	4	3.7	
	CO4	3.9	4	3.9	
	CO5	3.9	4	3.9	
	CO6	3.1	4	3.3	
MINI PROJECT	LO1	4	-	3.2	3.2
	LO2	4	-	3.2	
	LO3	4	-	3.2	
	LO4	4	-	3.2	
	LO5	4	-	3.2	
	LO6	4	-	3.2	
SN LAB	LO1	4	4	4	3.8
	LO2	4	3	3.8	
	LO3	4	3	3.8	
	LO4	4	3	3.8	
	LO5	4	3	3.8	
	LO6	4	3	3.8	
Average		**3.9**	**3.5**	**3.7**	**3.7**

Final CO attainment (AY 2019-20) SEM-VII

Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
END	CO1	4	4	4	4
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	3	3.8	
	CO5	4	4	4	
	CO6	4	4	4	
IS	CO1	2.9	4	3.1	3.2
	CO2	2.5	4	2.8	
	CO3	2.8	4	3	
	CO4	3.3	4	3.4	
	CO5	3.3	4	3.4	
	CO6	3.3	4	3.4	
STQA	CO1	3.9	4	3.9	4
	CO2	3.9	4	3.9	
	CO3	3.9	4	3.9	
	CO4	4	4	4	
	CO5	4	4	4	
	CO6	4	4	4	
AI	CO1	3.8	4	3.8	3.7
	CO2	3.5	4	3.6	
	CO3	4	4	4	
	CO4	3.6	4	3.7	

	CO5	4	4	4	
	CO6	2.8	3	2.8	
NDL LAB	LO1	4	4	4	3.9
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	3	3.8	
	LO5	4	4	4	
	LO6	4	3	3.8	
AS LAB	LO1	3.3	4	3.4	3.6
	LO2	3.6	4	3.7	
	LO3	3.8	4	3.8	
	LO4	3.1	4	3.3	
	LO5	3.4	3	3.3	
	LO6	4	4	4	
SAN	CO1	4	2.5	3.7	3.8
	CO2	4	3	3.8	
	CO3	4	2.5	3.7	
	CO4	4	2.5	3.7	
	CO5	4	2.5	3.7	
	CO6	4	4	4	
MIS	CO1	3.4	3	3.3	3.5
	CO2	3.4	4	3.5	
	CO3	3.9	2	3.5	
	CO4	3.6	3	3.5	
	CO5	4	3	3.8	
MINI PROJECT	LO1	4	-	3.2	3.2
	LO2	4	-	3.2	

	LO3	4	-	3.2	
	LO4	4	-	3.2	
	LO5	4	-	3.2	
	LO6	4	-	3.2	
IS LAB	LO1	3.4	4	3.5	3.4
	LO2	3.4	2	3.1	
	LO3	3.6	3	3.5	
	LO4	3.9	2	3.5	
	LO5	3.7	3	3.6	
	LO6	3.4	3	3.3	
AAD LAB	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
OR	CO1	4	3	3.8	3.9
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	3	3.8	
Average		3.8	3.6	3.7	3.7

Final CO attainment (AY2019-20) SEM-VIII

Subject	COs	Direct CO Attainment	Indirect CO Attainment	Final CO Attainment =0.8*Direct+0.2*Indirect	Average CO attainment for subject
BDA	CO1	4	4	4	3.4
	CO2	3.45	4	3.6	

	CO3	3.1	4	3.3	
	CO4	3.64	4	3.7	
	CO5	2.8	4	3	
	CO6	2.8	4	3	
IOE	CO1	4	3	3.8	3
	CO2	3.8	3	3.6	
	CO3	2.8	2	2.6	
	CO4	2.8	3	2.8	
	CO5	2.8	3	2.8	
	CO6	2.8		2.2	
UI	CO1	4	3	3.8	3.6
	CO2	4	3	3.8	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	2	3.6	
	CO6	2.8	2	2.6	
ERP	CO1	4	4	4	3.8
	CO2	4	4	4	
	CO3	4	4	4	
	CO4	4	4	4	
	CO5	4	4	4	
	CO6	2.8	4	3	
RM	CO1	4	2	3.6	3
	CO2	4	2	3.6	
	CO3	2.8	3	2.8	
	CO4	2.8	2	2.6	
	CO5	2.8	3	2.8	

	CO6	2.8	1	2.4	
PM	CO1	3.7	2	3.4	3.2
	CO2	3.9	2	3.5	
	CO3	3.9	2	3.5	
	CO4	2.8	2	2.6	
	CO5	3.9	2	3.5	
	CO6	2.8	2	2.6	
EM	CO1	3.9	2	3.5	3.2
	CO2	3.9	2	3.5	
	CO3	2.8	2	2.6	
FM	LO1	4	1	3.4	3.5
	LO2	4	2	3.6	
BDL LAB	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
IOE LAB	LO1	3.7	3	3.6	3.6
	LO2	3.7	3	3.6	
	LO3	3.7	3	3.6	
	LO4	3.7	4	3.8	
	LO5	3.7	3	3.6	
	LO6	3.7	3	3.6	
DEVAPS LAB	LO1	3.8	3.7	3.8	3.9
	LO2	4	3.7	3.9	
	LO3	4	4	4	

	LO4	4	3.5	3.9	
	LO5	4	4	4	
	LO6	4	4	4	
RPROG LAB	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
PROJECT	LO1	4	4	4	4
	LO2	4	4	4	
	LO3	4	4	4	
	LO4	4	4	4	
	LO5	4	4	4	
	LO6	4	4	4	
Average		3.7	3.3	3.6	3.6

Final CO Attainment
(For the batch passed out in 2019-20)

Sem	Direct	Indirect	Final CO Attainment=0.8*Direct+0.2*Indirect
III	3.7	3.7	3.7
IV	3.3	3.3	3.3
V	3.8	3.1	3.7
VI	3.8	3.5	3.7
VII	3.7	3.6	3.7
VIII	3.7	3.3	3.6
Average	**3.7**	**3.4**	**3.6**

Mrs. Chaitrsheela Nehete

Department of Information Technology

PO Attainment AY 2019-20

CO Contribution in PO attainment (AY2017-18) SEM-III

Subject	CO's	PO's												PSOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
AM-III	CO1	4	4	-	2.4	-	-	-	-	-	-	-	2.4	-	4
	CO2	4	4	-	2.4	-	-	-	-	-	-	-	2.4	-	4
	CO3	3.6	3.6	-	2.1	-	-	-	-	-	-	-	2.1	-	3.6
	CO4	4	4	-	2.4	-	-	-	-	-	-	-	2.4	-	4
	CO5	2.8	2.8	-	1.7	-	-	-	-	-	-	-	1.7	-	2.8
	CO6	2.8	2.8	-	1.7	-	-	-	-	-	-	-	1.7	-	2.8
DSA	CO1	2.4	4	4	2.4	-	-	-	-	2.4	-	-	-	4	4
	CO2	2.4	4	4	2.4	-	-	-	-	2.4	-	-	-	4	4
	CO3	2.4	4	4	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO4	2.4	4	4	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO5	2.4	4	-	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO6	4	4	-	2.4	-	-	-	-	2.4	-	-	2.4	4	4
PC	CO1	1.9	1.3	-	-	-	-	-	-		-	-	2.4	4	4
	CO2	2	1.3	-	-	-	-	-	-	1.9	-	-	1.9	-	1.9
	CO3	1.9	1.3	-	-	-	-	-	-		-	-	2	-	2
	CO4	2	1.3	-	-	-	-	-	-	1.9	-	-	1.9	-	1.9
	CO5	2	1.3	-	-	-	-	-	-	2	-	-	2	-	2
	CO6	2	1.3	-	-	-	-	-	-	2	-	-	2	-	2
LD	CO1	2.4	-	2.4	-	-	2.4	2.4	-	4	-	-	2	-	2
	CO2	2.4	-	2.4	-	-	2.4	2.4	-	4	-	-	4	-	-
	CO3	2.4	-	2.4	-	2.4	4	4	2.4	4	-	-	4	-	-
	CO4	2.4	-	4	-	2.4	4	4	2.4	4	-	-	4	-	-
	CO5	2.4	2.4	4	-	4	4	4	2.4	4	-	-	4	-	-
DBMS	CO1	3.4	3.4	3.4	3.4	3.4	-	-	-	-	-	-	3.4	3.4	3.4
	CO2	3.4	3.4	3.4	3.4	3.4	-	-	-	-	-	-	3.4	3.4	3.4
	CO3	3.3	3.3	3.3	3.3	3.3	-	-	-	-	-	-	3.3	3.3	3.3
	CO4	3.2	3.2	3.2	3.2	3.2	-	-	-	-	-	-	3.2	3.2	3.2
	CO5	3.4	3.4	3.4	3.4	3.4	-	-	-	-	-	-	3.4	3.4	3.4
	CO6	3.7	3.7	3.7	3.7	3.7	-	-	-	-	-	-	3.7	3.7	3.7
DDL LAB	CO1	2.4	-	2.4	-	-	2.4	2.4	-	4	-	-	4	-	-
	CO2	2.4	-	2.4	-	2.4	4	4	2.4	4	-	-	4	-	-

(Mrs. Charusheela Nehete)

	CO3	2.4	-	2.4	-	2.4	4	4	2.4	4	-	-	4	-	-
	CO4	2.4	-	4	-	4	4	4	2.4	4	-	-	4	4	4
	CO5	2.4	2.4	4	-	4	4	4	2.4	4	-	-	4	4	4
DS LAB	CO1	2.4	4	4	2.4	-	-	-	-	2.4	-	-		4	4
	CO2	2.4	4	4	2.4	-	-	-	-	2.4	-	-		4	4
	CO3	2.4	4	4	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO4	2.4	4	4	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO5	2.4	4	-	2.4	-	-	-	-	2.4	-	-	2.4	4	4
	CO6	4	4	-	2.4	-	-	-	-	-	-	-	2.4	4	4
JPL	CO1	-	-	-	-	-	-	-	-	-	-	-	4	4	4
	CO2	-	-	-	-	-	-	-	-	-	-	-	4	4	4
	CO3	2.4	2.4	-	-	-	-	-	-	-	-	-	4	4	4
	CO4	2.4	2.4	-	-	-	-	-	-	-	-	-	4	4	4
	CO5	2.4	2.4	2.4	-	2.4	-	-	-	-	-	-	4	4	4
	CO6	2.4	2.4	2.4	-	2.4	-	-	-	-	-	-	4	4	4
Average		**2.7**	**3.1**	**3.4**	**2.6**	**3.1**	**3.5**	**3.5**	**2.4**	**3**	-	-	**3.1**	**3.9**	**3.5**

CO Contribution in PO attainment (AY2017-18) SEM-IV

Subject	CO's	PO's												PSOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
AM-IV	CO1	3.7	3.7	-	2.2	-	-	-	-	-	-	-	2.2	3.7	-
	CO2	3.6	3.6	-	2.1	-	-	-	-	-	-	-	2.1	3.6	-
	CO3	3.6	3.6	-	2.1	-	-	-	-	-	-	-	2.1	3.6	-
	CO4	3.1	3.1	-	1.9	-	-	-	-	-	-	-	1.9	3.1	-
	CO5	3.9	3.9	-	2.3	-	-	-	-	-	-	-	2.3	3.9	-
	CO6	2.8	2.8	-	1.7	-	-	-	-	-	-	-	1.7	2.8	-
AT	CO1	2	2	2	2	-	-	-	-	-	-	-	2	1.2	-
	CO2	2	2	2	2	-	-	-	-	-	-	-	2	1.2	-
	CO3	2	2	2	2	-	-	-	-	-	-	-	2	1.2	-
	CO4	2	2	2	2	-	-	-	-	-	-	-	2	1.2	-
	CO5	2	2	2	2	-	-	-	-	-	-	-	1.2	1.2	-
	CO6	1.2	1.2	1.2	1.2	-	-	-	-	-	-	-	0.8	0.8	-
OS	CO1	-	-	-	-	-	-	-	-	2.4	-	-	4	-	2.4
	CO2	2.4	4	4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	CO3	2.4	4	4	2.4	-	-	-	-	2.4	-	-	4	4	2.4

	CO4	2.4	2.4	2.4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	CO5	2.4	2.4	2.4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	CO6	2.4	2.4	2.4	2.4	-	-	-	-		-	-	4	4	2.4
COA	CO1	-	-	-	-	-	-	-	-	3.2	-	-	3.2	3.2	3.2
	CO2	3	3	-	-	3	3	-	-	3	-	-	3	3	3
	CO3	2.5	2.5	-	-	2.5	2.5	-	-	2.5	-	-	2.5	2.5	2.5
	CO4	2.5	2.5	2.5	2.5	2.5	2.5	-	-	2.5	-	-	2.5	2.5	2.5
	CO5	2	2	2	2	2	2	-	-	2	-	-	2	2	2
CN	CO1	3.8	3.8	-	-	-	-	-	-	-	-	-	3.8	3.8	3.8
	CO2	3.7	3.7	-	3.7	-	-	-	-	-	-	-	3.7	3.7	3.7
	CO3	2.1	2.1	-	2.1	-	-	-	-	-	-	-	2.1	2.1	2.1
	CO4	3.8	3.8	-	3.8	-	-	-	-	-	-	-	3.8	3.8	3.8
	CO5	3.8	3.8	-	3.8	-	-	-	-	-	-	-	3.8	3.8	3.8
PYTHON LAB	LO1	4	4	2.4	4	2.4	-	-	-	4	4	4	4	4	4
	LO2	-	3	-	3	1.8	-	-	-	3	3	3	3	3	3
	LO3	-	3	-	3	1.8	-	-	-	3	3	3	3	3	3
	LO4	-	-	-	4	4	-	-	-	4	4	4	4	4	4
	LO5	-	4	4	4	4	-	-	-	4	4	4	4	4	4
	LO6	-	4	4	4	4	-	-	-	4	4	4	4	4	4
OS LAB	LO1	-	-	-	-	-	-	-	-	2.4	-	-	4		2.4
	LO2	2.4	4	4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	LO3	2.4	4	4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	LO4	2.4	2.4	2.4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	LO5	2.4	2.4	2.4	2.4	-	-	-	-	2.4	-	-	4	4	2.4
	LO6	2.4	2.4	2.4	2.4	-	-	-	-		-	-	4	4	2.4
CN-LAB	LO1	-	-	-	2.4	4	-	-	-	2.4	-	-	4	2.4	4
	LO2	-	-	-		4	-	-	-	2.4	-	-	4	2.4	4
	LO3	-	2.4	-	4	4	-	-	-	2.4	-	-	4	2.4	4
	LO4	-	2.4	-	4	4	-	-	-	2.4	-	-	4	2.4	4
	LO5	-	-	-	-	-	-	-	-	2.4	-	-	4	2.4	4
MP LAB	CO1	-	-	-	-	-	-	-	-	1.8	-	-	3	-	1.8
	CO2	1.8	1.8	1.8	3	1.8	-	-	-	1.8	-	-	1.8	3	1.8
	CO3	-	-	-	-	-	-	-	-	1.8	-	-	1.8	1.2	1.2
	CO4	1.8	1.8	1.8	3	1.8	-	-	-	1.8	-	-	1.8	3	1.8
	CO5	1.8	1.8	1.8	3	1.8	-	-	-	1.8	-	-	1.8	3	1.8
	CO6	1.8	1.8	1.8	3	1.8	-	-	-	1.8	-	-	1.8	3	1.8
Average		**2.6**	**2.8**	**2.5**	**2.7**	**2.8**	-	-	-	**2.6**	**3.7**	**3.7**	**3**	**3**	**2.9**

CO Contribution in PO attainment (AY2018-19) SEM-V

Subject	CO's	PO's												PSOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
MEP	CO1	2.1	-	-	2.1	-	-	-	-	-	-	-		2.1	2.1
	CO2	2.6	2.6	-	2.6	-	-	-	-	-	-	-	2.6	2.6	2.6
	CO3	-	-	2.1	-	-	1.3	-	-	-	-	-		2.1	
	CO4	3.1	-	-	3.1	-	-	-	-	-	-	-	3.1	3.1	3.1
	CO5	3.3	-	-	3.3	-	-	-	-	-	-	-	2	3.3	3.3
	CO6	-	-	-	2.1	-	-	-	-	-	-	-		2.1	2.1
IP	CO1	-	-	-	2.2	2.2	-	-	-	3.7	-	-	3.7	3.7	3.7
	CO2	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	CO3	-	-	-	2.1	2.1	-	-	-	3.5	-	-	3.5	3.5	3.5
	CO4	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	CO5	-	-	-	1.8	1.8	-	-	-	3	-	-	3	3	3
	CO6	-	-	-	0.7	0.7	-	-	-	1.2	-	-	1.2	1.2	1.2
ADMT	CO1	-	-	-	-	-	-	-	-	3.8	-	-	-	3.8	3.8
	CO2	-	-	4	2.4	4	-	-	-	4	-	-	4	-	4
	CO3	-	-	-	-	-	-	-	2.4		-	-	-	-	4
	CO4	-	-	3.9	2.3	3.9	-	-	-	3.9	-	-	3.9	3.9	3.9
	CO5	-	2.4	4	2.4		-	-	-	4	-	-	4	-	4
	CO6	-	2.4	4	2.4	4	-	-	-	4	-	-	4	4	4
CNS	CO1	4	-	-		4	-	-	-	-	4	-	-	2.4	-
	CO2	3.3	2	-	2	2	-	-	-	-	3.3	-	-	3.3	-
	CO3	3.3	3.3	-	-	-	2	-	-	-	3.3	-	-	3.3	-
	CO4	4	4	-	4	-	-	-	-	-	4	-	-	4	-
	CO5	4	4	-	4	4	4	-	-	-	4	-	-	-	4
	CO6	3.3	3.3	-	3.3	3.3	3.3	-	-	-	3.3	-	-	-	3.3
ADSAA	CO1	4	4	4	4	-	-	-	-	-	-	-	4	4	4
	CO2	4	4	2.4	4	-	-	-	-	-	-	-	4	4	4
	CO3	4	4	4	4	-	-	-	-	-	-	-	4	4	4
	CO4	4	4	4	2.4	-	-	-	-	-	-	-	-	4	4
	CO5	4	4	4	2.4	-	-	-	-	-	-	-	-	4	4
	CO6	4	4	4	2.4	-	-	-	-	-	-	-	-	4	4

ECOM &EBUSINESS	CO1	-	2.4	2.4	2.4	-	-	-	-	2.4	2.4	-	2.4	-	2.4
	CO2	-	-	3.9	-	-	2.4	-	3.9	-	2.4	-	2.4	-	2.4
	CO3	-	-	-	4	-	4	-	2.4	4	4	-	2.4	-	2.4
	CO4	-	-	3.9	-	-	3.9	2.3	2.3	3.9		-	3.9	-	3.9
	CO5	-	-	4	-	-	-	4	4	-	-	-	4	-	2.4
	CO6	-	4	4	-	-	4	-	4	-	-	-	4	-	2.4
BCE	CO1	2.4	2.4	2.4	2.4	4	4	4	4	4	4	4	4	2.4	4
	CO2	2.4	2.4	2.4	2.4	4	4	4	4	4	4	4	4	2.4	4
	CO3	2.4	2.4	2.4	2.4	4	4	4	4	4	4	4	4	2.4	4
	CO4	2.4	2.4	2.4	2.4	4	4	4	4	4	4	4	4	2.4	4
	CO5	2.4	2.4	2.4	2.4	4	4	4	4	4	4	4	4	2.4	4
IP LAB	LO1	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	LO2	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	LO3	-	-	-	2.1	2.1	-	-	-	3.6	-	-	3.6	3.6	3.6
	LO4	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	LO5	-	-	-	2.4	2.4	-	-	-	4	-	-	4	4	4
	LO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SECURITY LAB	LO1	4	-	-	-	4	-	-	-	-	4	-	-	-	-
	LO2	4	4	-	4	-	-	-	-	-	4	-	-	4	-
	LO3	4	4	-		-	-	-	-	-	4	-	-	4	-
	LO4	4	4	-	4	-	-	-	-	-	4	-	-	4	-
	LO5	4	4	-	4	4	4	-	-	-	4	-	-	-	4
	LO6	4	4	-	4	4	4	-	-	-	4	-	-	-	4
OLAP LAB	LO1	-	-	-		-	-	-	-	4	-	-	-	4	4
	LO2	-	-	4	2.4	4	-	-	-	4	-	-	4	-	4
	LO3	-	-	-	-	-	-	-	2.4		-	-	-	-	4
	LO4	-	-	4	2.4	4	-	-	-	4	-	-	4	4	4
	LO5	-	2.4	4	2.4	-	-	-	-	4	-	-	4	-	4
	LO6	-	2.4	4	2.4	4	-	-	-	4	-	-	4	4	4
IOT MINI PROJECT	LO1	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO2	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO3	-	-	4	4	4	-	-	-	4	-	-	-	4	4
	LO4	4	4	4	-	4	-	4	4	4	-	4	4	4	4
	LO5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	LO6	4	4	4	4	4	2.4	2.4	2.4	4	4	4	-	4	4
Average		**3.5**	**3.4**	**3.5**	**2.9**	**3.3**	**3.5**	**3.7**	**3.5**	**3.7**	**3.8**	**4**	**3.6**	**3.5**	**3.6**

CO Contribution in PO attainment (AY2018-19) SEM-VI

Subject	CO's	PO's												PSOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
SEPM	CO1	4	4	4	4	-	-	-	-	4	-	-	4	4	-
	CO2	4	4	4	4	-	-	-	-	4	-	-	-	4	-
	CO3	3	3	3	3	-	-	-	-	3	-	-	3	3	-
	CO4	4	4	4	4	-	-	-	-	4	-	-	-	4	-
	CO5	4	4	4	4	-	-	-	4	4	-	-	4	4	-
	CO6	4	4	4	4	-	-	-	4	4	-	-	4	4	-
AIP	CO1	-	-	-	-	-	-	-	-		-	-	-	3.9	3.9
	CO2	-	-	-	0.4	3	1.2	-	-	0.4	-	-	3.8	3.8	3.8
	CO3	-	-	-	-	-		-	-		-	-	-	3.7	3.7
	CO4	-	-	-	-	-	1.2	-	-	0.4	-	-	3.9	3.9	3.9
	CO5	-	-	-	-	-	-	-	-	-	-	-	-	3.9	3.9
	CO6	-	-	-	-	-	-	-	-	-	-	-	-	3.3	3.3
DMBI	CO1	-	2.4	-	-	-	-	-	-	-	-	-	-	-	2.4
	CO2	3.7	3.7	-	3.7	-	-	-	-	-	-	-	-	-	-
	CO3	3.6	3.6	-	3.6	3.6	-	-	-	-	-	-	-	-	3.6
	CO4	4	4	4	4	4	2.4	2.4	-	-	-	-	-	4	4
	CO5	3.1	-	-	3.1	3.1	-	-	-	-	-	-	-	-	-
	CO6	-	3.6	3.6	3.6	3.6	3.6	3.6	-	-	-	-	-	3.6	3.6
CCS	CO1	-	4	4	-	2.4	2.4	4	-	4	-	-	4	-	4
	CO2	-	3.8	3.8	-	2.3	2.3	3.8	-	3.8	-	-	3.8	3.8	3.8
	CO3	-	3.9	3.9	-	2.3	2.3	3.9	-	3.9	-	-	3.9	3.9	3.9
	CO4	-	4	4	-	2.4	2.4	4	4	4	-	-	4	4	4
	CO5	-	4	4	-	2.4	2.4	4	4	4	-	-	4	4	4
WN	CO1	3.9	2.34	2.34	3.9	3.9	2.34	-	-	3.9	-	3.9	3.9	3.9	3.9
	CO2	3.9	3.9	2.34	-	-	2.34	-	-	3.9	-	3.9	3.9	3.9	3.9
	CO3	-	3.9	2.34	-	3.9	-	-	-	3.9	-	-	3.9	3.9	3.9
	CO4	3.9	3.9	-	-	-	-	-	-	3.9	-	-	3.9	3.9	3.9
	CO5	3.1	3.1	2.34	-	3.1	-	-	-	3.1	-	3.1	3.1	3.1	3.1
	CO6	3.9	-	3.9	-	3.9	-	-	-	3.9	-	2.34	3.9	3.9	-
DF	CO1	4	-	-	-	4	-	-	-	-	4	-	-	-	-
	CO2	3.3	3.3	-	3.3	-	-	-	-	-	3.3	-	-	3.3	-
	CO3	3.3	3.3	-	-	-	-	-	-	-	3.3	-	-	3.3	-

	CO4	4	4	-	4	-	-	-	-	-	4	-	-	4	-
	CO5	4	4	-	4	4	4	-	-	-	4	-	-	-	4
	CO6	3.3	3.3	-	3.3	3.3	3.3	-	-	-	3.3	-	-	-	3.3
SD LAB	LO1	4	4	4	4	4	4	-	4	4	4	4	4	4	4
	LO2	4	4	4	4	4	4	-	4	4	4	4	4	4	4
	LO3	4	4	4	4	4	4	-	4	4	4	4	4	4	4
	LO4	4	4	4	4	4	4	-	4	4	4	4	4	4	4
	LO5	4	4	4	4	4	-	-	4	4	4	4	4	-	4
	LO6	4	4	4	4	4	-	-	4	4	4	4	4	4	4
BI LAB	LO1	3.2	3.2	-	3.2	3.2	-	-	-	3.2	-	-	-	-	3.2
	LO2	3.1	3.1	-	3.1	3.1	-	-	-	3.1	-	-	-	-	-
	LO3	4.2	4.2	4.2	4.2	4.2	2.5	2.5	-	4.2	-	-	-	4.2	4.2
	LO4	4	4	4	4	4	2.4	2.4	-	4	-	-	-	4	4
	LO5	4	-	-	4	4	-	-	-	4	-	-	-		
	LO6	-	3.8	3.8	3.8	3.8	3.8	3.8	-	3.8	-	-	-	3.8	3.8
SN LAB	LO1	4	4	-	4	-	4	4	4	2.4	-	-	4	-	-
	LO2	4	4	-	4	-	4	4	4	2.4	-	-	4	-	-
	LO3	-	-	4	4	4	-	-	-	4	-	-	-	4	4
	LO4	4	4	4	-	4	-	4	4	4	-	4	4	4	4
	LO5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	LO6	4	4	4	4	4	-	-	-	4	4	4	-	-	-
MINI PROJECT	LO1	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO2	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO3	4	4	4	4	4	-	-	-	2.4	-	-	-	4	4
	LO4	4	4	4	4	4	-	-	-	4	4	4	-	4	4
	LO5	4	4	4	4	4	-	-	4		4	4	4	4	4
	LO6	4	4	4	4	4	-	-	4	4	4	4	4	4	4
CCS LAB	LO1	-	3.7	3.7	-	2.2	2.2	3.7	-	3.7	-	-	3.7		3.7
	LO2	-	3.8	3.8	-	2.3	2.3	3.8	-	3.8	-	-	3.8	3.8	3.8
	LO3	-	4	4	-	2.4	2.4	4	-	4	-	-	4	4	4
	LO4	-	4	4	-	2.4	2.4	4	2.4	4	-	-	4	4	4
	LO5	-	4	4	-	2.4	2.4	4	2.4	4	-	-	4	4	4
	LO6	-	4	4	-	2.4	2.4	4	2.4	4	-	-	4	4	4
Average		**3.8**	**3.8**	**3.8**	**3.8**	**3.4**	**2.9**	**3.7**	**3.8**	**3.6**	**3.9**	**3.8**	**3.9**	**3.9**	**3.8**

CO Contribution in PO attainment (AY2019-20) SEM-VII

Subject	CO's	PO's												PSOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
END	CO1	4	-	-	4	4	2.4	-	-	-	-	-	2.4	4	2.4
	CO2	4	-	-	4	4	2.4	-	-	-	-	-	2.4	4	2.4
	CO3	4	-	-	4	4	4	-	-	2.4	-	2.4	1.6	4	4
	CO4	-	-	-	3.8	3.8	3.8	-	-	2.3	-	2.3	2.3	1.5	3.8
	CO5	-	-	-	4	4	4	-	-	4	-	2.4	4	2.4	4
	CO6	-	-	-	4	4	4	4	4	-	-	2.4	4	2.4	4
IS	CO1	1.2	2.9	1.7	1.2	1.7	1.7	1.7	1.7	-	-	-	2.9	2.9	2.9
	CO2		2.5	2.5	1.5	2.5	-	-	-	-	-	-	2.5	2.5	2.5
	CO3	1.1	2.7	2.7	2.7	2.7	1.6	1.6	1.6	-	-	-	2.7	2.7	2.7
	CO4	1.2	3.1	3.1	3.1	3.1	1.9	1.9	1.9	-	-	-	3.1	3.1	3.1
	CO5	1.3	3.2	3.2	3.2	3.2	1.9	1.9	1.9	-	-	-	3.2	3.2	3.2
	CO6	-	3.1	3.1	3.1	-	1.9	1.9	1.9	-	-	-	3.1	3.1	3.1
STQA	CO1	-	3.9	3.9	3.9	2.3	-	-	-	2.3	3.9	3.9	2.3	-	3.9
	CO2	-	2.3	3.9	-	3.9	1.6	-	-	2.3	3.9	2.3	3.9	-	3.9
	CO3	-	-	3.9	3.9	1.6	-	-	-	2.3	3.9	3.9	2.3	2.3	3.9
	CO4	-	-	4	4	2.4	-	-	-	4	1.6	4	4	4	-
	CO5	-	-	-	-	4	2.4	-	-	4	2.4	1.6	2.4	-	4
	CO6	4	4	-	-	-	-	-	4	4	4	4	2.4	-	4
AI	CO1	-	2	-	2	-	-	-	-	-	-	-	2	2	-
	CO2	-	-	-	-	3.4	-	-	-	-	-	-	2.1	2.1	3.4
	CO3	-	3.6	-	3.6	2.1	-	-	-	-	-	-	3.6	3.6	3.6
	CO4	-	3.9	-	3.9	2.3	-	-	-	-	-	-	3.9	3.9	3.9
	CO5	-	3.7	-	3.7	2.2	-	-	-	-	-	-	3.7	3.7	3.7
	CO6	-	3.4	-	3.4	2	-	-	-	-	-	-	3.4	3.4	3.4
MIS	CO1	-	-	1.86	-	-	1.86	3.1	-	-	-	3.1	3.1	3.1	-
	CO2	-	-	1.86	-	-	1.86	3.1	-	-	-	3.1	3.1	3.1	-
	CO3	-	-	3.5	-	-	2.1	3.5	-	-	-	3.5	3.5	3.5	-
	CO4	-	-	3.3	-	3.3	3.3	3.3	-	-	-	3.3	3.3	3.3	-
	CO5	-	-	3.6	-	-	3.6	3.6	-	-	-	3.6	3.6	3.6	-
OR	CO1	4	4	4	-	-	-	-	-	2.4	2.4	4	4	-	4
	CO2	4	-	2.4	4	-	-	-	-	-	-	4	4	-	2.4
	CO3	4	4	4	4	-	-	-	-	2.4	2.4	4	4	-	4

	CO4	4	4	4	4	-	-	-	-	2.4	2.4	2.4	4	-	4
NDL LAB	LO1	4	-	-	4	4	2.4	-	-	-	-	-	2.4	4	2.4
	LO2	4	-	-	4	4	2.4	-	-	-	-	-	1.6	4	2.4
	LO3	4	-	-	4	4	4	-	-	2.4	-	2.4	2.4	4	4
	LO4	-	-	-	3.8	3.8	3.8	-	-	2.3	-	2.3	2.3	1.5	3.8
	LO5	-	-	-	4	4	4	-	-	4	-	2.4	4	2.4	4
	LO6	-	-	-	3.8	3.8	3.8	3.8	3.8		-	2.3	3.8	2.3	3.8
AS LAB	LO1	-	3.4	3.4	3.4	3.4	2	2	2	2	-	-	3.4	3.4	3.4
	LO2	-	3.7	3.7	3.7	3.7	2.2	2.2	2.2	2.2	-	-	3.7	3.7	3.7
	LO3	-	3.6	3.6	3.6	3.6	2.2	2.2	2.2	2.2	-	-	3.6	3.6	3.6
	LO4	-	3.3	3.3	3.3	3.3	2	2	2	2	2	-	3.3	3.3	3.3
	LO5	-	3.3	3.3	3.3	3.3	2	2	2	2	-	-	3.3	3.3	3.3
	LO6	-	4	4	4	4	2.4	2.4	2.4	2.4	2.4	-	4	4	4
MINI PROJECT	LO1	3.2	3.2	-	3.2	-	3.2	3.2	3.2	2.4	-	-	3.2	3.2	3.2
	LO2	3.2	3.2	-	3.2	-	3.2	3.2	3.2	2.4	-	-	3.2	3.2	3.2
	LO3	3.2	3.2	3.2	3.2	3.2	-	-	-	2.4	-	-	-	3.2	3.2
	LO4	3.2	3.2	3.2	3.2	3.2	-	-	-	3.2	3.2	3.2	-	3.2	3.2
	LO5	3.2	3.2	3.2	3.2	3.2	-	-	3.2		3.2	3.2	3.2	3.2	3.2
	LO6	3.2	3.2	3.2	3.2	3.2	-	-	3.2	3.2	3.2	3.2	3.2	3.2	3.2
IS LAB	LO1	-	3.5	-	3.5		-	-	-	-	-	-	3.5	3.5	-
	LO2	-	-	-	-	3.4	-	-	-	-	-	-	3.4	3.4	3.4
	LO3	-	3.4	-	3.4	3.4	-	-	-	-	-	-	3.4	3.4	3.4
	LO4	-	3.5	-	3.5	3.5	-	-	-	-	-	-	3.5	3.5	3.5
	LO5	-	3.6	-	3.6	3.6	-	-	-	-	-	-	3.6	3.6	3.6
	LO6	-	3.3	-	3.3	3.3	-	-	-	-	-	-	3.3	3.3	3.3
AAD LAB	LO1	-	-	-	-	4	-	-	-	-	-	-	4	4	4
	LO2	-	2.4	4	-	4	-	-	-	-	-	-	4	4	4
	LO3	-	2.4	4	-	4	-	-	-	-	-	-	4	4	4
	LO4	-	2.4	4	-	4	-	-	-	-	-	-	4	4	4
	LO5	-	2.4	4	-	4	-	-	-	-	-	-	4	4	4
Average		3.2	3.3	3.4	3.5	3.4	2.7	2.6	2.6	2.7	2.9	3	3.2	3.3	3.5

CO Contribution in PO attainment (AY2019-20) SEM-VIII

Subject	CO's	PO's	PSOs

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
													4	4	
BDA	CO1	2.4	2.4	-	-	-	-	-	-	-	-	-	3.6	3.6	3.6
	CO2	3.6	3.6	3.6	3.6	3.6	-	-	-	3.6	-	-	3.3	3.3	3.3
	CO3	3.3	3.3	3.3	3.3	2	-	-	-	3.3	-	-	3.7	3.7	3.7
	CO4	3.7	3.7	3.7	3.7	2.2	-	-	-	3.7	-	-	3	3	3
	CO5	3	3	3	3	1.8	-	-	-	3	-	-	3	3	3
	CO6	3	3	3	3	1.8	-	-	-	3	-	-	3.8	3.8	3.8
IOE	CO1	3.8	3.8	3.8	3.8	3.8	-	-	3.8	3.8	-	3.8	3.6	-	-
	CO2	3.6	3.6	-	-	3.6	-	-	-	3.6	-	-	2.6	2.6	2.6
	CO3	2.6	2.6	2.6	-	2.6	2.6	-	2.6	2.6	-	2.6	2.8	2.8	2.8
	CO4	2.8	2.8	-	2.8	2.8	2.8	-	-	-	-	-	2.8	2.8	2.8
	CO5	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	-	2.8	2.2	2.2	2.2
	CO6	2.2	2.2	-	2.2	2.2	2.2	-	2.2	2.2	2.2	2.2	3.8	3.8	3.8
UI	CO1	3.8	3.8	3.8	3.8	3.8	-	-	3.8	3.8	-	3.8	4	-	-
	CO2	4	4	-	-	4	-	-	-	4	-	-	3.6	3.6	3.6
	CO3	3.6	3.6	3.6	-	3.6	3.6	-	3.6	3.6	-	3.6	3.2	3.2	3.2
	CO4	3.2	3.2	-	3.2	3.2	3.2	-	-	-	-	-	3.2	3.2	3.2
	CO5	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	-	3.2	2.2	2.2	2.2
	CO6	2.2	2.2	-	2.2	2.2	2.2	-	2.2	2.2	2.2	2.2	4	-	-
ERP	CO1	4	4	4	4	4	4	-	4	4	2.4	4	4	4	4
	CO2	-	4	4	-	4		4	-	4		4	4	4	4
	CO3	-	2.4	2.4	2.4	-	4	-	4	4		4	4	4	4
	CO4	-	-	-	-	-	4	-	-	-	4		4		4
	CO5	-	4	4	4	-	-	-	-	4	-	4	4	4	4
	CO6	-	3	3	3	-	-	-	3	3	-	3	3	3	3
RM	CO1	3.6	-	-	2.1	-	1.4	1.4	2.2	-	-	-	3.6	2.2	2.2
	CO2	-	3.6	-	-	-		2.2	2.2	-	-	-	3.6	1.4	2.2
	CO3	-	-	-	2.6	-	-	-	-	1.12	1.7	-	2.6	1.7	1.7
	CO4	-	-	-	2.6	2.6	-	-	-	-	1.56	-	2.6	1.6	1.6
	CO5	-	-	-	-	1.7	-	-	-	-	-	-	2.6	1.7	1.7
	CO6	-	-	-	-	-	-	-	-	-	2.6	-	2.6	1.4	1.4
PM	CO1	-	-	3.8	-	3.8	2.3	3.8	2.3	2.3	-	2.3	2.3	-	2.3
	CO2	-	-	3.9	-	3.9	2.3	3.9	2.3	2.3	-	3.9	3.9	-	2.3
	CO3	-	-	3.9	-	3.9	2.3	2.3	2.3	2.3	-	3.9	2.3	-	2.3
	CO4	-	-	1.8	-	1.8	1.8	1.8	1.8	1.8	-	1.8	3	-	1.8
	CO5	-	-	2.3	-	2.3	2.3	3.9	2.3	2.3	-	3.9	2.3	-	3.9
	CO6	-	-	1.8	-	1.8	1.8	3	3	3	-	3	3	-	

EM	CO1	3.5	1.4	-	1.4	1.4	3.5	3.5	3.5	3.5	2.1	2.1	3.5	-	2.1
	CO2	3.5	1.4	-	1.4	1.4	3.5	3.5	3.5	3.5	2.1	2.1	3.5	-	2.1
	CO3	2.6	-	-	-	-	2.6	2.6	2.6	2.6	1.6	1.6	2.6	-	1.56
FM	LO1	2.4	-	-	-	-	2.4	1.6	2.4	-	-	3.2	3.2	-	1.6
	LO2	2.4	-	-	-	-	2.4	1.6	2.4	-	-	3.2	3.2	-	1.6
BDL LAB	LO1	-	2.4	2.4	2.4	4	2.4	2.4	2.4	4	4	-	4	4	4
	LO2	-	4	4	4	4	2.4	2.4	-	4	4	-	4	4	4
	LO3	2.4	4	4	4	4	2.4	2.4	-	4	4	-	4	4	4
	LO4	-	4	4	4	4	2.4	2.4	-	4	4	-	4	4	4
	LO5	-	4	4	4	4	2.4	2.4	-	4	4	-	4	4	4
	LO6	-	4	4	4	4	4	4	2.4	4	4	-	4	4	4
IOE LAB	LO1	3.6	3.6	-	3.6	-	3.6	3.6	3.6	-	-	-	3.6	-	-
	LO2	3.6	3.6	-	3.6	-	3.6	3.6	3.6	2.2	-	-	3.6	-	-
	LO3	-	-	3.6	3.6	3.6	-	-	-	3.6	-	-		3.6	3.6
	LO4	3.8	3.8	3.8		3.8	-	3.8	3.8	3.8	-	3.8	3.8	3.8	3.8
	LO5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	LO6	3	3	3	3	3	1.8	1.8	1.8	3	3	3	-	-	-
DEVAP S LAB	LO1	3.8	2.3	3.8	-	3.8	-	-	-	3.8	3.8	3.8	3.8	1.5	3.8
	LO2	3.9	2.3	3.9	-	3.9	-	-	-	3.9	3.9	3.9	3.9	1.6	3.9
	LO3	4	2.4	4	-	4	-	-	-	4	4	4	4	1.6	4
	LO4	3.9	2.3	3.9	-	3.9	-	-	-	3.9	3.9	3.9	3.9	1.6	3.9
	LO5	4	2.4	4	-	4	-	-	-	2.4	4	2.4	2.4	1.6	2.4
	LO6	4	2.4	4	-	4	-	-	-	4	4	4	4	1.6	4
RPROG LAB	LO1	-	-	-	-	4	-	-	-	-	-	-	-	-	4
	LO2	-	-	-	-	4	-	-	-	-	-	-	-	4	4
	LO3	-	4	-	4	4	-	-	-	-	-	-	-	-	4
	LO4	4	-	-	-	4	-	-	-	-	-	-	-	-	4
	LO5	4	4	4	4	4	4	4	-	-	-	-	-	-	4
	LO6	-	-	-	-	4	-	-	-	-	-	-	-	-	-
PROJECT	LO1	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO2	4	4	-	4	-	4	4	4	2.4	-	-	4	4	4
	LO3	4	4	4	4	4	-	-	-	2.4	-	-	-	4	4
	LO4	4	4	4	4	4	-	-	-	4	4	4	-	4	4
	LO5	4	4	4	4	4	-	-	4	-	4	4	4	4	4
	LO6	4	4	4	4	4	-	-	4	4	4	4	4	4	4
Average		3.5	3.3	3.5	3.3	3.4	2.9	3	3	3.3	3.3	3.3	3.4	3.1	3.2

Direct PO Attainment (For 2019-20 Pass out batch)

Sem	POs													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
III	2.7	3.1	3.4	2.6	3.1	3.5	3.5	2.4	3			3.1	3.9	3.5
IV	2.6	2.7	2.5	2.5	2.8				2.6	3.7	3.7	2.9	3	2.8
V	3.5	3.4	3.5	2.9	3.3	3.5	3.7	3.5	3.7	3.8	4	3.6	3.5	3.6
VI	3.8	3.8	3.8	3.8	3.5	3	3.7	3.8	3.5	3.9	3.9	3.9	3.9	3.9
VII	3.2	3.3	3.4	3.5	3.4	2.7	2.6	2.6	2.7	2.9	3	3.2	3.3	3.5
VIII	3.5	3.3	3.5	3.3	3.4	2.9	3	3	3.3	3.3	3.3	3.4	3.1	3.2
Average	**3.2**	**3.3**	**3.4**	**3.1**	**3.3**	**3.1**	**3.3**	**3.1**	**3.1**	**3.5**	**3.6**	**3.4**	**3.5**	**3.4**

Indirect PO attainment

Sr. No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Indirect CO attainment	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Graduate Exit Survey	4	4	4	4	4	4	4	4	4	4	4	4	4	4
*Dept level Co-Curricular	3.9	3.8	4	3.6	4	3.8	3.5	3.8	3.8	4	4	3.7	3.9	3.9
**Institute level Co-Curricular	3	3	3	3	3	3	3	3	3	3	3	3	3	3
***Extra Curricular	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average AL	3.95	3.9	4	3.8	4	3.9	3.75	3.9	3.9	4	4	3.85	3.95	3.95

Final PO attainment= 0.8 * Direct + 0.2* Indirect

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
3.4	3.4	3.5	3.2	3.4	3.3	3.4	3.3	3.3	3.6	3.7	3.5	3.6	3.5

mrs Charusheela Nehete

Master of Electronics and telecommunication Engineering
CO-PO-PSO Mapping

Department of Electronics and telecommunication								
PG Sem-I (W.e.f. 2016-17)								
CO_PO mapping (Strength: S=3, M=2, W=1)			Theory					
Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes	
			PO1	PO2	PO3	PSO1	PSO2
Statistical Signal Processing	ETC101.1	Understand basics of linear algebra in communication engineering	-	-	3	-	-
	ETC101.2	Apply appropriate statistical tools for handling design and analysis of systems that involve randomness	1	1	3	2	2
	ETC101.3	Analyze random processes for LTI systems and estimation theory.	2	1	3	3	3
	ETC101.4	Evaluate role of probability models in engineering design	2	1	3	3	3
	ETC101		**2**	**1**	**3**	**3**	**3**
Optical Communication Networks	ETC102.1	Apply the fundamental principles of optics and light wave to design optical fiber communication systems	1	1	3	3	2
	ETC102.2	Identify the issues related to signal degradation due to multiplexing.	2	2	3	2	2
	ETC102.3	Identify working principle of various components of all optical network	1	1	3	3	3
	ETC102.4	Explore concepts of designing and operating principles of modern optical communication systems and networks.	1	1	3	3	3
	ETC102		**1**	**1**	**3**	**3**	**3**

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Modern Digital Signal Processing Applications	ETC103.1	Implement adaptive filters for a given application; study and apply the techniques of power spectrum estimation and wavelet theory for various applications	2	2	--	2	2
	ETC103.2	Apply Signal processing tools to biomedical signal processing and musical sound processing.	2	3	--	2	3
	ETC103		**2**	**3**	--	**2**	**3**
Department Level Optional Courses-I							
Next Generation Networks	ETDLO1011.1	Relate and compare the core differences between traditional and new telecommunication technologies	-	-	3	1	1
	ETDLO1011.2	Analyze, implement and apply the components of NGN architecture with NGN standards	-	-	3	3	2
	ETDLO1011		**-**	**-**	**3**	**2**	**2**
Institute Level Optional Courses-I							
Management Information System	ILO1013.1	Explain how information systems Transform Business	1	2	-	1	2
	ILO1013.2	Identify the impact information systems have on an organization	-	2	-	1	2
	ILO1013.3	Describe IT infrastructure and its components and its current trends	-	2	-	-	2
	ILO1013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making	1	-	-	2	2
	ILO1013.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses	1	2	3	1	2

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	ILO1013	1	2	3	1	2

PG Sem-I (W.e.f. 2016-17)

CO_PO mapping (Strength: S=3, M=2, W=1) — **Labs**

Name of the course	CO code	Course outcome*	Program Outcomes			Program Specific Outcomes	
			PO1	PO2	PO3	PSO1	PSO2
Laboratory I - Optical Communication Network	ETL101.1	Apply the fundamental principles of optics and light wave to design optical fiber communication systems	1	1	3	3	2
	ETL101.2	Identify the issues related to signal degradation due to multiplexing.	2	2	3	2	2
	ETL101.3	Identify working principle of various components of all optical network	1	1	3	3	3
	ETL101.3	Explore concepts of designing and operating principles of modern optical communication systems and networks.	1	1	3	3	3
	ETL101		**1**	**1**	**3**	**3**	**3**
Laboratory II - Modern Digital Signal Processing Applications	ETL102.1	Implement adaptive filters for a given application; study and apply the techniques of power spectrum estimation and wavelet theory for various applications	2	2	-	2	2
	ETL102.2	Apply Signal processing tools to biomedical signal processing and musical sound processing.	2	3	-	2	3
	ETL102		**2**	**3**	**-**	**2**	**3**

* As course outcomes are not mentioned for Labs in syllabus, you can frame COs as per practical list, or can use theory COs.

PG Sem-II (W.e.f. 2016-17)

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CO_PO mapping (Strength: S=3, M=2, W=1)			Theory				
Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes	
			PO1	PO2	PO3	PSO1	PSO2
Digital Communication	ETC201.1	Explain and implement different source coding techniques	1	2	1	3	2
	ETC201.2	Analyze waveform receivers for coherent and non-coherent communication	1	2	1	3	3
	ETC201.3	Describe and design of band-limited channels	1	2	2	2	3
	ETC201.4	Evaluate the detection and estimation of signals in the presence of noise	2	2	1	2	3
	ETC201.5	Explain the characteristics of fading channels.	3	1	3	3	3
	ETC201		**2**	**2**	**2**	**3**	**3**
Wireless Adhoc and Sensor Networks	ETC202.1	Understand and explain the concept of adhoc and sensor networks and their applications.	2	3	3	3	3
	ETC202.2	Set up and evaluate performance of various protocols in wireless sensor and adhoc networks.	2	2	3	3	3
	ETC202.3	Understand TCP performance over adhoc network	-	1	3	3	3
	ETC202.4	Understand integration of MANET, cellular Network and WLAN	-	1	3	3	3
	ETC202		**2**	**2**	**3**	**3**	**3**
RF and Microwave Engineering	ETC203.1	Characterize devices at higher frequencies.	1	2	3	2	2
	ETC203.2	Design and analyze RF circuits and components	1	1	3	3	3
	ETC203.3	Design and analyze amplifiers, oscillators and mixers at microwave frequencies.	2	1	3	3	3
	ETC203.4	Demonstrate skills of planning, design and deployment of microwave networks	1	1	3	2	2
	ETC203		**1**	**1**	**3**	**3**	**3**

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Department Level Optional Courses-II							
Network and Cyber Security	ETDLO2022.1	Describe security threats and apply security techniques using cryptosystems	-	-	3	3	3
	ETDLO2022.2	Explain the key terms and concepts in cyber law, intellectual property and cyber crimes, trademarks and domain theft	1	-	3	2	3
	ETDLO2022.3	Build and configure firewall and intrusion detections systems' using GNU open source security tools	1	-	3	3	3
	ETDLO2022.4	Incorporate approaches for incident analysis and response, for risk management and best practices and digital evidence collection, and evidentiary reporting in forensic acquisition	1	-	3	3	3
	ETDLO2022		**1**	**-**	**3**	**3**	**3**
Institute Level Optional Courses-II							
Research Methodology	ILO2026.1	Prepare a preliminary research design for projects in their subject matter areas	2	3	3	2	2
	ILO2026.2	Accurately collect, analyze and report data	2	3	3	2	2
	ILO2026.3	Present complex data or situations clearly Review and analyze research findings	3	3	3	2	2
	ILO2026		**2**	**3**	**3**	**2**	**2**

PG Sem-I (W.e.f. 2016-17)							
CO_PO mapping (Strength: S=3, M=2, W=1)			Labs				
Name of the course	**CO code**	**Course outcome***	**Program Outcomes**			**Program Specific Outcomes**	
			PO1	**PO2**	**PO3**	**PSO1**	**PSO2**
Laboratory III – Wireless Adhoc and	ETL201.1	Simulate routing protocols w.r.t. Adhoc wireless sensor network	2	2	1	3	3

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Sensor Networks	ETL201.2	Implement hardware /software project related to WSN	2	2	3	3	3
	ETL201.3	Understand technical papers related to AWSN and analyze it in detail	1	2	2	2	2
	ETL201		**2**	**2**	**2**	**3**	**3**
Laboratory IV - RF and Microwave Engineering	ETL202.1	Characterize devices at higher frequencies.	1	1	3	2	2
	ETL202.2	Design and analyze RF circuits and components	1	2	3	3	3
	ETL202.3	Design and analyze amplifiers, oscillators and mixers at microwave frequencies.	1	1	3	3	3
	ETL202		**1**	**1**	**3**	**3**	**3**

* As course outcomes are not mentioned for Labs in syllabus, you can frame COs as per practical list, or can use theory COs.

PG Sem-III (W.e.f. 2016-17)							
CO_PO mapping (Strength: S=3, M=2, W=1)							
Name of the course	**CO code**	**Course outcome**	**Program Outcomes**			**Program Specific Outcomes**	
			PO1	**PO2**	**PO3**	**PSO1**	**PSO2**
Special Topic Seminar	ETS301.1	Identify and finalize the topic of the seminar through a detailed literature survey.	3	---	2	2	
	ETS301.2	Identify the Problem,analyze and interpret it.	3	2	2	3	3
	ETS301.3	Document it through a written technical report and oral presentation	1	3	2	2	3
	ETS301		**2**	**3**	**2**	**2**	**3**
Dissertation I	ETD301.1	Identify and finalize the topic for a research project using literature survey.	3	--	2	2	3

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	ETD301.2	Demonstrate a sound technical knowledge of their selected topic.	3	2	2	1	2
	ETD301.3	Present a technical report in both ,written and oral format.	1	3	2	2	3
	ETD301		**2**	**3**	**2**	**2**	**3**

PG Sem-IV (W.e.f. 2016-17)							
CO_PO mapping (Strength: S=3, M=2, W=1)							
Name of the course	**CO code**	**Course outcome**	**Program Outcomes**			**Program Specific Outcomes**	
			PO1	**PO2**	**PO3**	**PSO1**	**PSO2**
Dissertation II	ETD401.1	Design engineering solution for identified problems.	3	--	2	3	3
	ETD401.2	Implement a design solution using selected hardware or software or both.	3	2	2	3	3
	ETD401.3	Communicate with engineers and the community at large through written and oral presentation.	1	3	2	3	3
	ETD401		**2**	**3**	**2**	**3**	**3**

CO attainment

Academic Year : 2017-18				**SEM: I**		
			Direct Method			
Course Code	**Course**	**Internal Direct Assessment CO Attainment**	**Internal Assessment (40%)**	**End Sem Exam**	**End Sem Exam (60%)**	**SUM of ESE and IA**
ETC101	Statistical Signal Processing	3	1.2	0	0	**1.2**
ETC102	Optical Communication	3	1.2	0	0	**1.2**

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	Networks					
ETC103	Modern Digital Signal Processing Applications	3	1.2	3	1.8	3
ETDLO 1011	Next Generation Networks	3	1.2	2	1.2	2.4
ILO1013	Management Information System	3	1.2	2	1.2	2.4
ETL101	Laboratory I - Optical Communication Network	3	1.2	3	1.8	3
ETL102	Laboratory II - Modern Digital Signal Processing Applications	3	1.2	3	1.8	3

CO Indirect attainment

Academic Year : 2017-18			SEM: I
Sr No	**Course Code**	**Course**	**CO Attainment Indirect**
1	ETC101	Statistical Signal Processing	3
2	ETC102	Optical Communication Networks	3
3	ETC103	Modern Digital Signal Processing Applications	3
4	ETDLO1011	Next Generation Networks	3
5	ILO1013	Management Information System	3
6	ETL101	Laboratory I - Optical Communication Network	3
7	ETL102	Laboratory II - Modern Digital Signal Processing Applications	3

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ME EXTC Sem-I			
PO Attainment(Direct)			
Course	POs		
	PO1	PO2	PO3
ETC101	0.720	0.480	1.200
ETC102	0.480	0.480	1.200
ETC103	1.800	3.000	--
ETDLO1011	-	-	2.400
ILO1013	0.960	1.440	2.400
ETL101	1.200	1.200	3.000
ETL102	1.800	3.000	-
Average	1.160	1.600	2.040
70% of Direct	**0.812**	**1.120**	**1.428**

Academic Year : 2017-18			
ME EXTC Sem-I			
PO Attainment(Indirect)			
Course	PO's		
	PO1	PO2	PO3
ETC101	1.8	1.2	3.0
ETC102	1.2	1.2	3.0
ETC103	1.8	3.0	--
ETDLO1011	-	-	3.0
ILO1013	1.2	1.8	3.0
ETL101	1.2	1.2	3.0
ETL102	1.8	3.0	-
Average (Indirect)	1.500	1.900	3.000
30% of Indirect	0.450	0.570	0.900
70% of Direct	0.812	1.120	1.428

Academic Year : 2017-18			SEM: II
			Direct Method

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Course Code	Course	Internal Direct Assessment CO Attainment	Internal Assessment (40%)	End Sem Exam	End Sem Exam (60%)	SUM of ESE and IA
ETC201	Modern Digital Communication	3	1.2	2	1.2	**2.4**
ETC202	Wireless Adhoc and Sensor Networks	3	1.2	0	0	**1.2**
ETC203	RF and Microwave Engineering	3	1.2	0	0	**1.2**
ETDLO2022	Network and Cyber Security	2	0.8	2	1.2	**2**
ILO2026	Research Methodology	3	1.2	0	0	**1.2**
ETL201	Laboratory III – Wireless Adhoc and Sensor Networks	3	1.2	3	1.8	**3**
ETL202	Laboratory IV - RF and Microwave Engineering	3	1.2	3	1.8	**3**

CO indirect attainment

Academic Year : 2017-18			SEM: II
Sr No	**Course Code**	**Course**	**CO Attainment Indirect**
1	ETC201	Digital Communication	3
2	ETC202	Wireless Adhoc and Sensor Networks	3
3	ETC203	RF and Microwave Engineering	3
4	ETDLO2022	Network and Cyber Security	3
5	ILO2026	Research Methodology	3
6	ETL201	Laboratory III – Wireless Adhoc and	3
7	ETL202	Laboratory IV - RF and Microwave Engineering	3

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Academic Year : 2017-18			
ME EXTC Sem-II			
PO Attainment(Direct)			
Course	**Pos**		
	PO1	**PO2**	**PO3**
ETC201	1.44	1.44	1.44
ETC202	0.72	0.72	1.20
ETC203	0.48	0.48	1.20
ETDLO2022	0.80	-	2.00
ILO2026	0.72	1.20	1.20
ETL201	1.8	1.8	1.8
ETL202	1.2	1.2	3
Average	1.023	1.140	1.691
70% of Direct	**0.716**	**0.798**	**1.184**

Academic Year : 2017-18			
ME EXTC Sem-II			
PO Attainment(Indirect)			
Course	**PO's**		
	PO1	**PO2**	**PO3**
ETC201	1.8	1.8	1.8
ETC202	1.8	1.8	3.0
ETC203	1.2	1.2	3.0
ETDLO2022	1.2	-	3.0
ILO2026	1.8	3.0	3.0
ETL201	1.8	1.8	1.8
ETL202	1.2	1.2	3
Average (Indirect)	**1.543**	**1.800**	**2.657**
30% of Indirect	**0.463**	**0.540**	**0.797**
70% of Direct	**0.716**	**0.798**	**1.184**
30% indirect+70% direct	**1.179**	**1.338**	**1.981**

Summary for CO Attainment (PG)		
ME EXTC		**A.Y. 2017-18**

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Semester	POs		
	PO1	PO2	PO3
Sem-I			
30% indirect+70% direct	1.262	1.690	2.328
Sem-II			
30% indirect+70% direct	1.179	1.338	1.981

	Academic Year : 2017-18			ODD SEM			
Sem-III (Direct)							
				Direct Method			
Sr No	Course Code	Course	Internal Direct Assessment CO Attain	Internal Assessment (40%)	End Sem Exam	End Sem Exam (60%)	SUM of ESE and IA
1	ETS301	Special Topic Seminar	3	1.2	3	1.8	3
2	ETD301	Dissertation-I	-	-	3	-	3

Sem-IV (Direct) EVEN SEM

				Direct Method			
Sr No	Course Code	Course	Internal Direct Assessment CO Attain	Internal Assessment (40%)	End Sem Exam	End Sem Exam (60%)	SUM of ESE and IA
1	ETD401	Dissertation-II	3	1.2	3	1.8	3

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Academic Year : 2017-18			
Sem-III (Indirect)			
Sr No	**Course Code**	**Course**	**CO Attainment Indirect**
1	ETS301	Special Topic Seminar	**3**
2	ETD301	Dissertation-I	**3**
		EVEN SEM	
Sem-IV (Indirect)			
1	ETD401	Dissertation-II	**3**

ME EXTC Sem-III			
PO Attainment(Direct)			
Course	**Pos**		
	PO1	**PO2**	**PO3**
ETS301	1.8	3.0	1.8
ETD301	1.8	3.0	1.8
Avg.	**1.800**	**3.000**	**1.800**
70% of Direct	**1.260**	**2.100**	**1.260**

ME EXTC Sem-IV			
PO Attainment(Direct)			
Course	**Pos**		
	PO1	**PO2**	**PO3**
ETD401	1.8	3.0	1.8
Avg.	**1.8**	**3.0**	**1.8**
70% of Direct	**1.260**	**2.100**	**1.260**

ME EXTC Sem-III	
PO Attainment(Direct)	
Course	**POs**

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	PO1	PO2	PO3
ETS301	1.8	3.0	1.8
ETD301	1.8	3.0	1.8
Avg.	**1.800**	**3.000**	**1.800**
30% of Indirect	**0.540**	**0.900**	**0.540**

ME EXTC Sem-IV

PO Attainment(Direct)

Course	POs		
	PO1	**PO2**	**PO3**
ETD401	1.8	3.0	1.8
Avg.	**1.8**	**3.0**	**1.8**
30% of Indirect	**0.540**	**0.900**	**0.540**

ME EXTC Sem-III

	PO1	PO2	PO3
70% of Direct	1.260	2.100	1.260
30% of Indirect	0.540	0.900	0.540
PO Attainment (70% direct + 30% Indirect)	**1.800**	**3.000**	**1.800**

ME EXTC Sem-IV

	PO1	PO2	PO3
70% of Direct	1.260	2.100	1.260
30% of Indirect	0.540	0.900	0.540
PO Attainment (70% direct + 30% Indirect)	**1.800**	**3.000**	**1.800**

Academic Year 2017-18

Sem-I (PG)

CO-PSO Direct Attainment

Course code	PSO1	PSO2
ETC101	1.2	1.2
ETC102	1.2	1.2
ETC103	1.8	3

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ETDLO1011	1.44	1.44
ILO1013	0.96	1.44
ETL101	3	3
ETL102	1.8	3
Average	**1.629**	**2.040**
70% Direct	**1.140**	**1.428**

Academic Year 2017-18		
Sem -I Indirect		
CO-PSO Attainment Indirect		
Course code	**PSO1**	**PSO2**
ETC101	3	3
ETC102	3	3
ETC103	1.8	3
ETDLO1011	1.8	1.8
ILO1013	1.2	1.8
ETL101	3	3
ETL102	1.8	3
Average Indirect	**2.229**	**2.657**
30% Indirect	**0.669**	**0.797**
70% Direct	**1.140**	**1.428**
70% Direcet + 30 % Indirect	**1.809**	**2.225**

Academic Year 2017-18		
Sem-II (Direct)		
CO-PSO Attainment (Direct)		
	PSO's	
Course	**PSO1**	**PSO2**
ETC201	2.4	2.4
ETC202	1.2	1.2
ETC203	1.2	1.2
ETDLO2022	2	2
ILO2026	0.72	0.72

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ETL201	3	3
ETL202	3	3
Average Direct	**1.931**	**1.931**
70% Direct	**1.352**	**1.352**

Sem-II		
CO-PSO Attainment (Indirect)		
Course	**PSO 1**	**PSO 2**
ETC201	3	3
ETC202	3	3
ETC203	3	3
ETDLO2022	3	3
ILO2026	1.8	1.8
ETL201	3	3
ETL202	3	3
Average (Indirect)	**2.829**	**2.829**
(30% of indirect)	**0.849**	**0.849**
70% Direct	**1.352**	**1.352**
(30% indirect+70% direct)	**2.201**	**2.201**

Academic Year 2017-18		
CO-PSO Attainment		
Course	**PSOs**	
	PSO1	**PSO2**
sem-I 30% indirect + 70% direct	1.809	2.225
sem-II 30% indirect + 70% direct	2.201	2.201
First Year (Avg)	**2.005**	**2.213**

Academic Year 2017-18		
Sem-III (PG) -Direct		
CO-PSO Direct Attainment		
Course code	**PSO1**	**PSO2**

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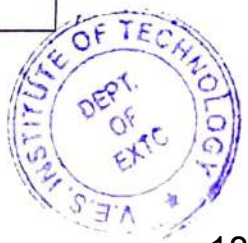
ETS301	1.8	3
ETD301	1.8	3
Average	**1.800**	**3.000**
70% Direct	**1.260**	**2.100**

Academic Year 2017-18		
Sem -III (PG) Indirect		
CO-PSO Attainment Indirect		
Course code	**PSO1**	**PSO2**
ETS301	1.8	3
ETD301	1.8	3
Average Indirect	**1.800**	**3.000**
30% Indirect	**0.540**	**0.900**
70% Direct	**1.260**	**2.100**
70% Direcet + 30 % Indirect	**1.800**	**3.000**

Academic Year 2017-18		
Sem-IV (Direct)		
CO-PSO Attainment (Direct)		
	PSO's	
Course	**PSO1**	**PSO2**
ETD401	3	3
Average Direct	**3.000**	**3.000**
70% Direct	**2.100**	**2.100**

Academic Year 2017-18		
Sem-IV (Indirect)		
CO-PSO Attainment		
Course	**PSO 1**	**PSO 2**



ETD401	3	3
Average (Indirect)	**3.000**	**3.000**
(30% of indirect)	**0.900**	**0.900**
70% Direct	**2.100**	**2.100**
(30% indirect+70% direct)	**3.000**	**3.000**

Academic Year 2016-17		
CO-PSO Attainment		
	PSOs	
	PSO1	**PSO2**
sem-III 30% indirect + 70% direct	1.800	3.000
sem-IV 30% indirect + 70% direct	3.000	3.000
Sem-III & IV (Avg.)	**2.400**	**3.000**

ME-PO Attainment by Direct Assessment Tool

Batch 2016-2018				
Sr. No.	**Direct Assessment Tool**	**Attainment of Program Outcomes**		
		PO1	**PO2**	**PO3**
1	**Co direct attainment**	1.61428	2.233	2.4857
2	**Final Year Project**	3	3	3
Average		**2.31**	**2.62**	**2.74**

ME- PO Attainment by Indirect Assessment Tools

Batch 2016-2018				
Sr. No.	**Inirect**	**Expected**	**Actual**	**Attainment of Program**

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	Assessment Tool	Level of PO attainment (in %)	contribution to PO attainment (in %)	Outcomes		
				PO1	PO2	PO3
1	Student Exit Survey	--	--	90	86.66	90
Attainment Level				3	3	3
2	Survey of courses and other activities	--	--	1.66	2.425	2.3125
Average (1,2)				2.33	2.7125	2.65625

Final batch wise PO Attainment-ME-EXTC				
Batch 2016 to 2018				
Sr. No.	Assessment Tools	Attainment of Program Outcomes		
		PO1	PO2	PO3
1	Direct Assessment Tools (70%)	1.61	1.83	1.92
2	Indirect Assessment Tools (30%)	0.7	0.81	0.8
Total		2.31	2.64	2.72

Sr. No.	Assessment Tools	Attainment of Program Outcomes		
		PO1	PO2	PO3
1	Direct Assessment Tools	2.3071	2.617	2.7429
2	Indirect Assessment Tools	2.33	2.7125	2.65625

(Neeta Chavan)

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Master of Information Technology

CO-PO-PSO Mapping

Department of Information Technology									
PG Sem-I (W.e.f. 2016-17)									
			Theory						
Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes			
			PO1	PO2	PO3	PSO1	PSO2	PSO3	
ITA	CO1	Students should be able to design enterprise wide networks considering various Qos parameters.	NA	NA	x	x	x	NA	
	CO2	students should be able to explain the design challenges of large scale data center	NA	NA	x	x	x	NA	
	CO3	students should be able to implement SDN and understand its impact on current design practice	NA	NA	x	x	x	NA	
	CO4	students should be able to explain the latest trends in SDN	NA	NA	x	x	x	NA	
DS	CO1	Demonstrate knowledge of statistical and exploratory data analysis data analysis techniques utilized in decision making.	NA	NA	x	x	x	NA	
	CO2	Apply principles of Data Science to the analysis of business problems.	NA	NA	x	x	x	NA	
	CO3	To use Machine Learning Algorithms to solve real-world problems.	NA	NA	x	x	x	NA	
	CO4	To provide data science solutions to business problems and visualization.	NA	NA	x	x	x	NA	
ASE	CO1	Compare and choose a process model for a software project development.	NA	NA	x	x	x	NA	
	CO2	Analyze and model software requirements of a software system	NA	NA	x	x	x	NA	

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	CO3	Design and Modeling of a software system with tools	NA	NA	x	x	x	NA
	CO4	Design and Modeling of a software system with tools	NA	NA	x	x	x	NA
UEE	CO1	Understand the importance of User Experience (UX).	NA	NA	x	x	x	NA
	CO2	Gain and apply knowledge of theoretical frameworks, methodological approaches, and problems solving techniques related to user experience design.	NA	NA	x	x	x	NA
	CO3	Criticize existing interface designs, and improve them.	NA	NA	x	x	x	NA
	CO4	Design complete application with end-to-end understanding of current UXE best practices and processes.	NA	NA	x	x	x	NA
MIS	CO1	Explain how information systems Transform Business	NA	NA	x	x	x	NA
	CO2	Identify the impact information systems have on an organization	NA	NA	x	x	x	NA
	CO3	Describe IT infrastructure and its components and its current trends	NA	NA	x	x	x	NA
	CO4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making	NA	NA	x	x	x	NA
	CO5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses	NA	NA	x	x	x	NA
Lab1	LO1	Able to explore various data analysis techniques and present required	x	x	x	x	x	NA

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		business solutions						
	LO2	Design a network as per the required given conditions	x	x	x	x	x	NA
	LO3	Design SAN as storage solution	x	x	x	x	x	NA
	LO4	should be able to select the required RAIDs as per the application requirements	x	x	x	x	x	NA
	LO5	Should be able to create various web elements ,objects with their proper placement and sequence of presentation	x	x	x	x	x	NA
Lab2	LO1	LO1:Gain and apply knowledge of theoretical frameworks, methodological approaches, and problems solving techniques related to user experience design.	x	x	x	x	x	NA
	LO2	Criticize existing interface designs, and improve them.	x	x	x	x	x	NA
	LO3	Design complete application with end-to-end understanding of current UXE best practices and processes.	x	x	x	x	x	NA
SEM-II								
SRM	CO1	Able to explain the knowledge about information security and Risk Management	NA	NA	x	x	x	NA
	CO2	Able to analysis Risk aAssessment methodology and risk mitigation approaches	NA	NA	x	x	x	NA
	CO3	Able to explain security management concepts and configuration management	NA	NA	x	x	x	NA
	CO4	Able to explain IT audit and its activities.	NA	NA	x	x	x	NA
AWT	CO1	To design a responsive web site using	NA	NA	x	x	x	NA

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		HTML5 and CSS.						
	CO2	To design RIA using proper choice of Framework	NA	NA	x	x	x	NA
	CO3	To recognize and evaluate website organizational structure and design elements	NA	NA	x	x	x	NA
	CO4	Explain emerging web 3.0 standards	NA	NA	x	x	x	NA
AT&ML	CO1	Explain the fundamentals of AI and machine learning.	NA	NA	x	x	x	NA
	CO2	Identify an appropriate AI problem solving method and knowledge representation technique.	NA	NA	x	x	x	NA
	CO3	Identify appropriate machine learning models for problem solving.	NA	NA	x	x	x	NA
	CO4	Design and develop AI applications in real world scenarios.	NA	NA	x	x	x	NA
RM	CO1	Prepare a preliminary research design for projects in their subject matter areas.	NA	NA	x	x	x	NA
	CO2	Accurately collect, analyze and report data.	NA	NA	x	x	x	NA
	CO3	Present complex data or situations clearly.	NA	NA	x	x	x	NA
	CO4	Review and analyze research finding	NA	NA	x	x	x	NA
Lab3	LO1	To work with open source security information management for security audit (OSSIM).	x	x	x	x	x	NA
	LO2	Design algorithms suited for Multicore processor and GPU systems using	x	x	x	x	x	NA

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		CUDA, MPI,OpenMP.and Analyze and optimize performance parameters						
	LO3	To design a website by using the studied web technologies	x	x	x	x	x	NA
Lab4	LO1	Identify an appropriate AI problem solving method and knowledge representation technique.	x	x	x	x	x	NA
	LO2	Identify appropriate machine learning models for problem solving	x	x	x	x	x	NA
	LO3	Design and develop AI applications in real world scenarios.	x	x	x	x	x	NA
	LO4	Prepare a preliminary research design for projects in their subject matter areas and Review and analyze research findings	x	x	x	x	x	NA
SEM-III								
Dissertation I	CO1	The student will be in a position to demonstrate knowledge of research processes (reading , evaluating and developing)by performing literature reviews using print and online databases	x	x	NA	x	x	NA
	CO2	The student will be able to identify, explain, compare and prepare the key elements of advanced topics	x	x	NA	x	x	NA
	CO3	The student will be able to explain the rationale for research ethics and the importance of local processes for internal reviews	x	x	NA	x	x	NA
SEM-IV								
Dissertat	CO1	The student will be able to	x	x	NA	x	x	NA

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ion II		demonstrate knowledge of research processes (reading , evaluating and developing)by performing literature reviews using print and online databases.						
	CO2	The student will be able to identify, explain, compare and prepare the key elements of a research proposal.	x	x	NA	x	x	NA
	CO3	The student will be able to define and develop a possible HIED research interest area using specific research designs.	x	x	NA	x	x	NA
	CO4	The student will be in a position to compare and contrast qualitative & quantitative research paradigms and explain the use of each in HIED research.	x	x	NA	x	x	NA
	CO5	The student will be able to explain the rationale for research ethics and the importance of local processes for internal reviews.	X	X	NA	x	x	NA

CO-PO-PSO Attainment

Department of Information Technology								
PG Sem-I (W.e.f. 2016-17)								
CO_PO mapping (Strength: S=3, M=2, W=1)			**Theory**					
Name of the course	**CO code**	**Course outcome**	**Program Outcomes**			**Program Specific Outcomes**		
			PO1	**PO2**	**PO3**	**PSO1**	**PSO2**	**PSO3**
ITA	CO1	Students should be able to design enterprise wide networks considering various Qos parameters.	NA	NA	2.5	2.5	2.5	NA
	CO2	Students should be able to explain the design challenges of large scale data center	NA	NA	2.5	2.5	2.5	NA

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	CO3	Students should be able to implement SDN and understand its impact on current design practice	NA	NA	2.5	2.5	2.5	NA
	CO4	Students should be able to explain the latest trends in SDN	NA	NA	2.5	2.5	2.5	NA
		Average			**2.5**	**2.5**	**2.5**	
DS	CO1	Demonstrate knowledge of statistical and exploratory data analysis data analysis techniques utilized in decision making.	NA	NA	4	4	4	NA
	CO2	Apply principles of Data Science to the analysis of business problems.	NA	NA	4	4	4	NA
	CO3	To use Machine Learning Algorithms to solve real-world problems.	NA	NA	4	4	4	NA
	CO4	To provide data science solutions to business problems and visualization.	NA	NA	4	4	4	NA
		Average			**4**	**4**	**4**	
ASE	CO1	Compare and choose a process model for a software project development.	NA	NA	**2.5**	2.5	2.5	NA
	CO2	Analyze and model software requirements of a software system.	NA	NA	**2.5**	2.5	2.5	NA
	CO3	Design and Modeling of a software system with tools	NA	NA	**2.5**	2.5	2.5	NA
	CO4	Design and Modeling of a software system with tools.	NA	NA	**2.5**	2.5	2.5	NA
		Average			**2.5**	**2.5**	**2.5**	
UEE	CO1	Understand the importance of User Experience (UX).	NA	NA	4	4	4	NA
	CO2	Gain and apply knowledge of theoretical frameworks, methodological approaches, and problems solving techniques related to user experience	NA	NA	4	4	4	NA

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		design.						
	CO3	Criticize existing interface designs, and improve them.	NA	NA	4	4	4	NA
	CO4	Design complete application with end-to-end understanding of current UXE best practices and processes.	NA	NA	4	4	4	NA
	Average				**4**	**4**	**4**	
MIS	CO1	Explain how information systems Transform Business.	NA	NA	4	4	4	NA
	CO2	Identify the impact information systems have on an organization.	NA	NA	4	4	4	NA
	CO3	Describe IT infrastructure and its components and its current trends	NA	NA	4	4	4	NA
	CO4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making.	NA	NA	4	4	4	NA
	CO5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses.	NA	NA	4	4	4	NA
	Average				**4**	**4**	**4**	
Lab1	LO1	Able to explore various data analysis techniques and present required business solutions	4	4	4	4	4	NA
	LO2	Design a network as per the required given conditions	4	4	4	4	4	NA
	LO3	Design SAN as storage solution	4	4	4	4	4	NA
	LO4	Should be able to select the required RAIDs as per the application requirements	4	4	4	4	4	NA
	LO5	Should be able to create various web elements ,objects with their proper placement and sequence of presentation	4	4	4	4	4	NA
	Average		**4**	**4**	**4**	**4**	**4**	

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Lab2	LO1	LO1:Gain and apply knowledge of theoretical frameworks, methodological approaches, and problems solving techniques related to user experience design.	4	4	4	4	4	NA
	LO2	Criticize existing interface designs, and improve them.	4	4	4	4	4	NA
	LO3	Design complete application with end-to-end understanding of current UXE best practices and processes.	4	4	4	4	4	NA
	Average		**4**	**4**	**4**	**4**	**4**	
SEM-II								
SRM	CO1	Able to explain the knowledge about information security and Risk Management	NA	NA	2	2	2	NA
	CO2	Able to analysis Risk aAssessment methodology and risk mitigation approaches	NA	NA	2	2	2	NA
	CO3	Able to explain security management concepts and configuration management	NA	NA	2	2	2	NA
	CO4	Able to explain IT audit and its activities.	NA	NA	2	2	2	NA
	Average				**2**	**2**	**2**	
AWT	CO1	To design a responsive web site using HTML5 and CSS.	NA	NA	1.5	1.5	1.5	NA
	CO2	To design RIA using proper choice of Framework	NA	NA	1.5	1.5	1.5	NA
	CO3	To recognize and evaluate website organizational structure and design elements	NA	NA	1.5	1.5	1.5	NA

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	CO4	Explain emerging web 3.0 standards	NA	NA	1.5	1.5	1.5	NA
	Average				**1.5**	**1.5**	**1.5**	
AT&ML	CO1	Explain the fundamentals of AI and machine learning.	NA	NA	4	4	4	NA
	CO2	Identify an appropriate AI problem solving method and knowledge representation technique.	NA	NA	4	4	4	NA
	CO3	Identify appropriate machine learning models for problem solving.	NA	NA	4	4	4	NA
	CO4	Design and develop AI applications in real world scenarios.	NA	NA	4	4	4	NA
	Average				**4**	**4**	**4**	
RM	CO1	Prepare a preliminary research design for projects in their subject matter areas	NA	NA	2	2	2	NA
	CO2	Accurately collect, analyze and report data	NA	NA	2	2	2	NA
	CO3	Present complex data or situations clearly	NA	NA	2	2	2	NA
	CO4	Review and analyze research finding	NA	NA	2	2	2	NA
	Average				**2**	**2**	**2**	
Lab3	LO1	to Work with open source security information management for security audit (OSSIM)	4	4	4	4	4	NA
	LO2	Design algorithms suited for Multicore processor and GPU systems using CUDA, MPI,OpenMP.and Analyze and optimize performance parameters	4	4	4	4	4	NA
	LO3	to design a website by using the	4	4	4	4	4	NA

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		studied web technologies						
	Average		**4**	**4**	**4**	**4**	**4**	
Lab4	LO1	Identify an appropriate AI problem solving method and knowledge representation technique.	3	3	3	3	3	NA
	LO2	Identify appropriate machine learning models for problem solving	3	3	3	3	3	NA
	LO3	Design and develop AI applications in real world scenarios.	3	3	3	3	3	NA
	LO4	Prepare a preliminary research design for projects in their subject matter areas and Review and analyze research findings	3	3	3	3	3	NA
		Average	**3**	**3**	**3**	**3**	**3**	
SEM-III								
	CO1	The student will be in a position to demonstrate knowledge of research processes (reading , evaluating and developing)by performing literature reviews using print and online databases.	4	4	NA	4	4	NA
	CO2	The student will be able to identify, explain, compare and prepare the key elements of advanced topics.	4	4	NA	4	4	NA
	CO3	The student will be able to explain the rationale for research ethics and the importance of local processes for internal reviews.	4	4	NA	4	4	NA
	Average		**4**	**4**		**4**	**4**	

Attainment Level 1: < 60% students scoring more than target % marks out of the relevant

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maximum marks
Attainment Level 2: 60-69% students scoring more than target % marks out of the relevant maximum marks
Attainment Level 3: 70-79% students scoring more than target% marks out of the relevant maximum marks
Attainment Level 4: >=80% students scoring more than target% marks out of the relevant maximum marks

Summary of PO attainment(2017-18)

SEM-I

Subjects	POs		
	PO1	PO2	PO3
DS	NA	NA	3
ITA	NA	NA	2.5
ASE	NA	NA	2.5
UEE	NA	NA	4
MIS	NA	NA	4
lab1	NA	NA	4
lab2	NA	NA	4
Avg1	NA	NA	**3**

SEM-II

Subjects	POs		
	PO1	PO2	PO3
SRM	NA	NA	2
AWT	NA	NA	1.5
AT&ML	NA	NA	4
RM	NA	NA	2
lab3	NA	NA	4
lab4	NA	NA	4
Avg2	NA	NA	**2.7**
	Pos		
	PO1	**PO2**	**PO3**
SEMIII	**4**	**4**	NA
SEMIV	**4**	**4**	NA
Total Avg	**4**	**4**	**2.8**

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Dr. Manoj Sabnis

Vivekanand Education Society's
Institute of Technology
Approved by AICTE & Affiliated to University of Mumbai

Master of Instrumentation Engineering
CO-PO-PSO Mapping

Department of Instrumentation and Control									
PG Sem-I (W.e.f. 2016-17)									
CO_PO mapping (Strength: S=3, M=2, W=1)			Theory						
Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3
Higher Mathematics fpr Control Engineering	ISEC101.1	Demonstrate ability to solve systems of linear equations	-	-	3	-	3	-
	ISEC101.2	Demonstrate ability to work with Vector Spaces	-	-	3	-	3	-
	ISEC101.3	Demonstrate ability to get least square solutions to systems	-	-	3	-	3	-
	ISEC101.4	Demonstrate ability to effect linear transformation	-	-	3	-	3	-
		ISEC101						
Advanced Signal Processing for Sensors	ISEC102.1	The students will be able to Classify the sensors based on resistive, capacitive and inductive principles	-	-	3	3	-	3
	ISEC102.2	The students will be able to understand the methodology and design of electronic circuits utilized for processing the signals for various sensors.	-	-	3	3	-	3
		ISEC102						
Robust Control	CO1	The students should be able to understand the robustness properties of the system against uncertainties.	1	2	2	-	3	-
	CO2	Students should be able to design robust control that overcomes parametric uncertainties.	3	3	3	-	3	-
	CO3	Students should be able to design the internal model control for uncertain systems.	3	3	3	-	3	-
	CO4	Students should be able to understand the concept of	1	1	1	-	3	-

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(Mrs. Nilima Warke)

		Quantitative feedback techniques.						
	CO5	Students should be able to design the sliding mode control for uncertain systems.	3	3	3	-	3	-
	ISEC103							
Advanced Biomedical Instrumentation	CO1	The students should be able to understand the principle and working of various advanced biomedical instruments	-	-	3	-	2	3
	CO2	The students should be able to design signal conditioning systems for bio-signal measurements	-	-	3	-	2	3
	CO3	The students should be able to apply concepts of biomedical techniques for various applications	-	-	3	-	2	3
	CO4	The students should be able to understand the concept and working of various advanced medical image acquisition and reconstructions techniques.	-	-	3	-	2	3
	ISELO1011							
Management Information System	ILO1013.1	Explain how information systems Transform Business	1	2	-	-	2	-
	ILO1013.2	Identify the impact information systems have on an organization	-	2	-	-	1	-
	ILO1013.3	Describe IT infrastructure and its components and its current trends	-	2	-	-	2	-
	ILO1013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making	1	-	-	-	2	-
	ILO1013.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses	1	2	3	-	2	-
	ILO1013							

PG Sem-I (W.e.f. 2016-17)									
CO_PO mapping (Strength: S=3, M=2, W=1)			Labs						
Name of the course	CO code	Course outcome*	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3
Laboratory I	ISEL101.1 /CO1	Students will be able to understand and design different types of electronic bridges used in sensor signal processing.	-	2	2	2	1	3
	ISEL101.2 /CO2	Students will be able to understand and design different types of filters used for sensor signal processing.	-	2	2	2	1	3
	ISEL101.3 /CO3	Students will be able to use high resolution ADC for sensor signal processing	-	2	2	1	-	3
	ISEL101.4 /CO4	Students will be able to develop a simulation of a process control system using PLC/DCS.	-	2	2	3	-	1
	ISEL101							
Laboratory II	ISEL102.1	Students will be able to compute different norms.	-	2	2	2	3	-
	ISEL102.2	Students will be able to perform various operations on matrices like LQ , QR decomposition and Gram Schmidth orthogonalization.	-	2	2	2	3	-
	ISEL102.3	Students will be able to design Sliding mode controllers for SISO systems.	1	2	3	2	3	-
	ISEL102.4	Students will be able to design Internal model controllers for various systems.	1	2	3	2	3	-
	ISEL102							

PG Sem-II (W.e.f. 2016-17)								
CO_PO mapping (Strength: S=3, M=2, W=1)			Theory					
Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3

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Electronic Systems Design	ISEC201.1	Students will be able to understand practical design considerations such as Noise reduction, Shielding and grounding techniques, Isolation and Power management associated with design of electronic systems.	-	-	3	2	-	3
	ISEC201.2	Students will be able to design Analog, Digital and Mixed signal processing circuits required for electronic systems.	-	-	3	2	-	3
	ISEC201							
State Estimation and Stochastic Processes	ISEC202.1	The students should be able to understand the Stochastic Properties of random variable in terms of pdf.	-	-	3	-	3	-
	ISEC202.2	Students should be able to understand the concept of stochastic processes	-	-	3	-	3	-
	ISEC202.3	Students should be able to understand concept of least square estimation	-	-	3	-	3	-
	ISEC202.4	Students should be able to realize the significance of the Kalman filter and its applications to linear and nonlinear systems.	-	-	3	-	3	-
	ISEC202							
Advanced Process Control and Automation	ISEC203.1	The students should be able to design the process and behavioral model of the process.	-	2	3	-	3	-
	ISEC203.2	The students should be able to select appropriate control configuration to minimize interaction between different loops	-	2	3	-	3	-
	ISEC203.3	The students should be able to design PLC and DCS based systems.	1	2	3	3	1	-
	ISEC203.4	The students should be able to understand and differentiate the properties of different network protocols available.	1	2	3	3	2	-

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	ISEC203.5	The students should be able to calculate Safety Integrity Level for a given process.	2	2	-	2	2	-
	ISEC203.6	The students should be able to differentiate the properties of advanced intrinsic safety.	2	2	-	-	2	1
	ISEC203							
Department Level Optional Courses-II								
Advanced Nuclear Instrumentation	ILO2026.1	1.To give students an understanding of the concept of high-resolution spectroscopy and provide an overview of the various blocks of spectroscopy systems related to both energy and timing measurement.	2	-	3	-	-	3
	ILO2026.2	2.Should be able to understand the main nuclear power reactor designs and identify their major components.	-	-	3	-	-	-
	ILO2026.3	3. To understand the importance of various elements of counting systems in the Detection of very low radio-activity Liquid scintillation and noise reduction techniques.	2	-	3	-	-	3
	ILO2026.4	4. To give students an understanding of the basics of Instrumentation for accelerators	-	-	3	-	-	-
	ILO2026.5	5. To describe and explain the key elements of Nuclear medical instrumentation and to design and construct Imaging systems.	-	-	3	-	-	-
	ILO2026.6	6. To understand the fundamental aspects of Instrumentation for astrophysics experiments	-	-	3	-	-	-
	ISEDLO2023							
Institute Level Optional Courses-II								
Research Methodology	ILO2026.1	Prepare a preliminary research design for projects in their subject matter areas	2	3	3	-	2	2

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	ILO2026.2	Accurately collect, analyze and report data	2	3	3	-	2	2
	ILO2026.3	Present complex data or situations clearly	2	3	3	-	2	2
	ILO2026.3	Review and analyze research findings	3	3	3	-	2	2
	ILO2026							

PG Sem-I (W.e.f. 2016-17)

CO_PO mapping (Strength: S=3, M=2, W=1) — **Labs**

Name of the course	CO code	Course outcome*	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3
Laboratory III (ISEL201)	ISEL201.1	Develop VIs for discrete process control systems	3	1	1	3	2	2
	ISEL201.2	Develop VIs for continuous process control systems	3	1	1	3	2	2
	ISEL201.3	Simulate stochastic process	3	1	1	1	2	2
	ISEL201							
Laboratory IV (ISEL202)	ISEL202.1	Simulate discrete and/or continuous process using PLC	3	1	1	3	2	2
	ISEL202.2	Simulate discrete and/or continuous process using DCS	3	1	1	3	2	2
	ISEL202.3	Illustrate various approaches and techniques in industrial data communication	3	1	1	2	2	2
	ISEL202							

PG Sem-III (W.e.f. 2016-17)

CO_PO mapping (Strength: S=3, M=2, W=1)

Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3
Special Topic Seminar	ISES301.1	Identify and finalize the topic of the seminar through a detailed literature survey.	3	---	2	3	3	3
	ISES301.2	Identify the Problem,analyze and interpret it.	3	2	2	3	3	3

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	ISES301.3	Document it through a written technical report and oral presentation	1	3	2	3	3	3
		ISES301						
Dissertation I	ISED301.1	Identify and finalize the topic for a research project using literature survey.	3	--	2	3	3	3
	ISED301.2	Demonstrate a sound technical knowledge of their selected topic.	3	2	2	3	3	3
	ISED301.3	Present a technical report in both ,written and oral format.	1	3	2	3	3	3
		ISED301						

PG Sem-IV (W.e.f. 2016-17)

CO_PO mapping (Strength: S=3, M=2, W=1)

Name of the course	CO code	Course outcome	Program Outcomes			Program Specific Outcomes		
			PO1	PO2	PO3	PSO1	PSO2	PSO3
Dissertation II	ESED 401.1	Design engineering solution for identified problems.	3	--	2	3	3	3
	ESED 401.2	Implement a design solution using selected hardware or software or both.	3	2	2	3	3	3
	ESED 401.3	Communicate with engineers and the community at large through written and oral presentation.	1	3	2	3	3	3

CO attainment(2017-18)

Sem I

Sr. No.	Name of the course	CO code		Program Outcomes			Program Specific Outcomes		
			CO attainment	PO 1	PO 2	PO 3	PSO1	PSO2	PSO3
1	Higher	ISEC101.1	4	-	-	3	-	3	-

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	Mathematics for Control Engineering	ISEC101.2	4	-	-	3	-	3	-
		ISEC101.3	4	-	-	3	-	3	-
		ISEC101.4	4	-	-	3	-	3	-
		Program Outcome Attainment		-	-	4	-	4	-
2	Advanced Signal Processing for Sensors	ISEC102.1	4	-	-	3	3	-	3
		ISEC102.2	4	-	-	3	3	-	3
		Program Outcome Attainment		-	-	4	4	2.77	4
3	Robust Control	ISEC103.1	2.88	1	2	2	-	3	-
		ISEC103.2	2.88	3	3	3	-	3	-
		ISEC103.3	2.88	3	3	3	-	3	-
		ISEC103.4	2.88	1	1	1	-	3	-
		ISEC103.5	2.88	3	3	3	-	3	-
		Program Outcome Attainment		**2.88**	**2.88**	**2.88**	-	**2.88**	-
4	Advanced Biomedical Instrumentation	ISELO1011.1	4	-	-	3	-	2	3
		ISELO1011.2	4	-	-	3	-	2	3
		ISELO1011.3	4	-	-	3	-	2	3
		ISELO1011.4	4	-	-	3	-	2	3
		Program Outcome Attainment		-	-	4	-	4	4
5	Management Information System	ILO1013.1	2.8	1	2	-	-	2	-
		ILO1013.2	2.8	-	2	-	-	1	-
		ILO1013.3	2.8	-	2	-	-	2	-
		ILO1013.4	2.8	1	-	-	-	2	-
		ILO1013.5	2.8	1	2	3	-	2	-
		Program Outcome Attainment		**2.8**	**2.8**	**2.8**	-	**2.8**	-
6	LabI	ISEL101.1	3.54	-	2	2	2	1	3
		ISEL101.2	4	-	2	2	2	1	3
		ISEL101.3	4	-	2	2	1	-	3
		ISEL101.4	4	-	2	2	3	-	1
		Program Outcome		-	**3.89**	**3.89**	**3.89**	**3.77**	**3.86**

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		Attainment							
7	LabII	ISEL102.1	4	-	2	2	2	3	-
		ISEL102.2	4	-	2	2	2	3	-
		ISEL102.3	4	1	2	3	2	3	-
		ISEL102.4	4	1	2	3	2	3	-
		Program Outcome Attainment		**4**	**4**	**4**	**4**	**4**	**-**

Sem II									
Sr. No.	**Name of the course**	**CO code**	**CO attainment**	**Program Outcomes**			**Program Specific Outcomes**		
				PO 1	**PO 2**	**PO 3**	**PSO1**	**PSO2**	**PSO3**
1	Electronics Systems Design	ISEC201.1	4	-	-	3	2	-	3
		ISEC201.2	4	-	-	3	2	-	3
		Program Outcome Attainment		**-**	**-**	4	4	**-**	**4**
2	State Estimation and Stochastic Processes	ISEC202.1	2.18	-	-	3	-	3	-
		ISEC202.2	2.18	-	-	3	-	3	-
		ISEC202.3	2.18	-	-	3	-	3	-
		ISEC202.4	2.18	-	-	3	-	3	-
		Program Outcome Attainment		**-**	**-**	**2.18**	**-**	**2.18**	**-**
3	Advanced Process Control and Automation	ISEC203.1	2.88	-	2	**3**	-	3	-
		ISEC203.2	2.88	-	2	**3**	-	3	-
		ISEC203.3	2.88	1	2	**3**	3	1	-
		ISEC203.4	2.88	1	2	**3**	3	2	-
		ISEC203.5	2.88	2	2	-	2	2	-
		ISEC203.6	2.88	2	2	-	-	2	1
		Program Outcome Attainment		**2.88**	**2.88**	**2.88**	**2.88**	**2.88**	**2.88**
4	Advanced Nuclear Instrumentation	ISEDLO2023.1	2.8	2	-	3	-	-	3
		ISEDLO2023.2	2.8	2	-	3	-	-	-
		ISEDLO2023.3	2.8	2	-	3	-	-	3
		ISEDLO2023.4	2.8	2	-	3	-	-	-
		ISEDLO2023.5	2.8	2	-	3	-	-	-

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		ISEDLO2023.6	2.8	2	-	3	-	-	-
		Program Outcome Attainment		**2.8**	**-**	**2.8**	**-**	**-**	**2.8**
5	Research Methodology	ILO2026.1	1.76	2	3	3	-	2	2
		ILO2026.2	1.76	2	3	3	-	2	2
		ILO2026.3	1.76	2	3	3	-	2	2
		ILO2026.3	1.76	3	3	3	-	2	2
		Program Outcome Attainment		**1.76**	**1.76**	**1.76**	**-**	**1.76**	**1.76**
6	Lab-III	ISEL201.1	4	3	1	1	3	2	2
		ISEL201.2	4	3	1	1	3	2	2
		ISEL201.3	4	3	1	1	1	2	2
		Program Outcome Attainment		**-**	**4.00**	**4.00**	**4.00**	**4.00**	**4.00**
7	Lab-IV	ISEL202.1	3.54	3	1	1	3	2	2
		ISEL202.2	4	3	1	1	3	2	2
		ISEL202.3	4	3	1	1	2	2	2
		Program Outcome Attainment		**3.85**	**3.85**	**3.85**	**3.83**	**3.85**	**3.85**

Sem-III

1	special Topic seminar	ISES301.1	4	3	---	2	3	3	3
		ISES301.2	4	3	2	2	3	3	3
		ISES301.3	4	1	3	2	3	3	3
				4.00	**4.00**	**4.00**	**4.00**	**4.00**	**4.00**
2	Project-I	ISED301.1	4	3	--	2	3	3	3
		ISED301.2	4	3	2	2	3	3	3
		ISED301.3	4	1	3	2	3	3	3
				4.00	**4.00**	**4.00**	**4.00**	**4.00**	**4.00**

PO Attainment

ME-PO attainment 2017-18

Sr.No	SUBJECT NAME	PO1	PO2	PO3	PSO1	PSO2	PSO3
1	Higher Mathematics fpr Control Engineering	-	-	4	-	4	-
2	Advanced Signal Processing for Sensors	-	-	4	4	2.77	4

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3	Robust Control	2.88	2.88	2.88	-	2.88	-
4	Advanced Biomedical Instrumentation	-	-	4	-	4	4
5	Management Information System	2.8	2.8	-	-	2.8	-
6	Lab-I	-	3.89	3.89	3.89	3.77	3.86
7	Lab-II	4	4	-	4	4	-
8	Electronics System Design	-	-	4	4	-	4
9	State Estimation and Stochastic Processes	-	-	2.18	-	2.18	-
10	Advanced Process Control and Automation	2.88	2.88	2.88	2.88	2.88	2.88
11	Advanced Nuclear Instrumentation	2.8	-	2.8	-	-	2.8
12	Research Methodology	1.76	1.76	1.76	-	1.76	1.76
13	Lab-III	3	1	1	4	4	4
14	Lab-IV	3.85	3.85	3.85	3.83	3.85	3.85
15	Special Topic Seminar	4	4	4	4	4	4
16	Project -1	4	4	4	4	4	4
	ME Overall PO Attainment(2017-18)	**3.2**	**3.1**	**3.2**	**3.8**	**3.3**	**3.6**

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(Mrs. Nilima Warke)

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6. Master of Computer Applications
CO-PO-PSO Mapping and attainment

		MCA SEM-I_ACADEMIC YEAR_2018-2019(ODD SEM)First Shift													
Sem I (2018-19)															
Subject	COs	CO Description	POs												
			PO 1	PO 2	PO3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO 10	PO11	PO12	PSO 1	PSO2
Object Oriented Programming	CO1	Comprehend Object oriented programming concepts and their application	1	1	1	1	NA	NA	1	NA	1	NA	NA	NA	1	NA
	CO2	To write applications using C++.	1	NA	2	2	NA	NA	NA	NA	2	NA	NA	NA	2	NA
	CO3	Implement programming concepts to solve bigger problems.	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2
Software Engineering & Project	CO1	Apply use of knowledge of Software Life Cycle to successfully implement the projects in the	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3

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AKP
Ameya Pol

Management		corporate world.														
	CO2	Identify the Inputs, Tools and techniques to get the required Project deliverable and Product deliverable using 10 Knowledge areas of Project Management	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
	CO3	Implement Project Management Processes to successfully complete projects in the IT industry.	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
Computer Organization and Architecture	CO1	Design trade-offs Basic fundamentals in digital logic & structure of a digital computer.	3	2	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	Identify performance issues in processor and memory design of a digital compute	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

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	CO3	To Develop independent learning skills and be able to learn more about different computer architectures and hardware.	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO4	To articulate design issues in the development of Multiprocessor organization & architecture.	NA	NA	3	3	NA	NA	3	NA	NA	NA	NA	3	3	3
IT in Management	CO1	To use various IT tools used for managing the Industrial operation.	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	3	NA
	CO2	To apply the decision for selecting the proper IT tools for Management operation.	NA	NA	NA	3	3	NA	3	NA	NA	NA	3	NA	3	NA
	CO3	To design the strategic plan for using Information Technology in Management	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	3	NA

Statistics & Probability	CO1	Distinguish between quantitative and categorical data	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Apply different statistical measures on data	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Identify, formulate and solve problems	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Classify different types of Probability and their fundamental applications	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Object Oriented Programming Lab	CO1	Design and Develop the solution to a problem using Object Oriented Programming Concepts	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Demonstrate use of C++ Concepts	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Develop real time applications.	3	3	3	3	NA	NA	3	3	NA	NA	3	3	3	NA
Software Engineering &	CO1	Design and Develop the solution to a problem using Object Oriented	NA	3	NA	NA	NA	3	NA	3	3	3	3	NA	3	3

Project Management Lab		Programming Concepts														
	CO2	Demonstrate use of C++ Concepts	NA	3	3	3	3	NA	NA	NA	3	3	3	NA	3	3
	CO3	Develop real time applications.	NA	NA	3	3	NA	NA	NA	3	3	3	3	NA	3	3
Web Technologies and Mini Project-Lab	CO1	Acquire knowledge about functionality of world wide web	3	NA	3	NA	NA	3	NA	3	NA	NA	3	3	3	3
	CO2	Develop web based applications using open source technology.	NA	NA	3	NA	3	NA	NA	3	NA	NA	3	3	3	3
	CO3	Design and develop dynamic web sites.	3	NA	3	NA	NA	NA	NA	3	NA	NA	3	3	3	3
		Average values for POs mapped	**2.5**	**2.6**	**2.8**	**2.7**	**3.0**	**3.0**	**2.7**	**3.0**	**2.6**	**3.0**	**3.0**	**3.0**	**2.9**	**2.9**

		MCA SEM-I_ACADEMIC YEAR_2018-2019(ODD SEM) Second Shift						
Sem I (2018-19)								
Subject	**COs**	**CO Description**	**POs**					

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			PO 1	PO 2	PO3	PO 4	PO 5	PO6	PO 7	PO 8	PO 9	PO 10	PO11	PO12	PSO 1	PS O2
Object Oriented Programming	CO1	Comprehend Object oriented programming concepts and their application	1	NA	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	CO2	To write applications using C++.	NA	NA	1	NA	NA	NA	NA	1	NA	NA	1	1	NA	NA
	CO3	Implement programming concepts to solve bigger problems.	NA	NA	1	1	NA	NA	NA	1	NA	NA	1	1	NA	NA
Software Engineering & Project Management	CO1	Apply use of knowledge of Software Life Cycle to successfully implement the projects in the corporate world.	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
	CO2	Identify the Inputs, Tools and techniques to get the required Project deliverable and Product	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3

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		deliverable using 10 Knowledge areas of Project Management														
	CO3	Implement Project Management Processes to successfully complete projects in the IT industry.	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
Computer Organization and Architecture	CO1	Design trade-offs Basic fundamentals in digital logic & structure of a digital computer.	3	2	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	Identify performance issues in processor and memory design of a digital compute	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO3	To Develop independent learning skills and be able to learn more about different computer architectures and hardware.	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

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	CO4	To articulate design issues in the development of Multiprocessor organization & architecture.	NA	NA	3	3	NA	NA	3	NA	NA	NA	NA	3	3	3
IT in Management	CO1	To use various IT tools used for managing the Industrial operation.	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	3	NA
	CO2	To apply the decision for selecting the proper IT tools for Management operation.	NA	NA	NA	3	3	NA	3	NA	NA	NA	3	NA	3	NA
	CO3	To design the strategic plan for using Information Technology in Management	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	3	NA
Statistics & Probability	CO1	Distinguish between quantitative and categorical data	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Apply different statistical measures on data	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3

	CO3	Identify, formulate and solve problems	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Classify different types of Probability and their fundamental applications	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Object Oriented Programming Lab	CO1	Design and Develop the solution to a problem using Object Oriented Programming Concepts	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Demonstrate use of C++ Concepts	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Develop real time applications.	3	3	3	3	NA	NA	3	3	NA	NA	3	NA	3	NA
Software Engineering & Project Management Lab	CO1	Design and Develop the solution to a problem using Object Oriented Programming Concepts	NA	3	NA	NA	NA	3	NA	3	3	3	3	NA	3	3
	CO2	Demonstrate use of C++ Concepts	NA	3	3	3	3	NA	NA	NA	3	3	3	NA	3	3
	CO3	Develop real time applications.	NA	NA	3	3	NA	NA	NA	3	3	3	3	NA	3	3

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Web Technologies and Mini Project-Lab	CO1	Acquire knowledge about functionality of world wide web	3	NA	3	NA	NA	3	3	NA	NA	NA	3	3	3	3
	CO2	Develop web based applications using open source technology.	NA	NA	3	NA	3	NA	3	NA	NA	NA	3	3	3	3
	CO3	Design and develop dynamic web sites.	3	NA	3	NA	3	NA	3	NA	NA	NA	3	3	3	3
		Average values for POs mapped	**2.8**	**2.8**	**2.6**	**2.8**	**3.0**	**3.0**	**3.0**	**2.5**	**3.0**	**3.0**	**2.7**	**2.3**	**3.0**	**3.0**

1: Weak 2:Medium 3: Strong

MCA SEM-II_ACADEMIC YEAR_2018-2019(EVEN SEM)First Shift															
Sem II(2018-19)															
Subject	**COs**	**CO Description**	**POs**												
			PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**	**PSO 1**	**PSO 2**

V.E.S. INSTITUTE OF TECHNOLOGY DEPT. OF MCA

Data Structure	CO1	Analyze and compute efficiency of various algorithms.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Effectively choose the data structure that efficiently model the information in a problem	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Describe how Linear data structures are represented in memory and used by algorithms and their applications	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Identify the benefits of Non-linear Data Structures and their applications	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Operating System	CO1	Classify different styles of operating system designs	3	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

	CO2	Analyze process management, I/O management, memory management functions of Operating System	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO3	Employ process scheduling and disk scheduling algorithms.	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO4	Explore file management and protection and security concepts.	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
Computer Network	CO1	Comprehend the basic concepts of computer networks and data communication systems.	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO2	Analyze basic networking protocols and their use in network design	NA	NA	2	NA	NA	NA	2	NA	NA	NA	NA	NA	2	2
	CO3	Explore various advanced networking concepts	NA	NA	NA	NA	2	NA	2	NA	NA	NA	NA	NA	2	2

	CO4	Understand ethical, legal, security, and social issues related to computer networking.	NA	NA	NA	NA	NA	2	2	NA	NA	NA	NA	NA	2	2
Financial Accounting & Management	CO1	To use accounting functions as an information development and communication system that supports economic decision making and provides value to entities	NA	3	NA	NA	NA	NA	3	3	NA	NA	NA	NA	NA	3
	CO2	Preparation of financial statements and related information and apply analytical tools in making both business and financial decisions.	NA	3	NA	NA	NA	NA	3	3	NA	NA	NA	NA	NA	3
	CO3	To analyze the impact of the accounting system on several business functions and managers" decision making.	NA	NA	NA	NA	NA	3	3	3	NA	NA	NA	NA	NA	3

	CO4	To analyze and use financial statements; prepare budgets and investment options	NA	NA	NA	NA	NA	3	3	3	NA	NA	NA	NA	NA	3
Decision Making & Mathematical Modeling	CO1	Develop mathematical and logical thinking	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Model situations from variety of settings in generalised mathematical form	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Solve the real world business problem	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Operating System Lab	CO1	Apply various operating system commands.	3	NA	NA	NA	3	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	To write a shell script and awk programming.	NA	NA	NA	NA	3	NA	3	NA	NA	NA	NA	NA	3	NA
	CO3	Design network for any business requirement.	NA	3	3	NA	3	NA	3	3	3	NA	3	NA	3	3

Networking Lab	CO1	Use appropriate network devices to build different network topology and configure it.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
	CO2	Analyze the features and operations of various protocols.	NA	NA	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	3
	CO3	Design and configure network for any business requirement	NA	NA	NA	NA	NA	NA	3	3	NA	NA	3	3	3	3
Data Structure Lab	CO1	Effectively select data structure model to be used for real world problem	3	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Build web application with effective storage mechanism for data	NA	NA	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
Web Application Lab	CO1	To study various linear and non-linear data structures.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3

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	CO2	To provide knowledge for developing web applications using AJAX framework and open source tools.	3	3	3	NA	3	NA	3	3	NA	NA	3	NA	3	3
	CO3	To conceptualize effective storage mechanisms for data and accessing it through web applications.	3	3	3	NA	3	NA	3	3	NA	NA	3	NA	3	3
		Average values for POs mapped	**3.0**	**3.0**	**2.9**	**3.0**	**2.9**	**2.7**	**2.8**	**3.0**	**3.0**	**NA**	**3.0**	**3.0**	**2.9**	**2.9**

MCA SEM-II_ACADEMIC YEAR_2018-2019(EVEN SEM)Second Shift															
Sem II(2018-19)															
Subject	**COs**	**CO Description**	**POs**												
			PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**

VES INSTITUTE OF TECHNOLOGY DEPT. OF MCA

Data Structure	CO1	Analyze and compute efficiency of various algorithms.	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA
	CO2	Effectively choose the data structure that efficiently model the information in a problem	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA
	CO3	Describe how Linear data structures are represented in memory and used by algorithms and their applications	NA	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
	CO4	Identify the benefits of Non-linear Data Structures and their applications	NA	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
Operating System	CO1	Classify different styles of operating system designs	3	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	Analyze process management, I/O management, memory	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

		management functions of Operating System													
	CO3	Employ process scheduling and disk scheduling algorithms.	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO4	Explore file management and protection and security concepts.	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
Computer Network	CO1	Comprehend the basic concepts of computer networks and data communication systems.	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO2	Analyze basic networking protocols and their use in network design	NA	NA	2	NA	NA	NA	2	NA	NA	NA	NA	NA	2	2
	CO3	Explore various advanced networking concepts	NA	NA	NA	NA	2	NA	2	NA	NA	NA	NA	NA	2	2
	CO4	Understand ethical, legal, security, and social issues related to	NA	NA	NA	NA	NA	2	2	NA	NA	NA	NA	NA	2	2

		computer networking.														
Financial Accounting & Management	CO1	To use accounting functions as an information development and communication system that supports economic decision making and provides value to entities	NA	3	NA	NA	NA	NA	3	3	NA	NA	NA	NA	NA	3
	CO2	Preparation of financial statements and related information and apply analytical tools in making both business and financial decisions.	NA	3	NA	NA	NA	NA	3	3	NA	NA	NA	NA	NA	3
	CO3	To analyze the impact of the accounting system on several business functions and managers' decision making.	NA	NA	NA	NA	NA	3	3	3	NA	NA	NA	NA	NA	3
	CO4	To analyze and use financial statements; prepare budgets and	NA	NA	NA	NA	NA	3	3	3	NA	NA	NA	NA	NA	3

		investment options														
Decision Making & Mathematical Modeling	CO1	Develop mathematical and logical thinking	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Model situations from variety of settings in generalised mathematical form	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Solve the real world business problem	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
Operating System Lab	CO1	Apply various operating system commands.	3	NA	NA	NA	3	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	To write a shell script and awk programming.	NA	NA	NA	NA	3	NA	3	NA	NA	NA	NA	NA	3	NA
	CO3	Design network for any business requirement.	NA	3	3	NA	3	NA	3	3	3	NA	3	NA	3	3
Networking Lab	CO1	Use appropriate network devices to build different network topology and configure it.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3

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	CO2	Analyze the features and operations of various protocols.	NA	NA	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	3
	CO3	Design and configure network for any business requirement	NA	NA	NA	NA	NA	NA	3	3	NA	NA	3	3	3	3
Data Structure Lab	CO1	Effectively select data structure model to be used for real world problem	3	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Build web application with effective storage mechanism for data	NA	NA	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
Web Application Lab	CO1	To study various linear and non-linear data structures.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO2	To provide knowledge for developing web applications using AJAX framework and open source tools.	3	3	3	NA	3	NA	3	3	NA	NA	3	NA	3	3

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	CO3	To conceptualize effective storage mechanisms for data and accessing it through web applications.	3	3	3	NA	3	NA	3	3	NA	NA	3	NA	3	3
		Average values for POs mapped	**2.9**	**2.8**	**2.5**	**2.2**	**2.9**	**2.7**	**2.8**	**3.0**	**3.0**	**NA**	**3.0**	**3.0**	**2.7**	**2.7**

MCA SEM-III_ACADEMIC YEAR_2019-2020(ODD SEM)First Shift

Sem III(2019-20)

Subject	COs	CO Description	POs													
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2
Database Management System	CO1	Understand various database concepts and apply them in real life applications.	3	3	3	NA	NA	NA	3	3	NA	NA	NA	3	3	NA
	CO2	Determine the manner in which data can be stored, organized and	NA	NA	3	NA	3	NA	3	3	NA	NA	NA	3	3	3

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		manipulated in a database system.														
	CO3	Apply various indexing and optimization techniques to process queries.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	CO4	Analyze and design database applications using suitable database techniques	NA	3	3	NA	NA	NA	3	3	NA	NA	NA	NA	3	3
Java Programming	CO1	Solve computational problems using basic constructs.	2	NA	NA	NA	NA	NA	2	2	NA	2	NA	NA	2	NA
	CO2	Find a solution for real world problems using Java	NA	NA	2	NA	2	NA	2	2	NA	2	NA	NA	2	2
	CO3	Develop Web Applications using Server Side Programming.	NA	NA	2	NA	2	2	2	2	NA	2	NA	NA	NA	2

Information Security	CO1	Understand the requirement of information security and clear understanding of its importance	NA	2	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	2	2
	CO2	Be familiar with information security threat and countermeasures, and familiar with information security design using available secure solution	2	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2
	CO3	Use database security mechanism , intrusion detection system formal models of security cryptography network and web security	2	NA	NA	NA	2	NA	2	NA	NA	NA	NA	NA	2	2
Operation Research	CO1	Apply Operations research methodology to a broad range of problems in business and industry.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3

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	CO2	Use mathematics and mathematical modelling using computers to forecast the implications of various choices.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
	CO3	Solve optimization problems.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
	CO4	Think of new methods for solving optimization problems.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
Software Testing & QA	CO1	Solve the problems using Software Testing techniques and Approaches.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	CO2	Apply various Software testing Techniques to find bugs in software.	NA	NA	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Use open source software Testing Tools.	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3

Management		corporate world.														
	CO2	Identify the Inputs, Tools and techniques to get the required Project deliverable and Product deliverable using 10 Knowledge areas of Project Management	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
	CO3	Implement Project Management Processes to successfully complete projects in the IT industry.	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
Computer Organization and Architecture	CO1	Design trade-offs Basic fundamentals in digital logic & structure of a digital computer.	3	2	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	Identify performance issues in processor and memory design of a digital compute	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

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		deliverable using 10 Knowledge areas of Project Management														
	CO3	Implement Project Management Processes to successfully complete projects in the IT industry.	NA	3	3	NA	NA	3	NA	3	3	3	3	NA	3	3
Computer Organization and Architecture	CO1	Design trade-offs Basic fundamentals in digital logic & structure of a digital computer.	3	2	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO2	Identify performance issues in processor and memory design of a digital compute	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA
	CO3	To Develop independent learning skills and be able to learn more about different computer architectures and hardware.	NA	2	3	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA

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	CO4	Apply various Software Quality Assurance Techniques to ensure the quality in Apply various Software Quality Assurance Techniques to ensure the quality in software.	NA	NA	NA	3		NA	NA	NA	NA	NA	NA	NA	NA	3
Database Management System Lab	CO1	Design database systems using available tools.	3	3	3	NA	NA	NA	3	3	NA	NA	NA	3	3	NA
	CO2	Develop applications using basic and modern database techniques as per organization requirements.	NA	NA	3	NA	3	NA	3	3	NA	NA	NA	3	3	3
Software Testing Lab	CO1	Demonstrate software testing tools	3	NA	NA	3	3	NA	3	NA	3	NA	NA	NA	NA	3
	CO2	Create test design documents and test reports	NA	3	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA
Java Program	CO1	Develop a simple software application	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3

ming Lab		using the object oriented approach.														
	CO2	Design and develop Java Web Applications.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
Unified Modeling Lab	CO1	Understand,developing,testing and debugging java program	NA	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Study UML tools	NA	3	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Explore object-oriented design using UML	NA	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
		Average values for POs mapped	2.7	2.8	2.9	3.0	2.7	2.5	2.8	2.6	3.0	2.0	NA	3.0	2.6	2.7

MCA SEM-III_ACADEMIC YEAR_2019-2020(ODD SEM)Second Shift															
Sem III(2019-20)															
Subject	COs	CO Description	POs												
			PO1	PO2	PO 3	PO4	PO5	PO6	PO7	PO 8	PO9	PO1 0	PO11	PO12	PSP O1	PSP O2

Database Management System	CO1	Understand various database concepts and apply them in real life applications.	NA	NA	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	3
	CO2	Determine the manner in which data can be stored, organized and manipulated in a database system.	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO3	Apply various indexing and optimization techniques to process queries.	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO4	Analyze and design database applications using suitable database techniques	NA	3	3	NA	NA	NA	3	3	NA	NA	NA	NA	3	3
Java Programming	CO1	Solve computational problems using basic constructs.	2	NA	NA	NA	NA	NA	2	2	NA	2	NA	NA	2	NA
	CO2	Find a solution for real world problems using Java	NA	NA	2	NA	2	NA	2	2	NA	2	NA	NA	2	2
	CO3	Develop Web Applications using Server Side Programming.	NA	NA	2	NA	2	2	2	2	NA	2	NA	NA	NA	2

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Information Security	CO1	Understand the requirement of information security and clear understanding of its importance	NA	2	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	2	2
	CO2	Be familiar with information security threat and countermeasures, and familiar with information security design using available secure solution	2	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	2
	CO3	Use database security mechanism , intrusion detection system formal models of security cryptography network and web security	2	NA	NA	NA	2	NA	2	NA	NA	NA	NA	NA	2	2
Operation Research	CO1	Apply Operations research methodology to a broad range of problems in business and industry.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
	CO2	Use mathematics and mathematical modelling using computers to forecast the implications of various	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3

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		choices.														
	CO3	Solve optimization problems.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
	CO4	Think of new methods for solving optimization problems.	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA	NA	3
Software Testing & QA	CO1	Solve the problems using Software Testing techniques and Approaches.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	CO2	Apply various Software testing Techniques to find bugs in software.	NA	NA	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Use open source software Testing Tools.	NA	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Apply various Software Quality Assurance Techniques to ensure the quality in Apply various Software Quality Assurance Techniques to ensure the quality in software.	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3

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Database Management System Lab	CO1	Design database systems using available tools.	3	3	3	NA	NA	NA	3	3	NA	NA	NA	3	3	NA
	CO2	Develop applications using basic and modern database techniques as per organization requirements.	NA	NA	3	NA	3	NA	3	3	NA	NA	NA	3	3	3
Software Testing Lab	CO1	Demonstrate software testing tools	3	NA	NA	3	3	NA	3	NA	3	NA	NA	NA	NA	3
	CO2	Create test design documents and test reports	NA	3	3	3	3	3	NA	NA	3	NA	NA	NA	NA	NA
Java Programming Lab	CO1	Understand,developing,testing and debugging java program	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
	CO2	Study UML tools	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
Unified Modeling Lab	CO2	Design and develop Java Web Applications.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
	CO1	Understand,developing,testing and debugging java program	NA	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Explore object-oriented design using UML	3	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	3	NA

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		Average values for POs mapped	**2.7**	**2.9**	**2.9**	**3.0**	**2.7**	**2.5**	**2.8**	**2.6**	**3.0**	**2.0**	**NA**	**3.0**	**2.7**	**2.8**

MCA SEM-IV_ACADEMIC YEAR_2019-2020(EVEN SEM)First Shift

Sem IV (2019-20)

Subject	COs	CO Description	POs													
			PO1	PO2	PO 3	PO4	PO5	PO 6	PO 7	PO8	PO 9	PO10	PO1 1	PO1 2	PSO1	PSO2
Data Mining & Business Intelligence	CO1	Understand Business Intelligence and Data Mining techniques	2	NA	NA	2	NA	NA	2	NA	NA	NA	NA	2	2	2
	CO2	Prepare Business Intelligence applications using Web Technologies	NA	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO3	Develop industry level data mining skills using software tools	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Make use of relevant theories, concepts and techniques to solve real-world BI problems	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	2	2

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Advanced Web Technology	CO1	Study the architecture of Dot Net framework	NA	NA	1	NA	1	NA	1	NA	NA	NA	NA	1	1	1
	CO2	Understand the basic principles of C# development	NA	NA	1	NA	1	NA	1	NA	NA	NA	NA	1	1	1
	CO3	Learn advanced windows and web development techniques using dotNET	NA	NA	1	NA	1	1	1	NA	NA	NA	NA	1	1	1
Computer Graphics	CO1	Understand the concepts of output primitives of Computer Graphics.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	NA
	CO2	Learn 2D and 3D graphics Techniques.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	NA
	CO3	Study various Image Processing techniques	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	1	NA
	CO4	Apply image processing techniques	3	3	NA	3	NA	NA	NA	NA	NA	NA	NA	1	1	NA
Ethics & CSR	CO1	Acquire knowledge of Ethics in the modern era	NA	NA	NA	NA	NA	1	NA	NA	NA	1	NA	NA	NA	1
	CO2	Understanding of Ethical decision making	NA	NA	NA	NA	NA	1	NA	NA	NA	1	NA	NA	NA	1

		approaches														
	CO3	Understand the scope and complexity of Corporate Social responsibility in the global and Indian context.	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3
Digital Forensics	CO1	Develop computer forensic awareness	NA	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Utilizing the knowledge for investigations in order to solve computer crime	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	NA	3	NA
	CO3	Perform best practices for incident response	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA	NA	3	NA
	CO4	Apply computer forensic tools for investigation	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA	NA	3	NA
AI & Soft Computing	CO1	Understand various AI concepts	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Solve the problems using neural networks techniques.	3	3	NA	3	NA	NA	NA	3	NA	NA	NA	NA	3	NA

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	CO3	Apply fuzzy logic techniques to find solutions to uncertain problems.	NA	3	3	3	NA	NA	3	3	NA	NA	NA	NA	3	3
	CO4	.Analyze the genetic algorithms and their applications	NA	3	3	3	NA	NA	3	3	NA	NA	NA	NA	NA	3
Advanced Web Technology Lab	LO1	Learn advanced windows and web development techniques using dotNET.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	NA	3	3
	LO2	Prepare Business Intelligence Applications using Web Technologies.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
DMBI Lab	LO1	Understand Business Intelligence and Data Mining techniques	3	3	3	3	3	NA	3	3	3	NA	NA	NA	3	3
	LO2	Prepare Business Intelligence applications using Web Technologies	3	3	3	3	3	NA	3	3	3	NA	NA	3	3	3
CG & IP Lab	LO1	Understand the concepts of output primitives of Computer Graphics.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA

	LO2	Learn 2 D and 3 D graphics Techniques.	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA	3	NA
	LO3	Study various Image Processing techniques	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA	3	NA
	LO4	Apply image processing techniques.	3	3	3	3	NA	NA	NA	NA	NA	NA	3	NA	3	NA
Soft Skill Developme nt Lab	LO1	Develop skills in communication, business correspondence, presentations, group discussions and interviews	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	NA	NA	NA
	LO2	Apply valuable strategies and interpersonal skills thereby making themselves more productive and better capable to lead others	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	3	NA	NA	NA
	LO3	Understand the importance of teamwork and learn to perform to the best of their ability, both individually and as team players	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	NA	NA	NA

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	Average values for POs mapped	2.9	2.9	2.9	2.9	2.9	3.0	2.9	3.0	3.0	3.0	3.0	2.9	2.9	2.9

MCA SEM-IV_ACADEMIC YEAR_2019-2020(EVEN SEM)Second Shift

Sem IV (2019-20)

Subject	COs	CO Description	POs													
			PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO8	PO 9	PO10	PO1 1	PO12	PSO 1	PSO2
Data Mining & Business Intelligence	CO1	Understand Business Intelligence and Data Mining techniques	NA	NA	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	3
	CO2	Prepare Business Intelligence applications using Web Technologies	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO3	Develop industry level data mining skills using software tools	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO4	Make use of relevant theories, concepts and techniques to solve	3	3	NA	NA	NA	NA	3	3	NA	NA	NA	NA	3	3

		real-world BI problems														
Advanced Web Technology	CO1	Study the architecture of Dot Net framework	NA	NA	3	NA	3	NA	3	NA	NA	3	NA	3	3	3
	CO2	Understand the basic principles of C# development	NA	NA	3	NA	3	NA	3	NA	NA	3	NA	3	3	3
	CO3	Learn advanced windows and web development techniques using dotNET	NA	NA	3	NA	3	3	3	NA	NA	3	NA	3	3	3
Computer Graphics	CO1	Understand the concepts of output primitives of Computer Graphics.	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO2	Learn 2D and 3D graphics Techniques.	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	3
	CO3	Study various Image Processing techniques	3	3	3	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	3
	CO4	Apply image processing techniques	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA	3
Ethics & CSR	CO1	Acquire knowledge of Ethics in the modern era	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3

	CO2	Understanding of Ethical decision making approaches	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3
	CO3	Understand the scope and complexity of Corporate Social responsibility in the global and Indian context.	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3
Digital Forensics	CO1	Develop computer forensic awareness	NA	NA	NA	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Utilizing the knowledge for investigations in order to solve computer crime	NA	NA	NA	3	3	NA	NA	NA	NA	3	NA	NA	3	NA
	CO3	Perform best practices for incident response	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA	NA	3	NA
	CO4	Apply computer forensic tools for investigation	NA	NA	NA	3	NA	NA	NA	NA	NA	3	NA	NA	3	NA
AI & Soft Computing	CO1	Identify and describe problems that are amenable to solution by AI methods.	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA

	CO2	Study appropriate soft computing techniques for problem solving	3	3	NA	3	NA	NA	NA	3	NA	NA	NA	NA	3	NA
	CO3	Study optimization techniques based on soft computing approach	NA	3	3	3	NA	NA	3	3	NA	NA	NA	NA	3	3
	CO4	Analyze the genetic algorithms and their applications	NA	3	3	3	NA	NA	3	3	NA	NA	NA	NA	NA	3
Advanced Web Technology Lab	LO1	Learn advanced windows and web development techniques using dotNET.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO2	Prepare Business Intelligence Applications using Web Technologies.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
DMBI Lab	LO1	Understand Business Intelligence and Data Mining techniques	3	3	3	3	3	NA	3	3	3	NA	NA	NA	3	3
	LO2	Prepare Business Intelligence applications using Web Technologies	3	3	3	3	3	NA	3	3	3	NA	NA	3	3	3

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CG & IP Lab	LO1	Understand the concepts of output primitives of Computer Graphics.	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	LO2	Learn 2 D and 3 D graphics Techniques.	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA	3	NA
	LO3	Study various Image Processing techniques	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA	3	NA
	LO4	Apply image processing techniques.	3	3	3	3	NA	NA	NA	NA	NA	NA	3	NA	3	NA
Soft Skill Development Lab	LO1	Develop skills in communication, business correspondence, presentations, group discussions and interviews	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	NA	NA	NA
	LO2	Apply valuable strategies and interpersonal skills thereby making themselves more productive and better capable to lead others	NA	NA	NA	NA	NA	3	NA	NA	NA	NA	3	NA	NA	NA

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	LO3	Understand the importance of teamwork and learn to perform to the best of their ability, both individually and as team players	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	NA	NA	NA
		Average values for POs mapped	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**

MCA SEM-V_ACADEMIC YEAR_2020-2021(ODD SEM)First Shift

Sem V (2020-21)

Subject	COs	CO Description	POs													
			PO1	PO2	PO3	PO4	PO 5	PO 6	PO7	PO8	PO 9	PO1 0	PO11	PO12	PSO1	PSO2
Wireless and Mobile Technology	CO1	Understand the concept of cellular communications, advantages and its limitations	3	-	-	3	-	-	3	-	-	3	-	-	3	3
	CO2	Compare the various wireless technologies and its applications	3	-	-	3	-	-	3	-	-	3	-	-	3	3

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	CO3	Apply the appropriate technology in the applications	3	-	-	3	-	-	3	-	-	3	-	-	3	3
Advanced Distributed Computing	CO1	Transform computational thinking from single system environment to distributed system environment	3	3	3	3	NA	NA	3	NA	3	NA	NA	NA	3	3
	CO2	Distinguish the difference between parallel and distributed computing	3		3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3
	CO3	Understand SOA architecture and its features	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	CO4	Identify different types of cloud and services and can demonstrate the importance of cloud security	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
User Experience Design	CO1	Understand and create interest in User Experience Design(UXD)	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA

	CO2	Analyze the framework and methodological approach for user experience design	NA	3	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	3	3
	CO3	Apply prototyping and problems solving techniques related to user experience design	NA	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO4	Design real life application with end-to-end understanding of User experience practices	NA	3	3	3	NA	NA	NA	NA	3	NA	3	NA	NA	3
Machine Learning	CO1	Analyze the Machine Learning techniques.	3	3	3	3		NA	NA	NA	NA	3	NA	NA	NA	3
	CO2	Apply regression, classification with AdaBoost and clustering methods to real world applications.	3	NA	3	3	NA	NA	3	NA	NA	NA	NA	NA	3	3
	CO3	Describe support vector machine, Dimensionality reduction, Anomaly Detection, Recommender	NA	NA	3	NA	NA	NA	3	NA	NA	3	NA	NA	3	

		Systems														
Internet of Things	CO1	To Understand the concepts of IOT	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Study IoT Architecture.	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Understanding the technologies used to build IoT applications.	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	3	NA
MIS	CO1	Understand theoretical aspects of Management Information Systems	NA	NA	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3
	CO2	Know the procedures and practices for performing information system planning and design.	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	3	3
	CO3	Gain knowledge in various Decision Support Systems	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3
	CO4	Understand the implications of Management Information Systems on business	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3

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Green Computing	CO1	Create awareness among stakeholders and promote green initiatives in their environments leading to a green movement.	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	3
	CO2	Adopt special skills such as knowledge about energy efficiency, ethical IT assets disposal, carbon footprint estimation.	NA	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	3	3
	CO3	Create eco-friendly environment	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	3	NA
Mobile Application Lab	LO1	Understand the entire Android Apps Development Cycle.	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	LO2	Apply the advanced android development techniques.	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3	3
	LO3	Conceptualize the design of user applications using User Experience Design.	NA	NA	3	NA	3	NA	NA	NA	NA	NA	NA	NA	3	3

User Experience Design Lab	CO1	Create real life applications with end-to-end understanding of User experience practices.	NA	NA	3	NA	NA	NA	NA	NA	3	NA	NA	NA	3	3
Open Source System For ADC	LO1	Design and Develop remote communication applications using Java Programming	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO2	Use remote objects for distributed computing and database access.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO3	Design and develop applications using Enterprise Java Beans.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO4	Implement process synchronization concepts.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO5	Establish knowledge on Cloud and Grid computing.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
		Average values for POs mapped	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**

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MCA SEM-V_ACADEMIC YEAR_2020-2021(ODD SEM)Second Shift

Sem V (2020-21)

Subject	COs	CO Description	POs													
			PO1	PO2	PO3	PO4	PO 5	PO 6	PO7	PO8	PO 9	PO1 0	PO11	PO12	PSO1	PSO2
Wireless and Mobile Technology	CO1	Understand the concept of cellular communications, advantages and its limitations	3	NA	NA	3	NA	NA	3	NA	NA	3	NA	NA	3	3
	CO2	Compare the various wireless technologies and its applications	3	NA	NA	3	NA	NA	3	NA	NA	3	NA	NA	3	3
	CO3	Apply the appropriate technology in the applications	3	NA	NA	3	NA	NA	3	NA	NA	3	NA	NA	3	3
Advanced Distributed Computing	CO1	Transform computational thinking from single system environment to distributed system environment	3	3	3	3	NA	NA	3	NA	3	NA	NA	NA	3	NA

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	CO2	Distinguish the difference between parallel and distributed computing	3	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3
	CO3	Understand SOA architecture and its features	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3
	CO4	Identify different types of cloud and services and can demonstrate the importance of cloud security	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
User Experience Design	CO1	Understand and create interest in User Experience Design(UXD)	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	3	NA
	CO2	Analyze the framework and methodological approach for user experience design	NA	3	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	3	3
	CO3	Apply prototyping and problems solving techniques related to user experience design	NA	3	3	3	3	NA	NA	NA	NA	NA	NA	NA	3	NA

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	CO4	Design real life application with end-to-end understanding of User experience practices	NA	3	3	3	NA	NA	NA	NA	3	NA	3	NA	NA	3
Machine Learning	CO1	Analyze the Machine Learning techniques.	3	3	3	3		NA	NA	NA	NA	3	NA	NA	NA	3
	CO2	Apply regression, classification with AdaBoost and clustering methods to real world applications.	3	NA	3	3	NA	NA	3	NA	NA	NA	NA	NA	3	3
	CO3	Describe support vector machine, Dimensionality reduction, Anomaly Detection, Recommender Systems	NA	NA	3	NA	NA	NA	3	NA	NA	3	NA	NA	3	
Internet of Things	CO1	To Understand the concepts of IOT	3	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA
	CO2	Study IoT Architecture.	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	3	NA
	CO3	Understanding the technologies used to build	3	3	NA	NA	NA	3	NA	NA	NA	NA	NA	NA	3	NA

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		IoT applications														
MIS	CO1	Understand theoretical aspects of Management Information Systems	NA	NA	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3
	CO2	Know the procedures and practices for performing information system planning and design.	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	NA	3	3
	CO3	Gain knowledge in various Decision Support Systems	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3
	CO4	Understand the implications of Management Information Systems on business	NA	3	3	NA	NA	NA	NA	3	NA	NA	NA	3	3	3
Green Computing	CO1	Create awareness among stakeholders and promote green initiatives in their environments leading to a green movement.	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	NA	3

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	CO2	Adopt special skills such as knowledge about energy efficiency, ethical IT assets disposal, carbon footprint estimation.	NA	NA	NA	NA	NA	NA	3	NA	NA	3	NA	NA	3	3
	CO3	Create eco-friendly environment	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	NA	NA	3	NA
Mobile Application Lab	LO1	Understand the entire Android Apps Development Cycle.	NA	NA	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	3
	LO2	Apply the advanced android development techniques.	NA	NA	NA	NA	3	NA	NA	NA	3	NA	NA	NA	3	3
	LO3	Conceptualize the design of user applications using User Experience Design.	NA	NA	3	NA	3	NA	NA	NA	NA	NA	NA	NA	3	3
User Experience Design Lab	CO1	Create real life applications with end-to-end understanding of User experience practices.	NA	NA	3	NA	5	NA	NA	NA	3	NA	NA	NA	3	3

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Open Source System For ADC	LO1	Design and Develop remote communication applications using Java Programming	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO2	Use remote objects for distributed computing and database access.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO3	Design and develop applications using Enterprise Java Beans.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO4	Implement process synchronization concepts.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
	LO5	Establish knowledge on Cloud and Grid Computing.	NA	NA	3	NA	3	NA	3	NA	NA	NA	NA	3	3	3
		Average values for POs mapped	**3.0**	**3.0**	**3.0**	**3.0**	**3.3**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**

Sem VI (2020-21)															
Subject	**COs**	**CO Description**	**POs**													
			PO	**PO2**	**PO3**	**PO4**	**PO**	**PO**	**PO**	**PO**	**PO9**	**PO1**	**PO11**	**PO1**	**PSO**	**PSO2**

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			1				5	6	7	8		0		2	1	
Internship Project	CO1	Attain an exposure to real life organizational and environmental situations	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO2	Attain technical skills as per the requirements of the domain	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO3	Adapt professional and interpersonal ethics.	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO4	Articulate SDLC phases in developing software projects and in writing the project document.	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
Research paper	CO1	Write a research paper	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3
	CO2	Present data coherently and effectively, outcome and counter-hypothesis	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3
	CO3	Attain experience in preparation of research materials for publication or presentation	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3
		Average values for PO	**NA**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

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		mapped														

MCA SEM-VI_ACADEMIC YEAR_2020-2021(EVEN SEM)Second Shift

Sem VI (2020-21)

Subject	COs	CO Description	POs													
			PO 1	PO2	PO3	PO4	PO 5	PO 6	PO 7	PO 8	PO9	PO1 0	PO11	PO1 2	PSP O1	PSPO 2
Internship Project	CO1	Attain an exposure to real life organizational and environmental situations	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO2	Attain technical skills as per the requirements of the domain	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO3	Adapt professional and interpersonal ethics.	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
	CO4	Articulate SDLC phases in developing software projects and in writing the project document.	NA	NA	NA	NA	NA	3	3	3	3	3	3	NA	3	3
Research	CO1	Write a research paper	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3

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2.6.2-MCA-Additional Information-2018-19 batch - Google Docs

paper	CO2	Present data coherently and effectively, outcome and counter-hypothesis	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3
	CO3	Attain experience in preparation of research materials for publication or presentation	NA	3	3	3	3	3	NA	NA	NA	3	NA	3	3	3
		Average values for PO mapped	**NA**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

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			Average Mapping											
Sem	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
I Avg	2.80	2.76	2.63	2.74	3.00	3.00	2.97	2.55	2.95	3.00	2.75	2.42	2.99	3.00
II Avg	2.87	2.76	2.56	2.31	2.89	2.67	2.84	3.00	3.00	NA	3.00	3.00	2.66	2.67
III Avg	2.7	2.9	2.9	3.0	2.7	2.5	2.8	2.6	3.0	2.0	NA	3.0	2.7	2.8
IV Avg	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
V Avg	3.0	3.0	3.0	3.0	3.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
VI Avg	NA	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	**2.9**	**2.9**	**2.8**	**2.8**	**3.0**	**2.9**	**2.9**	**2.9**	**3.0**	**2.8**	**2.9**	**2.9**	**2.9**	**2.9**

1: Weak 2:Medium 3: Strong

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Ameya Parkar