PROGRAM OUTCOMES (POs)

Computer science and engineering graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex 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.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities norms of engineering practice.
9. **Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with engineering community and with society, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering 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.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO1: Apply the principles of basic Engineering Science and acquire the hardware and software aspects of Computer Science and Engineering.

PSO2: Ability to design and develop applications using various software and hardware tools to solve real world problems.

PSO3: Exhibit the practical competence using broad range of programming languages.

UNIVERSITY CURRICULUM

The Process used to identify the extent of compliance of University curriculum for attaining the Program Outcomes (POs) and Program Specific Outcomes (PSOs) stated below.

- The program curriculum of department categorized into various streams like basic sciences and humanities, basic engineering courses, professional core courses, management and elective courses.
- For each stream there are courses identified.
- For all courses respective course outcomes (COs) are defined.
- COs are mapped with POs and PSOs.

PROGRAM CURRICULUM

Basic Science and Humanities

The stream include courses like Engineering Mathematics, Engineering Physics, and Engineering Chemistry, Constitution of India & professional ethics and Environmental studies. These courses form the fundamental basis for all engineering disciplines, which provides basic knowledge on mathematics, physics, chemistry, Indian constitution, professional ethics and importance of environment.

Basic Engineering Courses

The stream include courses like Basic electronics, Basic electrical engineering, Programming in C, Computer aided engineering drawing, Elements of mechanical engineering and Elements of civil engineering. These courses provide the fundamental knowledge on all engineering disciplines.

Professional Core Courses

The stream include courses relevant to the specific program and are meant to develop competencies required so that students acquire outcomes as desired by the profession. The course studies include core courses like Data Structures with C, Software Engineering, Formal Languages & Automata Theory, Operating Systems, Database Management Systems, Advanced Computer Architecture, Web Programming etc. Project work and technical seminar are included in final year to provide opportunity for students to develop understanding of the inter relationship between courses, develop and demonstrate higher order skills, and to apply the gained knowledge.

Management Courses

The stream include courses like Management and Entrepreneurship. These are essential to create awareness on managerial & entrepreneurial skills.

Elective Courses

The stream includes courses like Operations Research, Java & J2EE, C# & .NET Framework, Information & Network Security, Clouds, Grids and Clusters, Software Testing, Web 2.0, Storage Area Networks etc.

Table2.1: Various streams of program curriculum (2018 Scheme)

Sl. No.	Streams	CODE	Curriculum Content (Number of Courses)	Total marks	POs	PSOs
1	Basic Science	BSC	8	800	1,2,6,7,8	-
2	Engineering Science course	ESC	8	800	1,2,3,5	1,3
3	Professional Core	PCC	30	3000	1,2,3,4,5,6,11,12	
4	Humanity and Social Science	HSMC	6	600	1,6,7,8,9,10,11,12	1,2,3
5	Non-credit mandatory course	NCMC	0	0	-	-
6	Professional Elective	PEC	4	400	1,2,3,4,5,7	1,2
7	Open Elective	OEC	2	200	1,2,3,4	2, 3
8	Mini-project	MP	1	100	1,2,3,4,5	3
9	Internship	INT	2	100	1,2,3,4,5,6	3
10	Project	Project	1	200	1,2,3,4,5,6,7	3
11	Seminar	Seminar	1	100	1,2,3,4,5,6,7	2, 3
		Total	**63**	**6300**	**1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12**	**1,2,3**
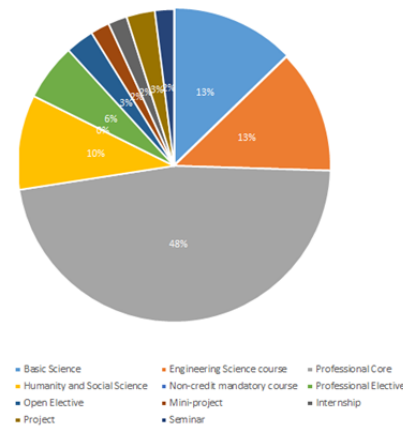
Figure 2.1: Curriculum chart for 2018 scheme.

Table2.2: Various streams of program curriculum (2015 Scheme)

Sl. No.	Streams	CODE	Curriculum Content (Number of Courses)	Total marks	POs	PSOs

1	**Basic Sciences & Humanities**	**BSH**	**12**	**1000**	**1,2,6,7,8**	**-**
2	**Basic Engineering Courses**	**BEC**	**8**	**800**	**1,2,3,5**	**1,3**
3	**Professional Core Courses**	**PCC**	**36**	**3700**	**1,2,3,4,5,6,11,12**	**1,2,3**
4	**Management Courses**	**MC**	**1**	**100**	**1,6,7,8,9,10,11, 12**	**-**
5	**Elective Courses**	**EC**	**7**	**700**	**1,2,3,4,5,7**	**1,2**
	Total		**64**	**6300**	**1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12**	**1,2,3**
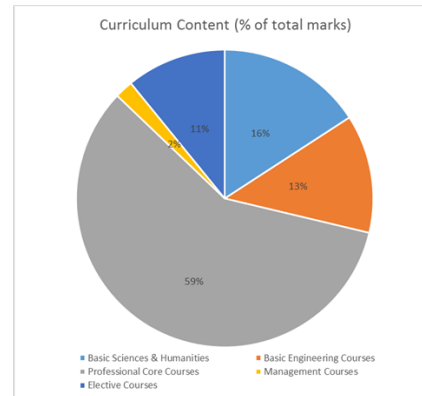
Figure 2.2: Curriculum chart for 2015 scheme.

Table2.3: Various streams of program curriculum (2010 Scheme)

Sl. No.	Streams	Curriculum Content (Number of Courses)	Total marks	POs	PSOs
1	Basic Sciences & Humanities	10	1050	1,2,6,7,8	-
2	Basic Engineering Courses	8	900	1,2,3,5	1,3
3	Professional Core Courses	38	4250	1,2,3,4,5,6,11,12	1,2,3
4	Management Courses	1	125	1,6,7,8,9,10,11, 12	-
5	Elective Courses	5	625	1,2,3,4,5,7	1
	All/Total	100% (62 courses)	6950	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1, 2,3
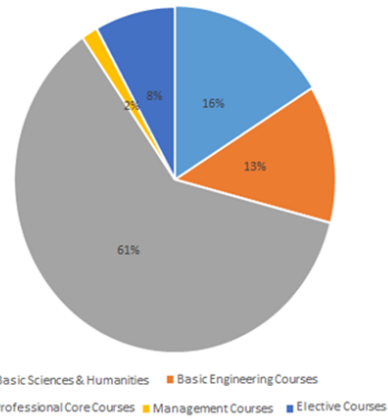
Figure 2.3: Curriculum chart for 2010 scheme.

2016-2020 Batch

CO	Subject Code	Subject Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
						First Semester								
C101	15MAT11	Engineering Mathematics-I	√	√										
C102	15CHE12 / 15CHE22	Engineering Chemistry	√	√										
C103	15PCD13 / 15PCD23	Programming in C & Data Structures	√	√	√	√	√	√	√		√			√
C104	15CED14 / 15CED24	Computer Aided Engineering Drawing	√	√	√	√	√				√		√	√
C105	15ELN15 / 15ELN25	Basic Electronics	√	√										
C106	15CPL16 / 15CPL26	Computer Programming Laboratory	√				√	√		√			√	√
C107	15CHEL17 / 15CHEL27	Engineering Chemistry Laboratory	√	√										
C108	15CIV18 / 15CIV28	Environmental Studies	√	√	√		√							√
						Second Semester								
C109	15MAT21	Engineering Mathematics-II	√	√										
C110	15PHY12 / 15PHY22	Engineering Physics	√	√	√		√		√					√
C111	15CIV13 / 15CIV23	Elements of Civil Engineering & Mechanics	√	√	√	√	√							
C112	15EME14 / 15EME24	Elements of Mechanical Engineering	√	√	√		√							

Course	Code	Course Name												
C113	15ELE15 / 15ELE25	Basic Electrical Engineering	√	√									√		
C114	15WSL16 / 15WSL26	Workshop Practice	√	√	√	√	√								
C115	15PHYL17 / 15PHYL27	Engineering Physics Laboratory	√	√	√	√	√	√	√		√	√			
C116	15CPH18 / 15CPH28	Constitution of India, Professional Ethics & Human Rights	√	√	√	√	√	√	√		√				√
Third Semester															
C201	15MAT31	Engineering Mathematics – III	√	√											
C202	15CS32	Analog and Digital Electronics	√	√	√		√								√
C203	15CS33	Data Structures and Applications	√	√	√										
C204	15CS34	Computer Organization	√	√											
C205	15CS35	Unix and Shell Programming	√	√		√									√
C206	15CS36	Discrete Mathematical Structures	√	√											
C207	15CSL37	Analog and Digital Electronics Lab	√	√	√		√								√
C208	15CSL38	Data Structures Laboratory	√	√	√										
C209	15MATDIP31	Additional Mathematics-I	√	√											
Fourth Semester															
C210	15MAT41	Engineering Mathematics-IV	√	√											
C211	15CS42	Software Engineering	√	√	√					√					√
C212	15CS43	Design and Analysis of Algorithms	√	√	√									√	
C213	15CS44	Microprocessors and Microcontrollers	√	√											
C214	15CS45	Object Oriented Concepts	√	√	√										
C215	15CS46	Data Communication	√	√		√									
C216	15CSL47	Design and Analysis of Algorithm Laboratory	√	√	√										√
C217	15CSL48	Microprocessors Laboratory	√	√			√				√	√			
C218	15MATDIP41	Additional Mathematics-II	√	√											
Fifth Semester															
C301	15CS51	Management & Entrepreneurship for IT Industry	√	√				√	√	√	√	√	√	√	√

Course	Code	Subject	1	2	3	4	5	6	7	8	9	10	11	12
C302	15CS52	Computer Networks	√	√		√	√					√	√	
C303	15CS53	Database Management System	√		√		√					√	√	
C304	15CS54	Automata Theory and Computability	√	√	√			√			√	√	√	√
C305	15CS553	Advanced JAVA and J2EE	√	√	√									
C306	15CS563	Embedded Systems	√	√	√									
C307	15CSL57	Computer Network Laboratory	√	√		√	√							√
C308	15CSL58	DBMS Laboratory with Mini Project	√		√		√							

Sixth Semester

Course	Code	Subject	1	2	3	4	5	6	7	8	9	10	11	12
C309	15CS61	Cryptography, Network Security and Cyber Law	√	√		√								
C310	15CS62	Computer Graphics and Visualization	√	√								√		√
C311	15CS63	System Software and Compiler Design	√	√	√		√							
C312	15CS64	Operating Systems	√	√			√							
C313	15CS654	Distributed Computing System	√	√								√		√
C314	15CS664	Python Application Programming	√	√										√
C315	15CSL67	System Software & Operating System Laboratory	√	√			√							
C316	15CSL68	Computer Graphics Laboratory with Mini Project	√	√								√		√

Seventh Semester

Course	Code	Subject	1	2	3	4	5	6	7	8	9	10	11	12
C401	15CS71	Web Technology and its applications	√	√	√									√
C402	15CS72	Advanced Computer Architectures	√	√	√									√
C403	15CS73	Machine Learning	√	√	√	√	√							
C404	15CS742	Cloud Computing and its Applications	√	√	√									√
C405	15CS754	Storage Area Networks	√	√	√								√	√
C406	15CSL76	Machine Learning Laboratory	√	√	√						√			√
C407	15CSL77	Web Technology Laboratory with Mini Project	√	√	√									√

CO	Subject Code	Subject Name												
C408	15CSP78	Project Phase - I + Seminar	√	√	√	√	√	√	√	√	√		√	√
Eighth Semester														
C409	15CS81	Internet of Things and Applications	√	√		√								
C410	15CS82	BIG Data Analytics	√	√	√	√								
C411	15CS832	User Interface Design	√	√	√									√
C412	15CS833	Network Management	√	√		√	√							√
C413	15CS84	Internship-Professional Practice	√	√			√				√	√		
C414	15CSP85	Project Work Phase – II	√	√	√	√	√	√	√	√	√	√	√	√
C415	15CSS86	Seminar	√	√		√				√		√		√
			65	62	34	18	25	08	07	06	12	12	10	29

CO	Subject Code	Subject Name	PSO1	PSO2	PSO3
First Semester					
C101	15MAT11	Engineering Mathematics-I			
C102	15CHE12 / 15CHE22	Engineering Chemistry	√		
C103	15PCD13 / 15PCD23	Programming in C & Data Structures			
C104	15CED14 / 15CED24	Computer Aided Engineering Drawing			
C105	15ELN15 / 15ELN25	Basic Electronics			
C106	15CPL16 / 15CPL26	Computer Programming Laboratory			
C107	15CHEL17 / 15CHEL27	Engineering Chemistry Laboratory	√	√	
C108	15CIV18 / 15CIV28	Environmental Studies	√	√	√
Second Semester					
C109	15MAT21	Engineering Mathematics-II			
C110	15PHY12 / 15PHY22	Engineering Physics			
C111	15CIV13 / 15CIV23	Elements of Civil Engineering & Mechanics			
C112	15EME14 / 15EME24	Elements of Mechanical Engineering	√	√	
C113	15ELE15 / 15ELE25	Basic Electrical Engineering			
C114	15WSL16 / 15WSL26	Workshop Practice			
C115	15PHYL17 / 15PHYL27	Engineering Physics Laboratory	√	√	√
C116	15CPH18 / 15CPH28	Constitution of India, Professional Ethics & Human Rights			
Third Semester					

C201	15MAT31	Engineering Mathematics – III			
C202	15CS32	Analog and Digital Electronics	√	√	√
C203	15CS33	Data Structures and Applications	√	√	
C204	15CS34	Computer Organization	√	√	
C205	15CS35	Unix and Shell Programming	√	√	
C206	15CS36	Discrete Mathematical Structures	√	√	
C207	15CSL37	Analog and Digital Electronics Lab	√	√	
C208	15CSL38	Data Structures Laboratory	√	√	
C209	15MATDIP31	Additional Mathematics-I			
Fourth Semester					
C210	15MAT41	Engineering Mathematics-IV			
C211	15CS42	Software Engineering	√		
C212	15CS43	Design and Analysis of Algorithms	√	√	
C213	15CS44	Microprocessors and Microcontrollers	√	√	
C214	15CS45	Object Oriented Concepts	√	√	
C215	15CS46	Data Communication	√	√	
C216	15CSL47	Design and Analysis of Algorithm Laboratory	√	√	
C217	15CSL48	Microprocessors Laboratory		√	
C218	15MATDIP41	Additional Mathematics-II			
Fifth Semester					
C301	15CS51	Management & Entrepreneurship for IT Industry		√	√
C302	15CS52	Computer Networks		√	√
C303	15CS53	Database Management System		√	√
C304	15CS54	Automata Theory and Computability			
C305	15CS553	Advanced JAVA and J2EE	√	√	
C306	15CS563	Embedded Systems	√	√	
C307	15CSL57	Computer Network Laboratory		√	
C308	15CSL58	DBMS Laboratory with Mini Project			
Sixth Semester					
C309	15CS61	Cryptography, Network Security and Cyber Law	√	√	
C310	15CS62	Computer Graphics and Visualization	√		
C311	15CS63	System Software and Compiler Design	√	√	√
C312	15CS64	Operating Systems	√	√	

C313	15CS654	Distributed Computing System	√		
C314	15CS664	Python Application Programming	√	√	
C315	15CSL67	System Software & Operating System Laboratory	√	√	
C316	15CSL68	Computer Graphics Laboratory with Mini Project	√		
Seventh Semester					
C401	15CS71	Web Technology and its applications	√	√	√
C402	15CS72	Advanced Computer Architectures	√	√	√
C403	15CS73	Machine Learning	√	√	√
C404	15CS742	Cloud Computing and its Applications	√	√	√
C405	15CS754	Storage Area Networks	√	√	√
C406	15CSL76	Machine Learning Laboratory	√	√	√
C407	15CSL77	Web Technology Laboratory with Mini Project	√	√	√
C408	15CSP78	Project Phase - I + Seminar	√	√	
Eighth Semester					
C409	15CS81	Internet of Things and Applications	√	√	
C410	15CS82	BIG Data Analytics	√	√	
C411	15CS832	User Interface Design	√	√	√
C412	15CS833	Network Management	√	√	√
C413	15CS84	Internship-Professional Practice	√	√	
C414	15CSP85	Project Work Phase – II	√	√	
C415	15CSS86	Seminar	√	√	
			44	43	16

CURRICULAR GAPS

The courses and the course content prescribed in the curriculum are mapped to the relevant POs and PSOs through individual course outcomes (COs). Curriculum gaps are identified through consolidation of average CO – PO/PSO mapping of all courses. The identified curricular gaps are as listed below.

Gap Identification

Table2.4: Course Gaps Identified and action plan.

Course with Code	Gap Description	POs and PSOs to be covered	Proposed Action

Gap 1: Data Structures with C	Use of hashing techniques	PO1, PO2, PO3, PO12, PSO1	Guest Lecture
Gap 2: UNIX & Shell programming	No Hands-on experience	PO1, PO2, PO3, PO12, PSO2	Additional Lab
Gap 3: Software Engineering	Testing Tools	PO1, PO2, PO3, PO4, PO5, PO11, PSO1	Hands on Experience
Gap 4: JAVA & J2EE	No Hands-on experience for concepts	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Workshop
Gap 5: C# Programming and .NET	No Hands-on experience for concepts	PO2, PO3, PO4, PO5, PO6, PO12, PSO1	Additional lab

2019-20

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	GAP3	Workshop	17/08/2019	Mr. Rajesh S P, Software Architect, Intel Technology India Pvt Ltd	90	PO1,PO2,PO3
2	GAP2	Guest Lecture	23/08/2019	Mr. Girish H R, Founder & Director, Skodem Technologies Pvt Ltd	80	PO6,PO7,PO8,PSO2
3	GAP4	Technical Seminar	24/08/2019	Mr. Santoshkumar R Navi, Network Security Engineer, QOS Technology	91	PO1, PO3, PO12
4	GAP1	Guest lecture	15/02/2020	Mr. Vasu, System Lead, CSC	90	PO1,PO2,PO3
5	GAP5	Guest Lecture	15/02/2020	Mr. Darshan, System Lead, CSC	90	PO1,PO2,PO3
6	GAP1	Technical Talk	2503/2019	Mrs. Sahana Kumarswamy, Software Lead, INFOSYS, India	90	PO1,PO2,PO3

2018-19

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	GAP1	Guest Lecture	27/10/2018	Mr. Shiv Kumar M., Sr. Manager , HR and OCM, LOWE'S, India	80	PO1,PO2,PO3
2	GAP3	Technical Talk	19/02/2019	Mr. Sridhar, Technical Lead, CSC	90	PO6,PO7,PO8,PSO2
3	GAP4	Workshop	08/12/2018	Mr. Rajesh S P, Software Architect, Intel Technology India Pvt Ltd	93	PO1,PO2,PO3

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Gap 5	Industrial Visit	26/4/2018	Neubotz Technologies Pvt Ltd, Bangalore	90	PO6, PO7, PO8, PSO3
2	Gap 3	Technical Talk	21/3/2018	Technical Talk was conducted for 5th semester B.E.(CSE) students on Testing Tools for 5th Sem Students from Santhosh, Trainer, Neubotz Technologies Pvt Ltd, Bangalore	85	PO1, PO2, PO3, PO4, PO5, PO11, PO12
3	Gap 4	Guest Lecture	7/3/2018	Technical Talk was conducted for 5th semester B.E.(CSE) students on Advanced Java from Sri. Chiranjeevi, Software Engineer, Applicate IT Solutions, RT Nagar, Bangalore On Saturday and Sunday During Sep/Oct 2018	80	PSO1
4	Gap 2	Additional Lab	2/3/2018	NA	90	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1
5	Gap 3	Workshop	3/11/2017	NA	90	PO1, PO3, PO12
6	Gap 5	Additional Lab	25/10/2017	NA	88	PSO2
7	Gap 4	Seminar	7/10/2017	Technical Talk was conducted for 5th semester B.E.(CSE) students on Advanced Java from Sri. Chiranjeevi, Software Engineer, Applicate IT Solutions, RT Nagar, Bangalore On Saturday and Sunday During Sep/Oct 2018	80	PO1, PO2, PO3, PO4, PO5, PO12, PSO1
8	Gap 3	Expert Lecture	18/11/2017	Guest lecture was conducted for 3rd year B.E.(CSE) Students on "Latest trends in Database Management Systems" on 18-11-2017 from. Prof. Prasanna Kumar, Asst. Prof. Dept. of CSE, SIT, Tumkur.	82	PO1, PO2, PO3, PO4, PO5, PO6, PO12, PSO1
9	Gap 1	Guest Lecture	8/9/2017	Prof. A. M. Padma Reddy, Dean Student affairs and Professor, Department of CSE, SVIT, Bengaluru has delivered a key note address on "Problem Solving in Data Structures with C" in Techyugam-2K18	92	PO1, PO2, PO3, PO4, PO5, PO12, PSO1

Kalpataru Vidya Samsthe (R) Estd: 1961

KALPATARU INSTITUTE OF TECHNOLOGY

(Affiliated to Visvesvaraya Technological University, Belgaum & Recognised by A.I.C.T.E., New Delhi)

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COURSE OUTCOMES AND PROGRAM OUTCOMES

Define the Program specific outcomes

Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs)

:

PSO1	Apply the principles of basic Engineering Science and acquire the hardware and software aspects of Computer Science and Engineering
PSO2	Ability to design and develop applications using various software and hardware tools to solve real world problems
PSO3	Exhibit the practical competence using broad range of programming languages

Course Name :		C2 02	Course Year :		2017-2018

Items		2020-21
C2	02.1	Should be able to describe the operation of JFET, MOSFET and solve problems based on FET biasing, & analyze OP-AMP and their applications.
C2	02.2	Describe and analyze combinational logic circuits, and to simplify algebraic equations using K-Map, QM method, MEV method and HDL implementation models.
C2	02.3	Analyze the operation of encoders decoders, multiplexers, adders, subtractors and design the Boolean expression using multiplexers, decoders, PLA, PAL.
C2	02.4	Should be able to describe and analyze the working of latches, flip flops and design registers, and counters.
C2	02.5	Describe and analyze different types of A/D converters & D/A converters

Course Name :		C2 11	Course Year :		2017-2018

Items		2020-21
C2	11.1	Explain the basic concepts of software engineering, the process models, to analyze the software requirement design and documentation and to assess the professional and ethical responsibility.
C2	11.2	Understand the various system models and to use the object oriented design principles using UML.
C2	11.3	Understand and apply various testing methods and also the evolution and maintenance phase of software engineering.
C2	11.4	Able to manage a project including planning, scheduling and to construct a software of high quality.
C2	11.5	Understand the various agile software development methods and agile project management

Course Name :		C3 01	Course Year :		2018-2019

Items		2020-21
C3	01.1	Understand the meaning, scope, development of management thoughts and to analyze the objectives of planning process, types of organization and staffing.
C3	01.2	Understand the meaning of directing, Leadership styles, motivation theories, communication and to establish controlling methods.
C3	01.3	Understand the meaning and function of Entrepreneur, the role of Entrepreneur in the economical development and to identify business opportunities along with feasibility studies.
C3	01.4	Understand the procedure to prepare project report & to study Enterprise Resource Planning.
C3	01.5	Understand the Micro and small enterprise and to Infer the importance of intellectual property rights and relate the institutional support.

Course Name :		C3 09	Course Year :		2018-2019

Items		2020-21
C3	09.1	Discuss the concept of mathematical background and preliminary concept of cryptography
C3	09.2	Learning the conception of public key and key exchange protocols and attacking the cipher systems
C3	09.3	Understand the concept of Digital Certificates, authentication and access control protocol

C3	09.4	Learning the standards and benchmarks and protocols of security
C3	09.5	Understand the knowledge about IT act. and cyber regulations

Course Name :		C4 01		Course Year :		2019-2020

Items		2020-21
C4	01.1	Adapt HTML and CSS syntax and semantics to build web pages
C4	01.2	Construct and visually format tables and forms using HTML and CSS
C4	01.3	Understand and develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically
C4	01.4	Understand the principles of object oriented development using PHP
C4	01.5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features

Course Name :		C4 09		Course Year :		2019-2020

Items		2020-21
C4	09.1	Assess the genesis, impact of IoT and its applications, architectures in real world
C4	09.2	Illustrate various methods of deploying smart objects and connect them to network
C4	09.3	Understand the IoT network layer, transport layer and application layer
C4	09.4	Infer the role of Data Analytics and Security in IoT.
C4	09.5	Identify sensor technologies for sensing real world entities and understand the role of IoT in various domains of Industry

CO-PO matrices of courses selected one per semester from 3rd to 8th semester)

1 . course name : C202

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C202.1	-	-	-	-	-	-	-	-	-	-	-	3
C202.2	2	2	-	-	-	-	-	-	-	-	-	-
C202.3	-	-	3	-	2	-	-	-	-	-	-	-
C202.4	3	3	3	-	-	-	-	-	-	-	-	-
C202.5	-	-	2	-	2	-	-	-	-	-	-	-
Average	3.00	2.50	2.67	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00

2 . course name : C211

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C211.1	-	-	-	-	-	-	-	-	-	-	-	2
C211.2	-	-	-	-	-	-	-	2	-	-	-	2
C211.3	3	3	-	-	-	-	-	-	-	-	-	2
C211.4	-	-	3	-	-	-	-	-	-	-	-	2
C211.5	-	-	-	-	-	-	-	2	-	-	-	-
Average	2.67	3.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00

3 . course name : C301

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C301.1	2	2	-	-	-	-	2	2	-	-	-	-
C301.2	-	-	-	-	-	2	2	2	-	2	-	-
C301.3	2	2	-	-	-	3	-	-	2	-	-	2
C301.4	2	2	-	-	-	-	-	-	-	2	2	-
C301.5	2	2	-	-	-	2	2	-	-	2	2	-
Average	2.00	2.00	0.00	0.00	0.00	2.33	2.00	2.00	2.00	2.00	2.00	2.00

4 . course name : C309

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

C309.1	-	-	-	-	-	-	-	-	-	-	-	-
C309.2	-	-	-	-	-	-	-	-	-	-	-	-
C309.3	3	3	-	-	-	-	-	-	-	-	-	-
C309.4	-	-	-	3	-	-	-	-	-	-	-	-
C309.5	-	-	-	-	-	-	-	-	-	-	-	-
Average	2.33	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5 . course name : C401

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C401.1	1	1	2	-	-	-	-	-	-	-	-	1
C401.2	2	2	2	-	-	-	-	-	-	-	-	2
C401.3	3	3	3	-	-	-	-	-	-	-	-	3
C401.4	2	2	2	-	-	-	-	-	-	-	-	2
C401.5	2	2	2	-	-	-	-	-	-	-	-	2
Average	2.00	2.00	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00

6 . course name : C409

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C409.1	-	-	-	-	-	-	-	-	-	-	-	-
C409.2	-	-	-	-	-	-	-	-	-	-	-	-
C409.3	3	3	-	-	-	-	-	-	-	-	-	-
C409.4	-	-	-	3	-	-	-	-	-	-	-	-
C409.5	3	3	-	-	-	-	-	-	-	-	-	-
Average	3.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1 . Course Name : C202

Course	PSO1	PSO2	PSO3
C202.1	2	-	-
C202.2	2	-	-
C202.3	-	3	-
C202.4	-	2	-
C202.5	-	-	2
Average	2.00	2.50	2.00

2 . Course Name : C211

Course	PSO1	PSO2	PSO3
C211.1	3	-	-
C211.2	-	-	-
C211.3	-	-	-
C211.4	-	-	-
C211.5	-	-	-
Average	3.00	0.00	0.00

3 . Course Name : C301

Course	PSO1	PSO2	PSO3
C301.1	-	-	-
C301.2	-	2	-
C301.3	-	-	2
C301.4	-	1	-
C301.5	-	-	-
Average	0.00	1.50	2.00

4 . Course Name : C309

Course	PSO1	PSO2	PSO3
C309.1	2	2	-
C309.2	3	-	-

Course			
C309.3	3 ⌄	- ⌄	- ⌄
C309.4	2 ⌄	- ⌄	- ⌄
C309.5	2 ⌄	- ⌄	- ⌄
Average	**2.40**	**2.00**	**0.00**

5 . Course Name : C401

Course	PSO1	PSO2	PSO3
C401.1	- ⌄	1 ⌄	2 ⌄
C401.2	- ⌄	- ⌄	1 ⌄
C401.3	- ⌄	- ⌄	- ⌄
C401.4	3 ⌄	- ⌄	1 ⌄
C401.5	3 ⌄	- ⌄	- ⌄
Average	**3.00**	**1.00**	**1.33**

6 . Course Name : C409

Course	PSO1	PSO2	PSO3
C409.1	3 ⌄	- ⌄	- ⌄
C409.2	3 ⌄	- ⌄	- ⌄
C409.3	- ⌄	3 ⌄	- ⌄
C409.4	3 ⌄	3 ⌄	- ⌄
C409.5	- ⌄	- ⌄	- ⌄
Average	**3.00**	**3.00**	**0.00**

A Program level Course-PO matrix of all courses INCLUDING first year courses

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	2.5	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C102	2	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103	2.5	2	1.5	1	1.33	1.33	3	PO8	2.5	PO10	PO11	1
C104	3	2.75	2.50	2.25	1	PO6	PO7	PO8	1	PO10	1	1
C105	2.67	2.50	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C106	1.75	PO2	PO3	PO4	1	1.75	PO7	1.75	PO9	PO10	1	1
C107	2	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C108	3	3	3	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	3
C109	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C110	2.5	1.5	1.5	PO4	2	PO6	1.5	PO8	PO9	PO10	PO11	1
C111	3	2.67	3	3	3	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C112	3	3	2	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C113	3	2.25	PO3	PO4	PO5	PO6	PO7	PO8	2	PO10	PO11	PO12
C114	3	2.67	3	3	3	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C115	2	1	2	3	3	2	1.5	PO8	1.5	1.5	PO11	PO12
C116	2.5	2	1.5	1	1.33	1.33	3	PO8	2.5	PO10	PO11	1
C201	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C202	3	2.5	2.67	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	3
C203	2	3	2.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204	2.5	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205	2.5	2.67	PO3	2.5	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C206	2.6	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C207	3	3	3	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	3
C208	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C209	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210	2.75	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C211	2.67	3	3	PO4	PO5	PO6	PO7	2	PO9	PO10	PO11	2
C212	2	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	2	PO12
C213	2.67	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C214	2	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C215	2.33	3	PO3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	2	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C217	3	3	PO3	PO4	3	PO6	PO7	PO8	3	2	PO11	1
C218	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C301	2	2	PO3	PO4	PO5	2.33	2	2	2	2	2	2
C302	2	2	PO3	2	2	PO6	PO7	PO8	PO9	2	2	PO12

C303	2.5	PO2	3	PO4	2.25	PO6	PO7	PO8	PO9	2	3	PO12
C304	3	PO2	3	2.6	2.6	1.8	PO7	1	PO9	1	2	PO12
C305	3	2	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306	2.33	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306	2.33	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C307	2.33	2.33	PO3	2.33	2.33	PO6	PO7	PO8	PO9	PO10	PO11	2.33
C308	2.25	PO2	2.25	PO4	2.25	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C309	2.33	3	PO3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C310	2.33	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	3	PO11	2
C311	2.67	2	2.25	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312	2	2.5	PO3	PO4	2.5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C313	2.33	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	3	PO11	2
C314	2.67	2.50	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C315	3	1.5	PO3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C316	2.5	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	3	PO11	2
C401	2	2	2.2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C402	1.8	2.2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.2
C403	2	1.8	1.8	1.8	2	1.4	PO7	PO8	PO9	PO10	PO11	PO12
C404	2	1.6	1.8	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.8
C405	2	2.5	1.75	PO4	PO5	PO6	PO7	PO8	PO9	PO10	2.4	1.8
C406	2.75	2.75	2.5	PO4	PO5	PO6	PO7	PO8	2.25	PO10	PO11	2.5
C407	2.5	2.25	2.25	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.5
C408	3	3	3	2.5	2	3	3	3	3	PO10	2.5	3
C409	3	3	PO3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C410	2.5	3	2.5	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411	2	1.60	1.80	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.8
C412	3	2.5	PO3	3	2	PO6	PO7	PO8	PO9	PO10	PO11	2
C413	2.5	3	PO3	PO4	3	PO6	PO7	PO8	3	3	PO11	PO12
C414	3	3	3	3	3	2.5	2	3	3	2.33	2.25	2.5
C415	2.5	3	PO3	2	PO5	PO6	PO7	3	PO9	3	PO11	3

B Program level Course-PSO matrix of all courses INCLUDING first year courses   :

Course	PSO1	PSO2	PSO3
C101	0	0	0
C102	1.75	0	0
C103	0	0	0
C104	0	0	0
C105	0	0	0
C106	0	0	0
C107	2.00	2.00	2.00
C108	2.00	2.00	2.00
C109	0	0	0
C110	0	0	0
C111	0	0	0
C112	3.00	2.50	0
C113	0	0	0
C114	0	0	0
C115	3.00	1.67	2.00
C116	0	0	0
C201	0	0	0
C202	2.00	2.50	2.00
C203	2.33	2.67	0
C204	3.00	2.33	0
C205	2.33	1.76	0
C206	2.33	2.00	0
C207	2.00	2.00	0
C208	2.67	2.50	0
C209	0	0	0
C210	0	0	0
C211	3.00	0	0
C212	3.00	3.00	0
C213	2.33	3.00	0
C214	2.67	2.67	0

C215	2.33	2.67	0
C216	2.00	3.00	0
C217	0	3.00	0
C218	0	0	0
C301	0	1.50	2.00
C302	0	1.50	2.00
C303	0	2.00	2.00
C304	1.6	1.00	1.4
C305	2.75	3.00	0
C306	2.50	3.00	0
C307	0	2.00	0
C308	0	0	0
C309	2.4	2.00	0
C310	2.0	0	0
C311	2.5	2.0	3.0
C312	3.0	3.0	0
C313	2.0	0	0
C314	2.20	2.33	0
C315	2.0	1.0	0
C316	2.0	0	0
C401	3.0	1.0	1.33
C402	2.0	1.0	1.5
C403	2.0	1.0	1.5
C404	1.5	2.0	1.5
C405	2.0	2.0	1.0
C406	2.0	1.0	1.0
C407	1.50	1.67	1.00
C408	3.00	3.00	0
C409	3.00	3.00	0
C410	2.00	3.00	0
C411	1.50	2.00	1.50

C412	3.00	2.50	2.00
C413	2.00	2.50	0
C414	2.80	2.40	0
C415	2.00	3.00	0