



2025 Sem-I

Student Information

Manual

CSE



Student Information Manual (SIM)

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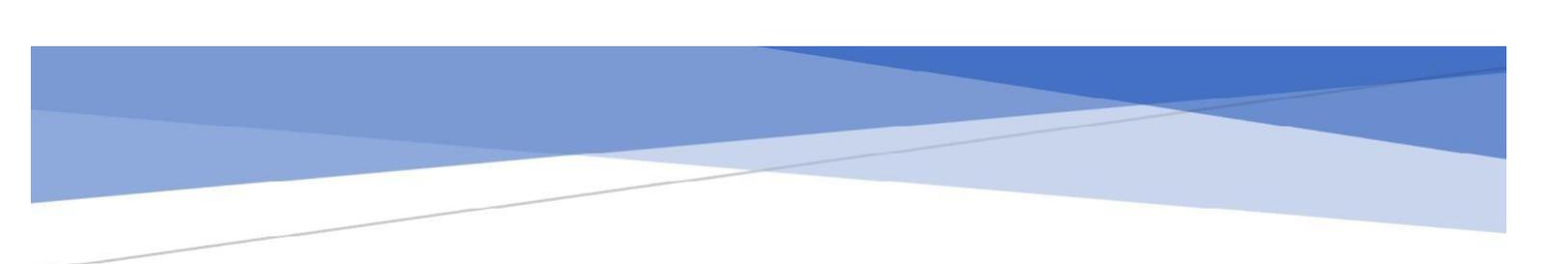
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INSTITUTE INFORMATION

Dr J. J. Magdum College of Engineering was established by Dr J. J. Magdum Trust, Jaysingpur in the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech program in Mechanical, Civil, Computer Science Engineering, Electronics.

Our Management extends its fullest support in building the institution as a center of excellence with technically superior, ethically strong and competent engineers.

The serene campus vibrant with aesthetic bliss in an exhilarating convenient location, well connected by road, rail and air is easily accessible. The eco-friendly ambience creates and bestows a healthy learning atmosphere.

The institution is meticulous with modern laboratory, workshop facilities and state of art computer center providing an excellent infrastructure.



The institution has spacious library with vast collection of Books, Newspapers, National & International Journals, Magazines, Reference books, Encyclopedia, World of science, ASM hand books and course materials. E-learning through NPTEL Video course by NIT and IIT Professors are available.

The Teaching and Non-Teaching Staff of the institute is a blend of senior experienced and young dynamic faculty members devoted to the noble cause of education. Qualified, experienced, versatile and efficient faculty members mold the students diligently in ethical, moral and academic aspects.

We impart technology based experiential learning through industry visits, live projects, expert talks, MOOC's, workshops, case studies, upscale labs, and virtual classroom sessions.

Industry-Institute interaction and real-time projects nurture and craft the budding engineers to bloom and flourish in the field with the prowess guidance in the campus. The college equips the students with the latest skills which make them employable and future ready.

Due to able and proper guidance and motivation, many of our students have topped at University. Our training and placement work meticulously to improve and develop life skills to the students and tries hard to seek good jobs for our students. In addition to the academics, the students are engaged in sports and cultural activities which helps them to develop versatile personality. Various Club activities are conducted to encourage, motivate and inspire students from diverse culture to harness the talent through their perseverance.

The institute is having spacious ground and the modern facilities for both indoor and outdoor games and ultra-modern Gymnasium. Due to proper guidance and motivation, many of our students have grabbed prizes at University level and different sport events.

We are committed to stakeholders for best results and produced more than 10000+ engineers getting campus placements.



VISION OF INSTITUTE

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.



MISSION OF INSTITUTE

- To produce competent technocrats to meet modern societal and industrial challenges.
- To create ethical and skilled human resources through quality education and various extension activities and outreach programs.
- To leverage technical expertise to solve societal issues for its sustainable development.



VISION OF DEPARTMENT

To be the front runner in the field of computer science and engineering to create skilled, knowledgeable and ethical professionals for development of society.



MISSION OF DEPARTMENT

- To provide quality education with smart tools to face challenges of industry and society.
- To create ethical human resource to provide service to the community.
- To associate with industry for giving opportunities to students to develop their employability and entrepreneur skills.



PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)

The Computer Science and Engineering Department strives for excellence in creating, applying and imparting knowledge in computer science and engineering through comprehensive education programs, research in collaboration with industry and service to professional societies, the community, the state, and the nation.

PEO1. Graduates of the program will apply their foundational engineering knowledge to achieve success in their careers.

PEO2. Graduates of the program will consistently demonstrate core technological expertise in computing throughout their careers

PEO3. Program graduates will fulfill professional requirements, explore higher education prospects, and exhibit understanding of the complexities of self-employment.

PEO4. Graduates of the program will uphold ethical standards, engage in lifelong learning, and remain attentive to societal needs.



PROGRAMME OUTCOMES (PO'S)

At the end of successful completion of program, the graduates will be able to,

1. **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, 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 specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork:** Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment.
12. **Lifelong Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of tech



PROGRAM SPECIFIC OUTCOMES (PSO)

1. Learn and apply latest Software Technologies in the field of Computer Science & Engineering.
2. Identify real time problems and deliver innovative Software solutions for development of society.



STUDENTS ROLES AND RESPONSIBILITIES



CODE-OF-CONDUCT

- Every student must carry his/her identity card while being present on the College Premises. Use of Cell phones is strictly prohibited during class/Labs hour.
- Without the permission of the Principal, Students are not allowed to circulate any printed materials within the college campus.
- Every student is expected to maintain the general cleanliness within the classrooms, laboratories and the campus in general.
- Students should handle the college properties with care. Damage to the furniture or any other materials may lead to penalty or suspension from the college.
- Intoxication or possession of narcotics and other dangerous material is strictly prohibited.
- Playing cards, spitting and loitering are strictly prohibited inside the college campus and shall invite severe punishment/disciplinary action
- Attempted or actual theft of and/or damage to property of the College, or property of a member of the College community, or other personal or public property, on or off campus will be considered as a punishable act.
- Every student will remain answerable to the college authority for his/her activity and conduct on the College Premises.
- Any act which obstructs teaching, research, administrative activity and other proceedings of the college is strictly prohibited.
- Indulging ragging, anti-institutional, anti-national, antisocial, communal, immoral or political expressions and activities within the Campus and hostel are strongly prohibited as well as punishable.
- Students are required to check the Notice Board and also website of the college for important announcements.



LABORATORY INSTRUCTIONS

- Students must present a valid ID card before entering the computer lab.
- Remove your shoes/chapels/sandals outside the lab.
- Playing of games on computer in the lab is strictly prohibited.
- Before leaving the lab, students must close all programs positively and keep the desktop blank.
- Students are strictly prohibited from modifying or deleting any important files and install any software or settings in the computer without permission
- Based on the prime priority, users may be requested by the lab in-charge, to leave the workstation any time and the compliance is a must.
- Eating and/or drinking inside the computer lab is strictly prohibited.
- Internet facility is only for educational/ study purpose.
- Silence must be maintained in the lab at all times.
- The lab must be kept clean and tidy at all times.
- If any problem arises, please bring the same to the notice of lab in-charge.
- No bags/ hand bags/ rain coats/ casual wears will be allowed inside the computer lab, however note book may be allowed.
- Lab timing will be as per the academic time table of different classes
- Every user must make an entry in the Computer Lab Register properly.
- Each student or visitor must take mobile phones in “Switched Off” mode while entering and or working in Computer Lab.
- Conversation, discussion, loud talking & sleeping are strictly prohibited.
- Users must turn-off the computer before leaving the computer lab.
- Maintain silence in lab.
- Computer Lab Assistants are available to assist with BASIC computer and software problems.
- Food and drink are not permitted in the computer lab.
- The use of cell phones is prohibited in the computer lab.
- Please take your calls outside. We also ask that you put your cell phone on vibrate mode.
- Unauthorized copying and/or installing of unauthorized software is not permitted
- Tampering with the hardware or software settings will not be tolerated.

CLASSROOM INSTRUCTIONS

- Students should know and obey rules and regulations of department as well as college.
- Students strive to meet Academic Expectations
- students are expected to take all tests at the scheduled times seriously.
- Maintain discipline in the class
- A student should maintain at least 75% attendance in the Lectures of every subject and 100% overall performance. Otherwise, he or she will be debarred from the University Examination.
- Latecomers will not be entertained to enter into the classroom.
- Participate in the activities organized in the Department as well as in the College.
- While discussion, students should conduct and express themselves in a way that is respectful of all persons.
- Develop positive attitudes;
- Be cooperative and considerate.
- Welcome challenges.
- Be helpful to others
- Be kind, polite, and courteous to others
- Do the assigned work on time
- Be prepared for classes with all necessary supplies.
- Be Respectful and Punctual
- Be in the best of behaviors

DEPARTMENT
ACADEMIC PLANNER

ACADEMIC PLANNER 2025-26



Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur.
 (An Autonomous Institute)

ACADEMIC CALENDAR

S. Y.B.Tech, T.Y.B.Tech and Final Year B.Tech, MCA-II

(A.Y. 2025-26, SEMESTER-I)

Week No.	Month	Week Days							Events
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	
1	July 2025	7	8	9	10	11	12	13	<ul style="list-style-type: none"> > 07 – Commencement of Academic Sem-I, > 07-16 – Declaration of Theory and Lab ISE Components, Updating ERP and LMS > 11-Expert session-Selection of good projects and Synopsis writing"- R&D section
2		14	15	16	17	18	19	20	<ul style="list-style-type: none"> > 16 – S.Y.B.Tech Induction Program > 18-Counsellor's session for Final Year > 19-NSS -Guest lect.ure-Disaster Mgt
3		21	22	23	24	25	26	27	<ul style="list-style-type: none"> > 25-Synopsis presentation and DRC meeting-R&D Section > Last Week-Saral Seva Bharati examination preparation session > Gate Opportunities session
4		28	29	30	31				<ul style="list-style-type: none"> > 31 – AMC (Academic Monitoring Committee) Meeting > Feedback By Dean Academics
Instruction Days: 20									
4	August 2025					1	2	3	<ul style="list-style-type: none"> > 01-02 – Display of Attendance and Counseling of Defaulters for the Month of July > 01-02-Academic Audit(External-LAY) > 01-Annabhau Sathe Jayanti Celebration-NSS > 02-NSS activity,Education Abroad session > 02-Expert session on Publication-R&D section
5		4	5	6	7	8	9	10	<ul style="list-style-type: none"> > 07-One day Workshop-Professional Ethics-IQAC > 09-Feedback By Principal > 10-Woman Cell Inauguration
6		11	12	13	14	15	16	17	<ul style="list-style-type: none"> > 14-Dr J J Magdum Death Anniversary > 15 – Independence Day and Parsi New Year, > 16-Tree Plantation-NSS > Second week-MPSC/UPSC exam preparation Sessionn ,Forien Language training session
7		18	19	20	21	22	23	24	
8		25	26	27	28	29	30	31	<ul style="list-style-type: none"> > 27 – Ganesh Chaturthi, Ecofriendly Ganesh festival-NSS > 29-30 – Formative Feedback and Academic Audit – I(Internal), > 30 – AMC Meeting,Cleaning activity at vil;ege-NSS > Last Week-Gate Prepeation Session > SORT Inauguration-R&D Section > 30-Forst Project Assesment-R&D Section30-First project assessment-R&D section
Instruction Days: 22									
9	Sept. 2025	1	2	3	4	5	6	7	<ul style="list-style-type: none"> > 02 – Gauri-Ganapati Visarjan, > 03-04 – Display of Attendance and Counseling of Defaulters for the Month of August, > 03-04-CIE-1 > 04-IPR session -R& D Section



ACADEMIC CALENDAR

S. Y.B.Tech, T.Y.B.Tech and Final Year B.Tech,MCA-II
 (A.Y. 2025-26, SEMESTER-I)

									<ul style="list-style-type: none"> ➤ 05 – Eid-E-Milad, Literacy Day awareness at village-Library ➤ 06 – Anant Chaturdashi ➤ 04-Expert session on IPR session-faculty-R&D Session
10		8	9	10	11	12	13	14	<ul style="list-style-type: none"> ➤ Counsellor's session of FY ➤ 15-Engineers Day-Cultural
11		15	16	17	18	19	20	21	<ul style="list-style-type: none"> ➤ Expert session on IPR session-faculty-R&D Session ➤ 15 – Mid Semester Examination Result Declaration ➤ Opportunities after GATE session
12		22	23	24	25	26	27	28	<ul style="list-style-type: none"> ➤ 26-SORT activity-R&D section
13		29	30						<ul style="list-style-type: none"> ➤ 30 – AMC Meeting ➤ 30-Feedback By Academic Dean,Dandiya-Cultural
Instruction Days: 24									
13	Oct. 2025			1	2	3	4	5	<ul style="list-style-type: none"> ➤ 02 – Mahatma Gandhi Jayanti and Dasara, ➤ 03-04 – Display of Attendance and Counseling of Defaulters for the Month of September ➤ 04-Se-Expert session on IPR session-faculty-R&D Session-Expert session on IPR session-faculty-R&D Secession,second project assesment ➤ 08-Counsellor's session-FY
14		6	7	8	9	10	11	12	<ul style="list-style-type: none"> ➤ 18-Plastic collection-NSS, HEC activity
15		13	14	15	16	17	18	19	<ul style="list-style-type: none"> ➤ Blood donation camp-NSS ➤ 14-Kavya Sandhya
16		20	21	22	23	24	25	26	<ul style="list-style-type: none"> ➤ 21 – Diwali (Laxmipujan), 22 – Diwali (Balipratipada), ➤ 23 – Bhaubij, ➤ 24-NSS day ➤ 24-25 – Summative Feedback
17		27	28	29	30	31			<ul style="list-style-type: none"> ➤ 30 – AMC Meeting, ➤ 31-National Unity Day celebration
Instruction Days: 21									
17	Nov. 2025						1	2	<ul style="list-style-type: none"> ➤ 01-02-CIE-2 ➤ 03-End Of Academic Activity ➤ 04-Health Awareness camp for Women ➤ 01-07 – Remedial Classes
18		3	4	5	6	7	8	9	<ul style="list-style-type: none"> ➤ 04 – Submission of ISE Marks, ➤ 05 – Gurunanak Jayanti, ➤ 06 – Display of Attendance and Defaulters in the Semester, Finalization of List of Detained Students and Submission to the Office of Dean Academics cc To Principal ➤ 08– Freezing of Attendance and ISE (Theory and LAB) Marks ➤ 09-Expert lect for Rules and regulation of Prevention of sexual harrashment

DEPARTMENTAL TIME TABLE

Second Year Sem-I Time Table



Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur
 Department of Computer Science and Engineering



Academic Year: 2025-26
 Class: S.Y. B.Tech
 Class Teacher: Mrs. A. S. Patil

Semester: III
 Classroom No.: 102
 W.e.f.: 28/07/2025

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	SFL(DBU)	SFL(DBU)	CN(SAN)	S1-FP(AMC)(WT) S2-CN(SAN)	S1-OOP(SSC)(OS) S2-FP(AVG)(DB)	DMS-TUT (ASP)
10.30 am-11.30 am	ES(PAC)	DMS(ASP)	UHV(PAC)	S3-OOP(SRM)(CN) S4-OOP(SSC)(OS)	S3-CN(SAN) S4-OOP(RDM)(CN)	DMS-TUT (ASP)
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	DMS(ASP)	ES(PAC)	EDC/FL	CN(SAN)	MDM	
12.40 pm -01.40pm	CN(SAN)	UHV(PAC)	EDC/FL	OE	MDM	
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	S1-OOP(SSC)(OS) S2-OOP(PSA)(CN) S3-FP(AMC)(DB) S4-FP(ASP)(WT)	S1-FP(SRM)(DB) S2-OOP(SSC)(OS) S3-FP(ASP)(WT) S4-CN(SAN)	S1-CN(SAN) S2-FP(AMC)(WT) S3-OOP(SSC) S4-FP(AVG)(DB)	DMS(ASP)	OE	
03.30 pm-04.30 pm				MDM	OE	

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Discrete Mathematics and Structures	DMS	Mrs. Ashwini S. Patil(ASP)	-
Statistics and Fuzzy Logic	SFL	Dr. D. B. Unde (DBU)	-
Computer Networks	CN	Mrs. Shruti A. Narde (SAN)	-
Human Computer Interface (Open Elective -01)	OE HCI	Mr. Sagar R. Mali (SRM)	-
Data Structure using Python (Multi-disciplinary Minor - 01)	MDM DSPP	Mrs. Supriya S. Chougule(SSC)	-
Computer Networks Lab	CN	Mrs. Shruti A. Narde (SAN)	Programming Lab
Object Orientated programming C++	OOP	Mrs. Supriya S. Chougule (SSC) Mr. Sagar R. Mali(SRM), Mr. Rohit D. Mane(RDM), Mr. P. S. Ambupe(PSA)	Operating System Lab Computer Network Lab
Field Project	FP	Dr. A. M. Chougule(AMC), Mrs. Ashwini S. Patil(ASP), Mrs. Archana V. Gundavade(AVG), Mr. Sagar R. Mali(SRM)	Web Technology Lab Database Lab
Universal Human Values	UHV	Mr. P. A. Chougule (PAC)	-
Environment Studies	ES	Mr. P. A. Chougule (PAC)	-
EDC / Foreign Language	EDC/FL	-	-

Head of Department
 Dr. A. M. Chougule

Dean Academics
 Dr. S. B. Patil

Principal
 Dr. G. V. Mulgund

Third Year Sem-I Time Table



Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur
 Department of Computer Science and Engineering



Academic Year: 2025-26
 Class: TY B.Tech
 Class Teacher: Prof. A. H. Pudale

Semester: V
 Classroom No.: C-102
 W.e.f.: 28/07/2025

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	SP(PSA)	CA(AMC)	T1- BE (AMM) T2-JAVA(ASP) _(wr) T3- JAVA(AHP) _(os) T4-SP(PSA)	SP(PSA)	CA(AMC)	
10.30 am-11.30 am	IOT(ASP)	CA(AMC)		OOMD(AVG)	CA(AMC)	
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	T1-IS(RDM) T2-SP(PSA) T3- BE(AMM) _(os) T4-JAVA(SSC) _(os)	T1- JAVA(ASP) _(wr) T2-IS(RDM) T3-SP(PSA) T4- BE (AMM)	SP(PSA)	T1- JAVA(AHP) _(os) T2-BE(AMM) T3-JAVA(ASP) _(wr) T4-IS(RDM)	T1- SP(PSA) T2-JAVA(AHP) _(os) T3- IS(RDM) T4-JAVA(ASP) _(wr)	
12.40 pm -01.40pm			IOT(ASP)			
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	JAVA(AHP)	IS(RDM)	JAVA(AHP)	IS(RDM)	OOMD(AVG)	
03.30 pm-04.30 pm	OOMD(AVG)	JAVA(AHP)	IS(RDM)	CA-TUT (AMC)	IOT(ASP)	

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Information Security	IS	Mr. Rohit D. Mane (RDM)	Computer Network Lab
System Programming	SP	Mr. Pravin S. Ambupe (PSA)	Data base Lab
Object-Oriented Modelling & Design	OOMD	Mrs. Archana V. Gundavade (AVG)	-----
Computer Algorithms	CA	Dr. Archana M. Chougule(AMC)	-----
Internet of Things	IoT	Mrs. Ashwini S. Patil (ASP)	-----
Java Programming	Java	Mr. Amol H. Pudale (AHP) Mrs. A. S. Patil(ASP), S. S. Chougule(SSC)	Web Technology Lab Operating system Lab
Business English	BE	Dr. A. M. More	Seminar hall/Classroom

Head of Department
 Dr. A. M. Chougule

Dean Academics
 Dr. S. B. Patil

Principal
 Dr. G. V. Mulgund

Final Year Sem-I Time Table



Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur Department of Computer Science and Engineering



Academic Year: 2025-26

Class: B.Tech

Class Teacher: Prof. S. R. Mali

Semester: VII

Classroom No.: C-103

W.e.f.: 28/07/2025

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	B1-CC(SRM) B2-ADS(AVG)	B1-WT(SSC) (WT) B2-CC(SRM)	AI(RDM)	AI(RDM)	WT(AHP)	
10.30 am-11.30 am	B3-WT(SAN)(PL) B4-WT(AHP)(WT)	B3-ADS(AVG) B4-WT(SAN)(PL)	ADS(AVG)	WT(AHP)	ACA(PSA)	
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	B1- PJ-1(WT LAB) B2- PJ-1(PR LAB) B3- PJ-1(SEMI HALL) B4- PJ-1(SEMI HALL)	CC(SRM)	B1-WT(SAN) (PL) B2-WT(AHP) (WT)	ACA(PSA)	B1- PJ-1(CN LAB) B2- PJ-1(PR LAB) B3- PJ-1(SEMI HALL) B4- PJ-1(SEMI HALL)	
12.40 pm -01.40pm		WT(AHP)	B3-CC(SRM) B4-ADS(AVG)	ADS(AVG)		
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	AI(RDM)	ADS(AVG)	CC(SRM)	B1- ADS(AVG) B2-WT(SAN) (PL) B3-WT(AHP) (WT) B4-CC(SRM)	ACA-TUT(PSA)	
03.30 pm-04.30 pm	CC(SRM)	ACA(PSA)	ACA(PSA)		AI-TUT(RDM)	

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Advanced Computer Architecture	ACA	Mr. Pravin S. Ambupe (PSA)	-----
Cloud Computing	CC	Mr. Sagar S. Mali (SRM)	Operating System Lab
Advanced Database Systems	ADS	Mrs. A. V. Gundavade (AVG)	Database Lab
Artificial Intelligence (Elective-I)	AI	Mr. Rohit D. Mane (RDM)	-----
Web Technologies	WT	Mr. Amol H. Pudale (AHP), S. A. Narde (SAN), S. S. Chougule (SSC)	Web Technology Lab Programming Lab
Project - I	Pj-I	Dr. A. M. Chougule(AMC) Prof. A. V. Gundavade (AVG) Prof. R. D. Mane(RDM) Prof. A. H. Pudale(AHP) Prof. P. S. Ambupe (PSA) Prof. S. S. Chougule (SSC) Prof. S. A. Narde (SAN) Prof. S.R. Mali(SRM) Prof. A.S. Patil(ASP)	Project Lab Seminar Hall Web Technology Lab Computer Network Lab

Head of Department
Dr. A. M. Chougule

Dean Academics
Dr. S. B. Patil

Principal
Dr. G. V. Mulgund



STRUCTURE OF SYLLABUS

1. SECOND YEAR COMPUTER SCIENCE AND ENGINEERING



Dr.J.J.MagdumTrust's
Dr. J. J. Magdum College of Engineering, Jaysingpur.
 (An Autonomous Institute)

Teaching and Evaluation Scheme for Academic Year 2024-25
 Program: Computer Science & Engineering
 S.Y. B. Tech. (Semester - III) NCrF Level: 5.0 w.e.f. 2025-26

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits	Evaluation scheme							
				L	T	P	Contact Hrs/wk		Theory			Practical		Total		
									CIE			ESE	CIE		ESE	
									T-I	T-II	ISE					
1	01CSEPL201	Discrete Mathematics and Structures	PCC	3	1	--	4	4	20	20	10	50	---	---	100	
2	01CSEPL202	Statistics and Fuzzy Logic	PCC	2	--	--	2	2	20	20	10	50	---	---	100	
3	01CSEPL203	Computer Networks	PCC	3	--	--	3	3	20	20	10	50	---	---	100	
4	01OEL120X	Open Elective -01	OE	3		--	3	3	20	20	10	50	---	---	100	
5	01CSEMDLX201	Multi-disciplinary Minor - 01	MDM	3	--	--	3	3	20	20	10	50	---	---	100	
6	01CSEPCP204	Computer Networks Lab	PCC	--	--	2	2	1	---	---	---	---	25	50	75	
7	01CSEPCP205	Object Orientated programming C++	PCC	--	--	4	4	2	---	---	---	---	50	50	100	
8	01CSEPCP206	Field Project	FP		--	4	4	2	---	---	---	---	25	50	75	
9	01CSEVEL207	Universal Human Values	VEC	2	--	--	2	2	--	--	--	---	50	---	50	
Total				16	1	10	27	22	100	100	50	250	150	150	800	
Mandatory Courses (Audit Courses)																
10	01SCEMCP251	Environmental Studies	MC					--					50	50		100
11	01CSEMCP252	Technical Aptitued-1	MC					--						50	--	50
12	01CSEMCP253	Professional Skill Enhancement & Foreign Language	MC					--						50	--	50

Course Category	BSC/ESC		Program Courses		Multidisciplinary Courses		Vocational and Skill Enhancement Course	Humanities Social Science and Management (HSSM)				Experiential Learning Courses				Liberal Learning Courses
	BSC	ESC	PCC	PEC	MDM	OE	VSEC	AEC	Enr/Pr/Man	IKS	VEC	RM	CEP/FP	PROJ	Int/OJT	CC
Last Sem Cumulative Sum	16	15	03	--	--	--	02	02	--	02	--	--	--	--	--	04
Semester Credits	--	--	12	--	03	03	--	--	--	--	02	--	02	--	--	--
Cumulative Sum	16	15	15	--	03	03	02	02	--	02	02	--	02	--	--	04

PROGRESSIVE TOTAL CREDITS: 44 + 22 = 66



Dr.J.J.MagdumTrust's

Dr. J. J. Magdum College of Engineering, Jaysingpur.

(An Autonomous Institute)

Teaching and Evaluation Scheme for Academic Year 2024-25

Program: Computer Science & Engineering

S.Y. B. Tech. (Semester – IV) ~~NCrF~~ Level: 5.0 w.e.f. 2025-26

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits	Evaluation scheme						Total
				L	T	P	Contact Hrs/wk		Theory			Practical			
									CIE			ESE	CIE	ESE	
									T-I	T-II	ISE				
1	01CSEPCL208	Theory of Computation	PCC	3	--	--	3	3	20	20	10	50	---	---	100
2	01CSELPC209	Database Engineering	PCC	3	--	--	3	3	20	20	10	50	---	---	100
3	01CSEPCL210	Computer Organization and Architecture	PCC	3	--	--	3	3	20	20	10	50	---	---	100
4	01OEL220X	Open Elective -02	OE	2	--	--	2	2	20	20	10	50	---	---	100
5	01CSEMDLX202	Multi-disciplinary Minor - 02	MDM	2	--	--	2	2	20	20	10	50	---	---	100
6	01CSEPCP211	Database Engineering Lab	PCC	--	--	2	2	1	---	---	---	---	25	50	75
7	01CSEVSP212	Mini Project using Python	VSEC	--	--	4	4	2	---	---	---	---	50	50	100
8	01CSEACP213	Professional Skill	AEC	2	--	--	2	2	--	--	--	--	25	---	25
9	01CSEECP214	Product Innovation and Lifecycle Management	EEMC	1	--	2	2	2	---	---	---	---	25	50	75
10	01CSEVEP215	Human Rights	VEC	--	--	4	4	2	---	---	---	---	25	---	25
Total				16	0	12	27	22	100	100	50	250	150	150	800

Mandatory Courses (Audit Courses)

13	01CSEMCP253	Technical Aptituded-1	MC											50		50
14	01CSEMCP254	Professional Skill Enhancement & Foreign Language	MC											50		50

Course Category	BSC/ESC		Program Courses		Multidisciplinary Courses		Vocational and Skill Enhancement Course	Humanities Social Science and Management (HSSM)				Experiential Learning Courses				Liberal Learning Courses
	BSC	ESC	PCC	PEC	MDM	OE	VSEC	AEC	Engg./Mgmt.	IKS	VEC	RM	CEP/FP	Ext.	Int/OJT	CC
Last Semester Cumulative Credits	16	15	15	--	03	03	02	02	--	02	02	--	02	--	--	04
Semester Credits	--	--	10		02	02	02	02	02	--	02	--	--	--	--	--
Cumulative Sum	16	15	25	--	05	05	04	04	02	02	04	--	02	--	--	04

PROGRESSIVE TOTAL CREDITS: 66 + 22 = 88

2. THIRD YEAR COMPUTER SCIENCE AND ENGINEERING – CBCS

THIRD YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																	
SEMESTER - V																	
Sr. No.	Course Subject / Title	TEACHING SCHEME								EXAMINATION SCHEME							
		THEORY			TUTORIAL		PRACTICAL			THEORY				ORAL / PRACTICAL		TERMWORK	
		Credits	NO. Of Lectures	Hours	Credits	No. of Hours	Credits	No. of Hours	mode	marks	Total Marks	MIN.	MAX	MIN.	MAX	MIN.	
1	PCC-CS501 Information Security	3	3	3			1	2	CIE	30	100	40			50	20	
								ESE	70								
2	PCC- CS502 System Programming	3	3	3			1	2	CIE	30	100	40	25	10	50	20	
								ESE	70								
3	PCC- CS503 Object-Oriented Modeling & Design	3	3	3					CIE	30	100	40					
								ESE	70								
4	PCC- CS504 Computer Algorithms	4	4	4	1	1			CIE	30	100	40			25	10	
								ESE	70								
5	OEC- CS505	3	3	3					CIE	30	100	40					
								ESE	70								
6	PCC- CS506 Java Programming	3	3	3			2	4					50	20	50	20	
7	HM- CS507 Business English				1	2							25	10	25	10	
	Total (SEM -V)	19	19	19	2	3	4	8			500		100		200		

THIRD YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																
SEMESTER - VI																
Sr. No.	Course Subject / Title	TEACHING SCHEME						EXAMINATION SCHEME								
		THEORY			TUTORIAL		PRACTICAL		THEORY				ORAL / PRACTICAL		TERMWORK	
		Credits	No. Of Lectures	No. of Hours	Credits	No. of Hours	Credits	No. of Hours	mode	marks	Total Marks	MIN.	MAX	MIN.	MAX	MIN.
1	PCC-CS601 Compiler Construction	3	3	3			1	2	CIE	30	100	40			25	10
									ESE	70						
2	PCC- CS602 Operating System-II	4	4	4			1	2	CIE	30	100	40			25	10
									ESE	70						
3	PCC- CS603 Database Engineering	4	4	4			1	2	CIE	30	100	40	50	20	25	10
									ESE	70						
4	PCC- CS604 Machine Learning	3	3	3	1	1			CIE	30	100	40			25	10
									ESE	70						
5	OEC- CS605	3	3	3					CIE	30	100	40				
									ESE	70						
6	PCC- CS606 C# Programming	2	2	2			1	2					50	20	25	10
7	PW- CS607 Domain Specific Mini Project						1	2					50	20	25	10
Total (SEM -VI)		19	19	19	1	1	5	10			500		150		150	
Total		38	38	38	3	4	9	18			1000		250		350	

CIE- Continuous Internal Evaluation

ESE – End Semester Examination

• Candidate contact hours per week : 30 Hours (Minimum)	• Total Marks for T.Y. Sem V & VI : 800 + 800 =1600
• Theory and Practical Lectures : 60 Minutes Each	• Total Credits for T.Y. Sem V & VI : 50 (SEM-V: 25 + SEM -VI: 25)
• In theory examination there will be a passing based on separate head of passing for examination of CIE and ESE.	
• There shall be separate passing for theory and practical (term work) courses.	

Note:

1. **PCC-CS:** Professional Core Course – Computer Science and Engineering are compulsory.
2. **HM-CS:** Humanities and Management- Computer Science and Engineering are compulsory.
3. **PW-CS:** Domain Specific Mini Project – Computer Science and Engineering are compulsory.
4. **#OEC-CS: Open Elective Course** – To be offered to Inter departmental students.
 - # - 60% of the students from other branches to be chosen on merit.
 - 40% of the students may be from same branch based on merit.
 - Number of students to be allowed should be 72(Max.) for the branch with intake of 60 students.
 - The above ratio should be followed in proportionate to the sanctioned intake.

OPEN ELECTIVE-I

Sr.No.	Name of the Subject	Name of the concern Branch
1	i) Computer Graphics & Multimedia ii) Internet of Things	Computer Science and Engineering

OPEN ELECTIVE-II

Sr.No.	Name of the Subject	Name of the concern Branch
1	i) E-Commerce & Digital Marketing ii) Cyber Security	Computer Science and Engineering

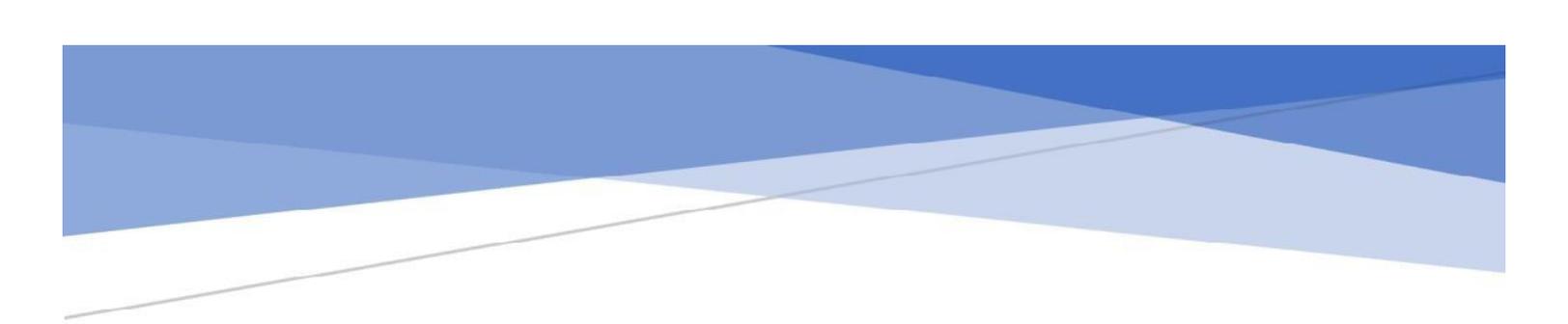
3. FINAL YEAR COMPUTER SCIENCE AND ENGINEERING – CBCS

FINAL YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																
SEMESTER - VII																
Sr. No.	Course Subject / Title	TEACHING SCHEME						EXAMINATION SCHEME								
		THEORY			TUTORIAL		PRACTICAL		THEORY				ORAL / PRACTICAL		TERMWORK	
		Credits	NO. Of Lectures	Hours	Credits	No. of Hours	Credits	No. of Hours	mode	marks	Total Marks	MIN.	MAX	MIN.	MAX	MIN.
1	PCC-CS701 Advanced Computer Architecture	4	4	4	1	1		CIE	30	100	40			25	10	
								ESE	70							
2	PCC- CS702 Cloud Computing	3	3	3			1	2	CIE	30	100	40			25	10
									ESE	70						
3	PCC- CS703 Advanced Database Systems	3	3	3			1	2	CIE	30	100	40	50	20	25	10
									ESE	70						
4	PCE- CS704 Elective-I	3	3	3	1	1			CIE	30	100	40			25	10
									ESE	70						
5	PCC- CS705 Web Technologies	3	3	3			2	4					50	20	50	20
6	PW- CS706 Project – I						2	4					50	20	50	20
7	SI-CS707 Internship						1								50	20
Total (SEM –VII)		16	16	16	2	2	7	12			400		150		250	

FINAL YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																	
SEMESTER - VIII																	
Sr. No.	Course Subject / Title	TEACHING SCHEME							EXAMINATION SCHEME								
		THEORY			TUTORIAL		PRACTICAL		THEORY				ORAL / PRACTICAL		TERMWORK		
		Credits	NO. Of Lectures	No. of Hours	Credits	No. of Hours	Credits	No. of Hours	mode	marks	Total Marks	MIN.	MAX	MIN.	MAX	MIN.	
1	PCC- CS801 Big Data Analytics	4	4	4			1	2	CIE	30	100	40	50	20	25	10	
									ESE	70							
2	PCC- CS802 Deep Learning	3	3	3	1	1			CIE	30	100	40			25	10	
									ESE	70							
3	PCE- CS803 Elective-II	3	3	3	1	1			CIE	30	100	40			25	10	
									ESE	70							
4	PCE- CS804 Elective-III	3	3	3	1	1			CIE	30	100	40			25	10	
									ESE	70							
5	PCC- CS805 Mobile Application Development	3	3	3			2	4					50	20	50	20	
6	PW- CS806 Project – II						2	4					50	20	50	20	
7	HM-CS807 Professional Skills				1	1									50	20	
Total (SEM –VIII)		16	16	16	4	4	5	10			400		150		250		
Total		32	32	32	6	6	12	22			800		300		500		

CIE- Continuous Internal Evaluation

ESE – End Semester Examination

- 
- | |
|---|
| <ul style="list-style-type: none">• In theory examination there will be a passing based on separate head of passing for examination of CIE and ESE.• There shall be separate passing for theory and practical (term work) courses. |
|---|

Note:

1. **PCC-CS:** Professional Core Course – Computer Science and Engineering are compulsory.
2. **PCE-CS:** Professional Core Elective – Computer Science and Engineering are compulsory.
3. **HM-CS:** Humanities and Management- Computer Science and Engineering are compulsory.
4. **PW-CS:** Domain Specific Mini Project – Computer Science and Engineering are compulsory.
5. **SI-CS:** Internship-Computer Science and Engineering are compulsory.

Professional Core Elective – I

1. Artificial Intelligence
2. Software Testing & Quality Assurance
3. Image Processing

Professional Core Elective – II

1. Project Management
2. Natural Language Processing
3. Ad-Hoc Wireless Sensor Networks

Professional Core Elective – III

1. High Performance Computing
2. Blockchain Technologies
3. Human computer Interaction



COURSE DETAILS/SYLLABUS

S. Y. B. Tech (Computer Science and Engineering) Sem – III

Dr J J Magdum College of Engineering, Jaysingpur
Computer Science & Engineering Department
SY- B. Tech -SEM-III

Course Name: Discrete Mathematical Structure

Course Details:

Class	SY		Semester	III		
Course Title	Discrete Mathematical Structure		Course Code	Theory: 01CSEPCL201		
				Practical: --		
Prerequisites:			Basic knowledge of algebra, logic, and set theory			
Teaching scheme:	Theory Hours:	3 Hrs/Week	Practical Hours:	--	Tutorial Hours:	1 Hr/Week
	Credits:	3	Credits:	--	Credits:	1
Evaluation scheme						
Theory				Practical		Total
CIE-I	CIE-II	ISE	ESE	CIE	ESE	
20	20	10	50	--	--	100

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
01CSEPCL201.01	Expose the students to the mathematical logic related to computer science areas.
01CSEPCL201.02	Enhance the problem solving skills in the areas of theoretical computer science.
01CSEPCL201.03	Use mathematical concepts in the development of computer applications.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

CO	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCL201.01	Apply the principles of propositional logic and predicate logic to solve logical problems and infer conclusions	L3, L4
01CSEPCL201.02	Perform operations on sets, relations, and functions, and analyze their properties with appropriate representations	L2, L3
01CSEPCL201.03	Illustrate and apply concepts of algebraic structures like semigroups, monoids, and groups in computational scenarios	L2, L3
01CSEPCL201.04	Analyze lattice structures and apply Boolean algebra to design and minimize logical expressions	L3, L4

01CSEPCL201.05	Solve problems involving permutations, combinations, and discrete probability using standard formulas and theorems	L3
01CSEPCL201.06	Represent and analyze graphs and trees to solve problems related to network structures and path finding	L3, L4

Sr No.	Course Contents			
Unit Number	Details	Hours	Mapping with COs	Levels of attainment as per revised Bloom's Taxonomy
Unit-01	Mathematical Logic Statements and notations Connectives Statement formulas and truth tables, Well-formed formulas Equivalence of formulas Duality law functionally complete sets of connectives Normal Forms completely parenthesized infix and polish notations Theory of Inference for statement calculus – validity using truth table, rules of inference, consistency of premises	8 Hrs	01	L3, L4
Unit-02	Set Theory Basic concepts of set theory, types of operations on sets Ordered pairs Cartesian Product Representation of discrete structures relation, properties of binary relations, Matrix and graph representation Partition and covering of set Equivalence relation Composition POSET and Hasse diagram Function - types, Composition of functions, Inverse function	07 Hrs	02	L2, L3
Unit-03	Algebraic systems Semigroups and Monoids, Properties Examples, Groups: Definition and examples, subgroups homomorphism	05 Hrs	03	L2, L3
Unit-04	Lattices and Boolean algebra Lattice as POSETs definition, examples and properties	07 Hrs	04	L3, L4

	lattice as algebraic systems Special lattices Boolean algebra definition and examples Boolean functions representation minimization of Boolean function			
Unit-05	Permutations, Combinations and Probability theory The Basics of Counting The Pigeonhole Principle Permutations and Combinations Generalized Permutations and Combinations Discrete Probability Conditional probability Bayes' Theorem	07 Hrs	05	L3
Unit-06	Graph theory Introduction to Graphs Graph Terminology Representing Graphs and Graph Isomorphism, Connectivity Euler and Hamilton Paths Planar Graphs Introduction to Trees	07 Hrs	06	L3, L4

Text Books/Reference Books:

Sr. No	Book Type (Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Discrete Mathematical Structures with Application to Computer Science	J. P. Tremblay & R. Manohar	MGH International	First Edition	1987
2	Text Book	Discrete Mathematics and its Applications	Kenneth H. Rosen	AT&T Bell Labs	3 rd edition	2000
3	Reference Book	Discrete Mathematics	Semyour Lipschutz	MarcLipson (MGH), Schaum's outlines	2 nd Edition	2007

Online References:

Sr. No.	Website Name	URL	Units Covered
1	NPTEL	https://nptel.ac.in/courses/111106086	Unit 1: Mathematical Logic, Unit 2: Set Theory, Unit 6: Graph Theory
2		https://www.coursera.org/learn/discrete-mathematics	Units 1 to 5 (Mathematical Logic, Set Theory, Algebraic Structures, Boolean Algebra, Counting & Probability)

for ISE:

Student should be able to perform 10-12 tutorials based on the syllabus and concepts mentioned below:

Tutorial No.	Topic	Levels of attainment as per revised Bloom's Taxonomy
1	Identify and classify propositions and their truth values	L2
2	Construct truth tables for logical formulas	L3
3	Derive principal conjunctive/disjunctive normal forms	L4
4	Use rules of inference to determine validity of arguments	L3
5	Perform set operations and verify set identities	L3
6	Represent binary relations using matrices and graphs	L3
7	Draw Hasse diagrams for partially ordered sets	L3
8	Identify subgroups from given group structures	L4
9	Verify properties of semigroups and monoids	L3
10	Minimize Boolean functions using Karnaugh Maps	L3
11	Construct Boolean expressions from truth tables	L3
12	Solve problems on permutations and combinations	L3
13	Apply Bayes' theorem to solve real-world probability problems	L3, L4
14	Represent and analyze graphs (adjacency matrix, list, etc.)	L4
15	Identify Eulerian and Hamiltonian paths in graphs	L4

Examination Scheme and Guidelines:

T-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
T-II 20 Marks	Examination of 20 marks based on Units 4 and 5 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
ESE 50 Marks	ESE-End Semester Examination
	Que.1: MCQ's based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2 (Carries 16 Marks)
	Que.3: based on Unit 2, 3 (Carries 16 Marks)
	Que.4: based on Unit 4 (Carries 16 Marks)

Que.5: based on Unit 5 (Carries 16 Marks)

Course Name: Statistics and Fuzzy Logic

Course Details:

Class	SY			Semester	III		
Course Title	Statistics and Fuzzy Logic			Course Code	Theory: 01CSEPCL202		
					Practical :--		
Prerequisites:							
Teaching scheme:	Theory Hours:	2	Hrs/Week	Practical Hours:	----	Tutorial Hours:	----
	Credits:	2		Credits:	---	Credits:	-----
Evaluation scheme							
Theory				Practical		Total	
T-I	T-II	ISE	ESE	CIE	ESE		
20	20	10	50	---	---	100	

Course Objectives:

The course aims to:

Sr No.	Course Objectives
01CSEPCL202.01	Learn examples on Lines of Regression & the curve fitting
01CSEPCL202.02	Introduce the core principles of fuzzy logic, including fuzzy sets, membership functions
01CSEPCL202.03	Equip students with the ability to represent uncertainty using fuzzy numbers and perform arithmetic operations while considering degrees of uncertainty
01CSEPCL202.04	Understand and solve examples on Binomial Distribution, Fitting of Binomial Distribution, Poisson, Distribution, Fitting of Poisson Distribution
01CSEPCL202.05	Understand and solve examples on assignment problem

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCL202.01	Solve problems on Lines of Regression	3
01CSEPCL202.02	Solve problems on curve fitting	3
01CSEPCL202.03	Construct different fuzzy sets using basic definitions of fuzzy sets.	3
01CSEPCL202.04	Use the extension principle on fuzzy numbers/sets to develop arithmetic operations	3
01CSEPCL202.05	Solve problems on Probability Distribution	3

01CSEPCL202.06	Solve Assignment problem.	3
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Course Contents				
Unit Number	Details	Hours	Mapping of COs	Levels of attainment as per revised Bloom's Taxonomy
Unit-01	Lines of Regression Lines of Regression of bivariate data, correlation using lines of Regression, Lines of Regression by using standard deviation.	4	CO1	3
Unit-02	Curve Fitting Fitting of Curves by method of Least-squares, Fitting of Straight lines. Fitting of second degree Parabolic curves, Fitting of Exponential Curve	4	CO2	3
Unit-03	Introduction to Fuzzy sets Basic concepts of Fuzzy Sets, Crisp Set and Fuzzy Set , Membership Functions, Basic operations on fuzzy sets , Properties of fuzzy sets.	4	CO3	3
Unit-04	Fuzzy Arithmetic Fuzzy Numbers, Fuzzy Cardinality, Operations on Fuzzy Numbers , Fuzzy Equations of Type $A + X: B$ and $A.X: B$, $A+B$ & $A- B$, $A.B$ for discrete fuzzy set	4	CO4	3
Unit-05	Probability Distribution Binomial Distribution, Fitting of Binomial Distribution, Poisson, Distribution, Fitting of Poisson Distribution	4	CO5	3
Unit-06	Assignment Problem Balanced Assignment Problem, Hungarian Method, Unbalanced Assignment Problem, Assignment problem of maximization	4	CO6	3

Text Books/Reference Books:

Sr. No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Textbook	A text book of Applied Mathematics	P. N. Wartikar & J. N. Wartikar	Pune Vidyarthi Griha Prakashan, Pune	1 st Edition	2010

2	Textbook	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publishers, Delhi		
3	Textbook	Fuzzy Sets & Fuzzy Logic Theory and Applications	George J. Klir and Bo Yuan	PHI Learning Private Limited	2 nd Edition and onwards	2009
4	Reference	Fundamentals of mathematical Statistics	S. C. Gupta & V. K. Kapoor	Sultan Chand & Sons	Twelfth Revised Edition	2020
5	Reference	Fuzzy Logic with Engineering Applications	Timothy J. Ross	McGraw-Hill	International Edition	2004

Online References:

Sr. No.	Website Name	URL	Units Covered
1	www.nptel.ac.in	https://onlinecourses.nptel.ac.in/noc23_ma77/preview	unit No : 3,4
2	www.nptel.ac.in	https://onlinecourses.nptel.ac.in/noc24_ma37/preview	unit No : 1

List of Assignments/Tutorials for ISE:

Minimum 05 Assignments/Tutorials based on the curriculum.

Examination Scheme and Guidelines:

T-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
T-II 20 Marks	Examination of 20 marks based on Units 4 and 5 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
ESE 50 Marks	ESE-End Semester Examination
	Que.1: MCQ's based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2 (Carries 16 Marks)
	Que.3: based on Unit 2, 3 (Carries 16 Marks)
	Que.4: based on Unit 4 (Carries 16 Marks)
	Que.5: based on Unit 5 (Carries 16 Marks)

Course Name: Computer Networks

Course Details:

Class	SY		Semester	III		
Course Title	Computer Networks		Course Code	Theory: 01CSEPCL203		
Prerequisites:			Basic understanding of computer fundamentals			
Teaching scheme:	Theory Hours:	3	Practical Hours:	--	Tutorial Hours:	--
	Credits:	3	Credits:	--	Credits:	--
Evaluation scheme						
Theory				Practical		Total
T-I	T-II	ISE	ESE	CIE	ESE	
20	20	10	50	--	--	100

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
PCC-01CSEPCL203.01	Perceive fundamental concepts of Computer Networks
PCC-01CSEPCL203.02	Understand layered architecture and basic networking protocols
PCC-01CSEPCL203.03	Illustrate the TCP/IP protocol internal details
PCC-01CSEPCL203.04	Understand application layer protocol

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCL203.01	<i>Describe</i> basic concepts of data communication, network models, and protocol layers.	L-2
01CSEPCL203.02	<i>Apply</i> error detection/correction techniques and data link layer control protocols.	L-3
01CSEPCL203.03	<i>Analyze</i> MAC protocols and IEEE 802 standards used in LANs.	L-4
01CSEPCL203.04	<i>Explain</i> routing algorithms, addressing, and congestion control in the network layer.	L-4
01CSEPCL203.05	<i>Demonstrate</i> the functions of transport layer protocols like TCP and UDP.	L-3
01CSEPCL203.06	<i>Understand and explain</i> the use of application layer protocols (DNS, DHCP, HTTP, etc.).	L-2

Course Contents				
Unit Number	Details	Hours	Course Outcome No.	Levels of attainment as per revised Bloom's Taxonomy
Unit-01	Introduction to Network 1.1.Data Communication, 1.2.Networks 1.3.Internet, 1.4.Protocols and Standards 1.5.Layered Task 1.6.OSI Model and Layers, 1.7.TCP/IP Protocol Suite 1.8.Addressing 1.9.Physical Layer and Media	5 Hours	01	L2
Unit-02	Data Link Control Layer 2.1 Error Detection and Correction 2.2 Block Coding 2.3 Linear Block Codes 2.4 Cyclic Codes 2.5 Checksum 2.6 Data Link Control: Framing, Flow and Error Control, 2.7 Protocols: Noiseless channels, Noisy Channels	8 Hours	02	L3
Unit-03	Medium Access Control Sub layer 3.1 Channel allocation Problem, 3.2 Multiple Access Protocols: ALHOA, CSMA 3.3 Collision free protocols 3.4 Limited contention protocols 3.5 IEEE Standard 802 for LANS and MANS, 3.6 Bridges 3.7 Introduction to VLANS	7 Hours	03	L4
Unit-04	Network Layer 4.1 Network Layer Design Issues 4.2 Routing Algorithms: Shortest Path, Flooding, Distance Vector, Link State, Broadcast 4.3 IP IPv4 Addresses: Introduction, Classful and Classless addressing, Special Addresses 4.4 ARP 4.5 RARP 4.6 ICMP. 4.7 Congestion control algorithms: Principles, Congestion prevention	8 Hours	04	L4

	policies, Traffic Shaping, congestion control in datagram subnet Choke Packet, Load Shedding, Jitter Control,			
Unit-05	Transport Layer 5.1 Transport Layer functions, 5.2 UDP- datagram, services, applications, 5.3 TCP - services, segment, connection, state transition diagram, Flow control, congestion control, error control, timers.	4 Hours	05	L3
Unit-06	Application Layer 6.1 DHCP: DHCP operation, Packet Format, DHCP Configuration, 6.2 DNS: Need, Name Space, Domain Name Space, Distribution of name space, and DNS in internet, Resolution, 6.3 Telnet 6.4 FTP 6.5 TFTP 6.6 HTTP 6.7 SMTP	8 Hours	06	L2

Text Books/Reference Books:

Sr No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text Book	Data Communications and Networking	Behrouz A Forouzan	The McGraw Hill	5th Edition	2017
2	Text Book	Computer Networks	Andrew S. Tanenbaum	Prentice Hall	5th Edition	2010
3	Text Book	TCP/IP Protocol Suite	Behrouz Forouzan	The McGraw Hill	5th Edition	2021
4	Reference Book	Computer Networking with Internet Protocols and Technology	William Stallings	Prentice Hall		2003

Online References:

Sr. No.	Website Name	URL	Units Covered
1	Coursera – <i>Computer Networks & Network Security</i>	https://www.coursera.org/specializations/computer-network-	Units 1, 3, 4, 5, 6

		security	
2	NPTEL – <i>Computer Networks and Internet Protocol</i>	https://onlinecourses.nptel.ac.in/noc22_cs19/preview	All units

List of Assignments for ISE:

- Minimum 06 Assignments based on the curriculum.

Examination Scheme and Guidelines:

T-I 20 Marks	Examination of 20 marks based on Units 1, 2, and 3 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
T-II 20 Marks	Examination of 20 marks based on Units 4 and 5 should be conducted, and marks should be communicated to the Exam Cell. • One question of 05 Marks based on MCQ's compulsory
ISE 10 Marks	ISE/CA -In Semester Evaluation/Continuous Assessment
ESE 50 Marks	ESE-End Semester Examination
	Que.1: MCQ's based on All Units (Carries 06 Marks)
	Que.2: based on Unit 1, 2 (Carries 16 Marks)
	Que.3: based on Unit 2, 3 (Carries 16 Marks)
	Que.4: based on Unit 4 (Carries 16 Marks)
	Que.5: based on Unit 5 (Carries 16 Marks)

Course Name: Computer Network Lab

Course Details:

Class	SY		Semester	III		
Course Title	Computer Network Lab		Course Code	Theory:-- Practical: 01CSEPCP204		
Prerequisites:						
Teaching scheme:	Theory Hours:	--	Practical Hours:	2Hrs/Week	Tutorial Hours:	--
	Credits:	--	Credits:	1	Credits:	--
Evaluation scheme						
Theory				Practical		Total
T-I	T-II	ISE	ESE	CIE	ESE	
--	--	--	--	50	50	100

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
01CSEPCP204.01	Introduce basic networking devices and protocols.
01CSEPCP204.02	Teach error detection and framing techniques.
01CSEPCP204.03	Simulate flow and error control mechanisms.
01CSEPCP204.04	Implement routing and addressing at the network layer.
01CSEPCP204.05	Develop socket-based client-server communication programs.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCP204.01	Identify and describe the functionality of basic networking devices and protocols.	L2
01CSEPCP204.02	Implement error detection techniques and data framing protocols.	L3
01CSEPCP204.03	Simulate flow and error control mechanisms in data communication.	L3
01CSEPCP204.04	Implement network layer functionalities like routing and addressing.	L3
01CSEPCP204.05	Develop programs using socket APIs to establish communication over networks.	L3

List of Experiments for CIE/ESE:

Experiment Number	Type of Experiment	Experiment Title	Levels of attainment as per revised Bloom's Taxonomy	Course Outcome No.
1	Basic	Identify and understand the working of network devices like hub, switch, router, and access point.	L2	01
2	Basic	Implement Parity Check error detection techniques.	L3	02
3	Basic	Implement CRC error detection techniques.	L3	02
4	Basic	Implement character stuffing in a data communication scenario.	L3	02
5	Basic	Implement bit stuffing in a data communication scenario.	L3	02
6	Basic	Develop a program to simulate Stop-and-Wait ARQ for reliable data transfer.	L3	03
7	Basic	Develop a program to simulate Go-Back-N ARQ for reliable data transfer.	L3	03
8	Basic	Implement and shortest path routing Algorithm.	L3	04
9	Basic	Implement distance vector routing Algorithm.	L3	04
10	Basic	Design an IP addressing scheme for a given network topology and calculate subnet masks.	L3	04
11	Basic	Develop a client-server communication model using TCP sockets.	L3	05
12	Basic	Develop a client-server communication model using UDP sockets.	L3	05
13	Basic	Study of DNS tools	L2	01
14	Basic	Study of network Analyzer (wireshark)	L2	01

Text Books/Reference Books:

Sr No	Book Type(Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
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2	Text Book	Computer Networks	Andrew S. Tanenbaum	Prentice Hall	5th Edition	2010
3	Text Book	TCP/IP Protocol Suite	Behrouz Forouzan	The McGraw Hill	5th Edition	2021

Online References:

Sr. No.	Website Name	URL
1	Udemy (Computer Networking Lab Course)	https://onlinecourses.nptel.ac.in/noc22_cs19/preview

Examination Scheme and Guidelines:

CIE (Practical) (50 Marks)	Continuous assessment as per institute policy
ESE 50 Marks	ESE-End Semester Examination
	Practical Oral Exam

Course Name: Object Oriented Programming with C++

Course Details:

Class	SY		Semester	III		
Course Title	Object Oriented Programming with C++		Course Code	Practical: 01CSEPCP205		
Prerequisites:			Fundamentals of C Programming, Data structures			
Teaching scheme:	Theory Hours:	----	Practical Hours:	4	Tutorial Hours:	----
	Credits:	----	Credits:	2	Credits:	----
Evaluation scheme						
Theory				Practical		Total
T-I	T-II	ISE	ESE	CIE	ESE	
--	--	--	--	50	50	100

Course Objectives:

The course aims to:

Sr No.	Course Objectives
01CSEPCP205.01	Understand and apply fundamental object-oriented programming concepts in C++
01CSEPCP205.02	Develop programs using advanced features of C++ such as dynamic memory allocation, friend functions, inline functions, and pointers
01CSEPCP205.03	Implement searching and sorting algorithms using C++
01CSEPCP205.04	Design and implement linear data structures such as stacks, queues, and linked lists using arrays and linked representations
01CSEPCP205.05	Implement nonlinear data structures including trees and heaps with various operations

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr No.	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCP205.01	Apply fundamental Object-Oriented Programming (OOP) concepts such as classes, objects, constructors, destructors, encapsulation, inheritance, and abstraction using C++.	L3
01CSEPCP205.02	Implement special member functions and advanced OOP concepts like friend functions, friend classes, static members, and dynamic memory allocation.	L3

01CSEPCP205.03	Analyze and implement runtime polymorphism using virtual functions and demonstrate understanding of early and late binding mechanisms.	L4
01CSEPCP205.04	Apply searching and sorting algorithms efficiently in C++ to solve basic computational problems.	L3
01CSEPCP205.05	Implement linear data structures such as stacks, queues, singly linked lists using arrays and linked lists.	L3
01CSEPCP205.06	Apply tree and heap data structures to perform various operations like insertion, deletion, traversal, and update.	L3

Text Books/Reference Books:

Sr No	Book Type (Text/Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication	Online
1	Reference	The Complete Reference C++	Herbert Schild	Tata McGraw Hill	4th Edition and onwards	2000	
2	Reference	Object oriented Programming in C++	Rajesh K.Shukla	Wiley	1st Edition	2008	
3	Textbook	Object-Oriented Programming with C++	E. Balaguruswamy	Tata McGraw-Hill	6th Edition and onwards	2011	
4	Textbook	Object oriented Programming with C++	Sourav Sahay	Oxford	2nd edition	2012	
5	Reference	Data Structures Through C++	Yashavant Kanetkar	BPB Publications	4th Edition	2022	

References:

Sr. No.	Website Name	URL	Units Covered
1	www.nptel.ac.in	https://archive.nptel.ac.in/courses/106/105/106105151/	C++ All
2	www.nptel.ac.in	https://nptel.ac.in/courses/106102064	Data structures All

Student should be able to perform 13-15 experiments based on the syllabus and concepts mentioned below:

Experiment Number	Type of Experiment (Basic /Design/Advanced/ Mini/ Minor Projects/ Seminar/ Case Studies)	Experiment Title	Course Outcome No.	Levels of attainment as per revised Bloom's Taxonomy
1	Basic	Implement classes & objects, Constructors & destructors	01	L3
2	Basic	Implement Friend function and Friend class	02	L3
3	Basic	Implement Inline Function, Static data members & member functions,	02	L3
4	Basic	Implement Array, Array of Objects, Pointer to Object, THIS pointer, Dynamic allocation operators (New & Delete)	03	L3
5	Basic	Implement Function overloading, Operator overloading (unary/binary/arithmetic/comparison)	03	L3
6	Basic	Implement Inheritance (multilevel, multiple, hybrid, Hierarchical)	03	L3
7	Basic	Implement Abstraction	03	L3
8	Basic	Implement Virtual function and Virtual class, early and late binding	04	L4
9	Basic	Implement Encapsulation	04	L3
10	Basic	Implement Searching algorithm using C++	04	L3
11	Basic	Implement Sorting algorithm using C++	05	L3
12	Basic	Implementation of stack using array/ Linked list using C++.	05	L3
13	Basic	Implementation of queue using array/Linked list using C++.	05	L3
14	Basic	Problem on implementation of the various operations on singly Linked List, like create, display, delete using C++.	06	L3
15	Basic	Program to create doubly linked list, and search for a particular key using C++	06	L3

16	Basic	Implementation of different tree traversal algorithms using C++	06	L3
17	Basic	Inserting new elements, deleting existing elements, and updating elements in tree using C++	06	L3
18	Basic	Insertion and deletion of elements in heap using C++.	06	L3

Examination Scheme and Guidelines:

CIE (Practical) (50 Marks)	Continuous assessment as per institute policy
ESE 50 Marks	ESE-End Semester Examination
	Practical Oral Exam

Course Name: Field Project

Course Details:

Class	S.Y. B. Tech.		Semester	III		
Course Title	Field Project		Course Code	Practical: 01CSEPCP206		
Prerequisites:			Basics of Programming and Computer Science.			
Teaching scheme:	Theory Hours:	---	Practical Hours:	4	Tutorial Hours:	---
	Credits:	---	Credits:	2	Credits:	---
Evaluation scheme						
Theory				Practical		Total
T-I	T-II	ISE	ESE	CIE	ESE	
---	---	---	---	25	50	75

Course Objectives:

The Course is aimed to:

Sr. No.	Course Objectives
01CSEPCP206.01	Create awareness among the students to express technical ideas, strategies and methodologies.
01CSEPCP206.02	Motivate students to self-learn new tools, algorithms, and/or techniques that contribute to the software solution of the project and to work as a responsible member and possibly a leader of a team in developing software solutions.
01CSEPCP206.03	To implement a small research problem using suitable technique and create awareness among the students with several domain areas where IT can be effectively used.
01CSEPCP206.04	Improve the team building, communication and management skills of the students

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEPCP206.01	Identify and formulate technical problems.	L1
01CSEPCP206.02	Select and utilize suitable techniques for problem solving.	L3
01CSEPCP206.03	Test the results and attempt to improve the system.	L4

01CSEPCP206.04	Present the findings and results with good coordination of all project partners.	L4
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Course Contents

This course will be completed under the guidance of faculty called supervisor. It is expected that the student should implement a small project based on a real world problem. Students should give preference to research paper, any visits to small businesses in society and prepare a synopsis by gathering requirements. The students should give at least two progress presentations intermediately as per the guidance of the supervisor and present a final report justifying the applicability, relevance and significance of the work. Students shall submit the final report as per the prescribed format in two copies to department.

Examination Scheme and Guidelines:

ISE 25 Marks	CA - Continuous Assessment based on two in semester presentations.
ESE 50 Marks	Final Project Presentation.

Course Name: Universal Human Values

Class	SY		Semester	III		
Course Title	Universal Human Values		Course Code	Theory: 01CSEVEL207		
Prerequisites:						
Teaching scheme:	Theory Hours:	1 Hr/week	Practical Hours:	-	Self-Study	1 Hr/week
	Credits:	1	Credits:	-	Credits:	1
Evaluation scheme						
Theory				Practical		Total
T-I	T-II	ISE	ESE	CIE	ESE	
--	--	--	--	50	--	50

Course Objectives:

The course aims to:

Sr. No.	Course Objectives
01CSEVEL207.01	Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
01CSEVEL207.02	Development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
01CSEVEL207.03	Highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Outcomes:

Upon successful completion of this course, the student will be able to:

Sr. No.	Course Outcomes	Levels of attainment as per revised Bloom's Taxonomy
01CSEVEL207.01	Explain the concepts of right understanding, happiness, and prosperity and their relevance to holistic development.	L2
01CSEVEL207.02	Distinguish between the needs of the Self and the Body and analyze their interrelationship for achieving harmony.	L4
01CSEVEL207.03	Illustrate the foundational values of trust and respect and analyze their role in ensuring harmony in relationships.	L3, L4
01CSEVEL207.04	Describe the concept of harmony in nature and interpret co-existence among the four orders of nature.	L3 L4

01CSEVEL207.05	Apply the principles of human values and ethics in real-life situations and examine their role in professional conduct.	L3, L4
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Course Contents			
Unit Number	Details	Hours	Revised Bloom's Taxonomy
Unit-01	Introduction to Value Education Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations	3	L2
Unit-02	Harmony in the Human Being Understanding Human being as the Co-existence of the Self and the Body, distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health	3	L3
Unit-03	Harmony in the Family and Society Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order	3	L4
Unit-04	Harmony in the Nature/Existence Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence	7	L4
Unit-05	Implications of the Holistic Understanding – a Look at Professional Ethics Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Competence in Professional Ethics Holistic	5	L2

	Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession		
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Text Books/Reference Books:

Sr . No	Book Type (Text/ Reference)	Name of the Book	Name of the Author	Publisher	Edition	Year of Publication
1	Text	The Textbook A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Asthana, G P Bagaria,	Excel Books, New Delhi	2nd	2019
2	Text	The Teachers Manual for A Foundation Course in Human Values and Professional Ethics	R R Gaur, R Asthana, G			
3	Reference	Fundamentals of Ethics for Scientists & Engineers	E G Seebauer & Robert L. Berry	Oxford University Press		2000

Online References:

Sr. No.	Website Name	URL	Units Covered
1	You Tube	https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw	ALL
2	Website	https://fdp-si.aicte-india.org/8dayUHV_download.php	ALL

List of Assignments/Tutorials for ISE:

- Minimum 06 Assignments/Tutorials based on the curriculum.

Evaluation Scheme:

CIE (50 Marks)	<ul style="list-style-type: none"> • Continuous assessment as per institute policy 25 Marks • MCQ (multiple choice questions) for 25 Marks can be conducted
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COURSE DETAILS/SYLLABUS

T. Y. B. Tech (Computer Science and Engineering) Sem – V

T. Y. B. Tech (Computer Science and Engineering) Sem – V

1. Information Security (PCC-CS501)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :	Term work: 50 Marks
Practical : 2 Hrs./Week	Practical : –

Pre-requisites: Computer Network, Modular Arithmetic & Number Theory, C / C++.

Course Objectives

6. To introduce the principles of Crypto-Systems.
7. To expose students to various security services and mechanisms used.
8. To make the students aware of the security features of PGP, S/MIME, Digital Signatures, IPsec & SSL.
9. To make the students understand the system level security issues concerning threats, intruders and use of firewalls and trusted systems.
10. To make students to explore non-cryptographic and software vulnerabilities.

Course Outcomes

Upon successful completion of this course, the students will be able to :

6. Understand principles of Crypto-systems.
7. Compare and analyze various security services and mechanisms.
8. Apply and use the features of PGP, S/MIME, DSA, IPsec, SSL in their profession.
9. Take precautions of their personal computing system from possible threats and attacks.
10. Explore newer vulnerabilities and provide the solutions to them.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	The OSI Security Architecture, Symmetric Cipher Models: Substitution Techniques, Transposition Techniques, Block Cipher Principles, The Data Encryption Standard.	6
2.	Principles of Public-Key Cryptosystems, The RSA Algorithm, Key Management, Diffie-Hellman Key Exchange, Authentication requirements, Authentication functions, MAC and Hash functions and their requirements,	7
3.	Digital Signature, Digital Signature Standard, Authentication applications - Kerberos, X.509 Authentication service.	5

4.	Email Security - PGP, S/MIME, IP Security - IP Security Architecture, Authentication Header and Encapsulating Security Payload.	5
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Student Information	Web and Network Security	2025-26 SEM I	Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction, Intruders, Intruder Detection, Password Management, Firewall Design Principles, Trusted Systems.	6
5.			Layer Security, Secure Electronic Transaction, Intruders, Intruder Detection, Password Management, Firewall Design Principles, Trusted Systems.	6
6.			Non-Cryptographic Protocol Vulnerabilities - DoS and DDoS, Session Hijacking and Spoofing, Pharming attacks. Software Vulnerabilities - Phishing, Buffer Overflow, Format String attacks, SQL Injection.	7

Term Work

- Minimum of 10 Experiments to be performed from the list given below.
- Practical should include the implementation and use of the following mechanisms/Algorithms/Tools /Techniques
- Implementation can be in C/C++ Programming Language

Experiment List

14. GCD Using Euclidean algorithm/Computing Multiplicative inverses/ Prime number and modular arithmetic operations.
15. Substitution/Transposition/ Product Cipher and their Analysis
16. Single round of DES algorithm/Double DES/ Triple DES and its analysis
17. RSA Algorithm to provide Confidentiality and Authentication services or any other Public-Key Algorithm.
18. Diffie–Hellman or any other key exchange Algorithm.
19. Implementation and use of any authentication functions / algorithm.
20. Generation and use of Digital Signature for real world situation.
21. Usage of PGP security package and S/MIME features.
22. Experimenting with SSL/TLS/E-Commerce Applications and identifying their Vulnerabilities.
23. Demo and usage of network traffic analysis tools.
24. Experimentation on identifying non-cryptographic Protocol Vulnerabilities and remedies thereon.
25. Experimenting on identifying software Vulnerabilities using various tools/techniques and their analysis.
26. Any other4 Implementation/Demo/Experimentation based on the topics of syllabus.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Cryptography and Network Security	William Stallings	Pearson Edition	(Unit I to V)
2	Network Security and Cryptography	Bernard Menezes	Cengage Learning	Unit -VI

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Cryptography and network security	Atul Kahate	TMGH
2	Cryptography and Network Security	Forouzan	TMGH
3	Network Security Know it All	Joshi et. al	Morgan Kaufmann Publisher

2. System Programming (PCC-CS502)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial : ---	Term work : 50 Marks
Practical : 2 Hrs./Week	Oral : 25 Marks

Pre-requisites : Basics of Operating Systems and Microprocessor.

Course Objectives

4. To expose students to the fundamentals of languages and processing
5. To make students to learn design of grammars, assemblers and compilers
6. To provide hands on experience to the students on simulation of linkers, loaders and software tools for UIs

Course Outcomes

7. Student will be able to identify the role of system programs and application programs.
8. Student will be able to understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.
9. Students able to describe the various concepts of assemblers and macro - processors.
10. Students able to understand the various phases of compiler and compare its working with assembler.
11. Students understand how linker and loader create an executable program from an object module created by assembler and compiler.
12. Students will be able to create graphical user interfaces for basic programs and learn about terminal input/output through the termios libraries
- 13.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	Language Processors: Introduction, Language processing activities, Fundamentals of language processing, Fundamentals of language, Specification, Language Processing Development Tools: LEX and YAC	7
2.	Assemblers: Elements of assembly language programming, A simple assembly scheme, pass structure of assemblers, Design of a two pass assemble	5
3.	Macros and Macro Processors: Macro definition and call, Macro expansion, Nested macro calls, Advanced macro facilities, Design of macro pre-processor: Design Overview, Data structure of Macro pre-processor with and Example	7
4	Compilers and Interpreters: Aspects of compilation, Memory allocation: Static and Dynamic memory allocation, Memory Allocation in block Structure language. Compilation of expressions, Code optimization: Local and Global optimization and Optimization technique, Interpreters	7
5.	Linkers: Introduction, Relocation and linking concepts, Self- relocating programs, linking for overlays, Loaders	5
6.	Software tools: Introduction, Software tools for program development, Editors, Debug Monitors, Programming Environments, and User Interface	5

Term Work

Minimum of 5 experiments on LEX and 5 case study each on Assembler, Compiler, Macro Preprocessor, Linker and Loaders.

Oral Exam

Orals can be conducted over the syllabus contents and Term Work assignments

Textbooks

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	System Programming and operating systems	D.M. Dhamdhare	2nd Edition (TMGH)	All Units
2.	Lex & Yacc Publisher:	Doug Brown, John Levine, Tony Mason	2nd Edition O'Reilly Media	For Practical

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial : ---	Term work : ---
Practical : --	Oral : ---

Pre-requisites: Software Engineering Concepts, Object Oriented Concepts

Course Objectives

5. To Understand the Object Based View of the System
6. To design Problems using Object Oriented Analysis and Design Techniques
7. To Understand UML notations and compare with OMT
8. To inculcate necessary skills to handle complexities in Software Design

Course Outcomes

5. Student will able to analyze and model software systems
6. Student will able to construct OO view of the system
7. Student will able to design a Software System using OMT design techniques.
8. Student will able to design a Software System using UML design techniques.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	<p>Introduction: Ability to analyze and model software systems Object oriented themes, modeling as a design technique.</p> <p>Object Modeling: Object, classes, Link & association, advanced link & Association concepts, generalization & Inheritance, grouping constructs, aggregation, abstract classes, generalization as extension & restriction, multiple inheritance, metadata, candidate key & constraints.</p>	8
2.	<p>Dynamic & Functional Modeling: Dynamic modeling: Events & states, operations, nested state diagrams, concurrency, advanced dynamic modeling concepts & simple dynamic model, relation of object dynamic models.</p> <p>Functional Modeling: functional model, data flow diagrams,</p>	7

Student Information	Specification of Unit 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	
	relation of functional to object & dynamic model.	
3.	Design Methodology: OMT methodology, Impact of an object-oriented approach, analysis, system design with examples, combining models, design algorithms, design optimization, implementation of controls, design association & physical packaging.	3
4.	Introducing the UML: An overview of the UML, Conceptual Model of UML, Architecture of UML Structure modeling Using UML: Classes, Relationship, Diagrams, Class Diagrams.	7
5.	Behavioral Modeling: Interactions, Use Cases, Use Case Diagram, Interaction diagrams, Activity diagrams, Events & Signals, State Machines, Process & Threads, Time & Space, State chart diagrams.	5
6.	Architectural Modeling: Components, Deployment, Collaboration, Patterns & frameworks, component diagrams, Deployment diagrams.	6

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Object-orientated Modeling & Design: (Unit 1 to 3)	James Rambaugh, Michael Blaha, William Premerlani, Frederick Eddy, William Lorensen	PHI	Unit 1 to 3
2	The Unified Modeling Language User Guide	Grady Booch, James Rambaugh, Lvar Jacobson	Addison Wesley	Unit 4 to 6

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Object oriented analysis & design using UML	H. Srimathi, H. Sriram, A. Krishnamoorthy	SCITECH PUBLICATION 2nd Edition
2	Object Oriented analysis & Design	Andrew High	TMG
3	Practical Object Oriented Design with UML	Mark Priestley	McGraw-Hill Education
4	Threat first Object oriented analysis & design	BreetMclaughline, Garry Police & Devide West	OREILLY

4. Computer Algorithm (PCC-CS504)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 4Hrs/Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial : 1Hr/Week	Term work: 25 Marks
Practical: --	Oral : ---

Pre-requisites: Data Structures, Discrete Maths, Engineering Maths, Programming Concepts

Course Objectives

5. To introduce algorithm design methods / techniques with analysis
6. To devise algorithm for given problem statement
7. To introduce complex computational problems
8. Introducing parallel algorithms

Course Outcomes Upon

Completion of this course, students will be able to:

6. Understand and demonstrate algorithm design methods with analysis
7. Devise algorithm for given problem statement and analyze its space and time complexity by using recurrence relation
8. Categorize the problem to determine polynomial and non-polynomial based on its nature
9. Understand and demonstrate basic concepts of parallel algorithms

Stud	UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
	1.	Unit 1 : Divide and Conquer What is algorithm, Algorithm Specification, Recurrence relations, Performance Analysis, Randomized Algorithms. Divide and Conquer : The general method, Binary search, Finding the maximum and minimum, Merge sort, Quick sort, DC Selection Algorithm, analysis of Divide and Conquer algorithms.	10
	2.	Unit 2 : The Greedy Method The general method, Knapsack problem, Job sequencing with deadlines, minimum-cost spanning trees – Prim’s and Kruskal’s Algorithms, Optimal storage on tapes, Optimal merge patterns, Single source shortest paths.	7
	3.	Unit 3 : Dynamic Programming The general method, Multistage graphs, All pair shortest paths, 0/1 knapsack, Reliability design, Traveling Sales person problem.	7
	4.	Unit 4 : Basic Traversal and Search Techniques and Backtracking	13
		Techniques for Binary Trees, Game Tree; Techniques for Graphs – Breadth First Search & Traversal, Depth First Search & Traversal, AND/OR graphs; Connected components and Spanning Trees; Bi-connected components and depth first search. Backtracking - The general method, 8-queen problem, sum of subsets, Knapsack Problem, Hamiltonian Cycle, and Graph Coloring.	
	5.	Unit 5 : NP Hard and NP Complete Problems Basic Concepts, Introduction to NP Hard Graph Problems.	4
	6.	Unit 6 : Introduction to Parallel Algorithm Computational Model and Fundamental Techniques and Algorithms – PRAM, MESH and HYPERCUBE.	7

Term Work

It should consist of minimum 10-12 assignments based on following guidelines

- A batch of students will be assigned different algorithms and expected to analyze the algorithms in terms of time and space complexity
- Solve different exercise problems in text book mentioned in syllabus
 - Student need to perform at least 6 programs from the syllabus. Perform Priori Analysis and Posteriori Measurement on the same.
- Study of Profiling tools.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Fundamentals of Computer Algorithms	Ellis Horowitz, Satraj Sahani, Saguthevar Rajasejaran	Universities Press, Second Edition	All Units

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Fundamentals of Algorithmics	Gilles Brassard, Paul Bratley	Pearson Education
2	Mastering Algorithms with C	Kyle Loudon	SPD O'Reilly
3	Computer Algorithms- Introduction to Design and Analysis	Sara Baase, Allen Van Gelder	Pearson Education

Open Elective - I (OEC-CS505) Computer

Graphics and Multimedia (OEC-CS505)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :	Term work :
Practical :	Practical :

Course Objectives

- To provide knowledge to the students about basics of computer graphics and different display devices.
- To expose students to the various 2D & 3D transformation & projection techniques.
- To provide knowledge to the students about basics of Illumination models, surface rendering methods.
- To make the students aware of multimedia system & Multimedia Authoring, Compression techniques.

Course Outcomes

Upon successful completion of this course, the student will be able to -

- Express basic ideas of computer graphics and different display devices.
- Understand & apply various transformation, projection and rendering techniques on graphical objects.

8. Understand multimedia system & use of Multimedia Authoring & Compression techniques on graphical objects.

Unit No.	Unit Name and Contents	No. of Lectures
1	Basic of Computer Graphics Basic of Computer Graphics, Applications of computer graphics, Display devices: Random and Raster scan systems, Input devices, Scan Conversion techniques: RLE, Frame Buffer, Graphics software and standards.	5
2	Transformations – Basic 2D & 3D transformations - Translation, Scaling, Rotation, Reflection, Shearing, Multiple Transformations, Rotation about an axis parallel to a coordinate axis, Rotation about an arbitrary axis in space, Affine and Perspective Geometry, Orthographic projections and Axonometric projections.	8
3	Illumination models and surface rendering methods Light sources, Basic illumination models, Displaying light intensities, Polygon Rendering methods, Ray tracing methods, Radiosity lighting.	5
4	Introduction to Multimedia Multimedia: Historical perspective, multimedia data and multimedia systems, a multimedia system today, Analog and Digital Signals, Analog-to- Digital Conversion, Media Representation and Media Formats - Digital Images, Digital Video, Digital Audio.	6
5	Multimedia Authoring & Compression Examples of Multimedia, Requirements for Multimedia Authoring Tools, Intra media Processing, Intermedia Processing, Media Compression - The Need for Graphics Compression, Graphics compression in relation to other media compression, Mesh compression using connectivity encoding.	7
6	Computer Animation Introduction: Types, Key frame animation, Procedural animation, Construction of an animation sequence, Motion control methods, VFX, SFX, Introduction to Morphing, Wrapping techniques, Defining virtual & Augmented reality.	5

Text Books:

7. Procedural elements for Computer Graphics - David F. Rogers (MGH International) (For Units 1)
8. Mathematical elements for Computer Graphics - David F. Rogers, J. Alan Adams (MGHInt.) (Unit 2)
9. Computer Graphics C Version second edition –Donald D. Hearn, M. Pauline Baker(Pearson) (Unit 3)
10. Multimedia systems: Algorithms, Standards & Industry Practice-Parag Havaldar&Gerard Medioni, Cengage Learning (Unit 4, 5)
11. Computer Graphics- Rajesh Maurya (WILEY India) (Unit 6)

Some assignments on following topics can be given and its evaluation should be considered for CIE

7. Introduction to computer graphics, OPEN GL, GLUT, GLU
8. Design 2D & 3D objects by using graphics primitives
9. Apply the different transformation techniques on 2D & 3D graphical objects
10. Create graphics design using any software(Picasa, Autodesk Maya, SketchUp, Solidworks)
11. Perform rendering using Blender or LuxCoreRender Software
12. Create 2D & 3D animated object using Synfig or Blender Software.

Internet of Things(OEC-CS505)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :	Term work :
Practical :	Practical :

Pre-requisites: Fundamentals of Computer Network and Internet, basics of C / C++ programming language.

Course Objectives

5. To learn Internet of Things Technology.
6. To know the basics of RFID, Sensor technologies.
7. To know the basics of IoT systems like Raspberi Pi, Arduino, Banana Pi.
8. To aware students about wireless communication technologies and IoT applications.

Course Outcome

5. Students will understand basic concepts of IoT
6. students will be able to learn and implement RFID technology in various applications.
7. Students will be able to write programs for basic applications
8. Student will understand and implement different communication technologies in IoT systems.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	Introduction: IoT, Objects / Things, IoT definitions, IoT frame work, Identification technologies, Internet in IoTs.	4
2.	Fundamental of IoT mechanisms: Identification of IoT objects and services, Traffic characteristics, scalability and inter-operability, security and privacy, Communication capabilities, Mobility support and device power, Sensor technology, RFID technology and satellite technology.	6

Student Information	Radio Frequency Identification Technology, IoT objects and services, principles of RFID, Components of an RFID system, RFID reader, Tags, middleware, Sensor nodes, connecting nodes, networking nodes.	6
3.	IoT systems: Hardware and Software: Introduction to Raspberi Pi, Familiar with Raspberi Pi hardware, study of I/O ports, Programming with Raspberi Pi: Study of operating system, simple programs in C / C++, Introduction with Python programming.	8
4.	Communication Technologies: WPAN Technologies: Introduction to IEEE 802.15.4 standard, Bluetooth, Zigbee, IEEE 802.15.6; WBANS, NFC, IEEE 802.11 WLAN, Cellular and mobile technologies.	6
5.	IoT Application Examples: Smart Metering, advanced metering infrastructure, e-health / Body Area Network, City Automation (Smart City), Automotive Application, Environmental Applications, Home Automation, Control Applications.	6

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	The Internet of Things - Connecting objects to the web	Hakima Chaouchi	Wiley Publications
2	Building the Internet of Things	Daniel Minoli	Wiley Publications
3	Raspberi Pi Beginner's Guide	Gareth Halfacree	Raspberi Press
4	Introduction to Wireless Telecommunications systems and Networks	Gary J. Mulett.	Cengage Learning (India Edition).

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Raspberi Pi for Dummies	Sean McManus, Mike Cook	A Wiley Brand
2	Architecting the Internet of Things	Bernd Scholz, Reiter	Springer

6. Java Programming (PCC-CS506)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory :---- CIE : ---
Tutorial : ---	Term work: 50 Marks
Practical: 4 Hrs./Week	Oral : 50 Marks

Pre-requisites : C++ and html

Course Objectives

7. To Introduce the concept of object-oriented programming using java.
8. To learn how to implement reliable and secure application using exception handling and package concept.
9. Have the ability to write program to perform file operations.
10. To understand how to design components with java Swing API and present mechanism of multithreading.
11. To familiarize database connectivity through JDBC and learn the collection framework.
12. To explore the concept of networking and web programming using java servlet and jsp.

Course Outcomes

7. Students will be able to articulate the principle of object-oriented problem solving & programming.
8. Students will be able to illustrate code reusability, security and abstraction using inheritance, package and interface.
9. Students will be able to develop reliable and user-friendly applications using exception handling and file handling.
10. Students will be able to create desktop apps using SWING and event handling and also illustrate multithreading concepts.
11. Students will be able to use JDBC & collection framework.
12. Students will be able to apply network programming concept & develop web applications using servlet and jsp.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	<p>Fundamental Programming in Java: The Java Buzzwords, The Java Programming Environment- JVM, JIT Compiler, Byte Code Concept, HotSpot, A Simple Java Program, Source File Declaration Rules, Comments, Data Types, Variables, Operators, Strings, Input and Output, Control Flow, Big Numbers, Arrays- Jagged Array.</p> <p>Objects and Classes: Object-Oriented Programming Concepts, Declaring Classes, Declaring Member Variables, Defining Methods, Constructor, Passing Information to a Method or a Constructor, Creating and using objects, Controlling Access to Class Members, Static Fields and Methods, this keyword, Object Cloning, Class Design Hints,</p>	5
2.	<p>Inheritance, Interface and Packaging:</p> <p>Inheritance: Definition, Super classes, and Subclasses, Overriding and Hiding Methods, Polymorphism, Inheritance Hierarchies, Super keyword, Final Classes and Methods, Abstract Classes and Methods, casting, Design Hints for Inheritance, Nested classes & Inner Classes, finalization and garbage collection.</p> <p>Interfaces: Defining an Interface, Implementing an Interface, Using an Interface as a Type, Evolving Interfaces, and Default Methods.</p> <p>Packages: Class importing, Creating a Package, Naming a Package, Using Package Members, Managing Source and Class Files. Developing and deploying (executable) Jar File.</p>	7
3.	<p>Exception and I/O Streams:</p> <p>Exception: Definition, Dealing with Errors, The Classification of Exceptions, Declaring Checked Exceptions, Throw an Exception, Creating Exception Classes, Catching Exceptions, Catching Multiple Exceptions, Re-throwing and Chaining Exceptions, finally clause, Advantages of Exceptions, Tips for Using Exceptions.</p> <p>I/O Streams: Byte Stream – Input Stream, Output Stream, Data Input Stream, Data Output Stream, File Input Stream, File Output Stream, Character Streams, Buffered Stream, Scanner, File, Random Access File.</p>	4
4.	<p>Graphical User Interfaces using Swing and Multithreading</p> <p>Introduction to the Swing, Swing features, Swing Top Level Containers-Creating a Frame, Positioning a Frame, Displaying Information in a Panel, The Model-View-Controller Design Pattern, The J Component Class.</p> <p>Layout Management: Introduction to Layout Management, APIs for Border Layout, Flow Layout, Grid Layout</p>	6

Student Information	Event Handling, The AWT Event Hierarchy, Semantic and Low- Level Events in the AWT, Low-Level Event Types	5
	User Interface Components: Text Input, Choice Components, Menus, Dialog Boxes Setting the Look and Feel of UI, Introduction to JApplet Multithreading: Processes and Threads, Runnable Interface and Thread Class , Thread Objects, Defining and Starting a Thread, Pausing Execution with Sleep, Interrupts, Thread States, Thread Properties, Joins, Synchronization	
5.	Collection and Database Programming Collections: Collection Interfaces, Concrete Collections- List, Queue, Set, Map, the Collections Framework Database Programming: The Design of JDBC, The Structured Query Language, JDBC Installation, Basic JDBC Programming Concepts, Query Execution, Scrollable and Updatable Result Sets, Metadata, Row Sets, Transactions	7
6.	Networking and Web: Networking: Overview of Networking, Networking Basics, Working with URLs, Creating a URL, Parsing a URL, Reading Directly from a URL, Connecting to a URL, Reading from and Writing to a URL Connection, Sockets, Reading from and Writing to a Socket, Writing the Server Side of a Socket, Datagrams, Writing a Datagram Client and Server. Servlet and JSP: Introduction to Servlet, The servlet Lifecycle, Retrieving Information and Sending Information, Database Connectivity using servlet, Introduction to JSP, Writing Scriplets, The jsp Lifecycle, Retrieving Information and Sending Information, Database Connectivity using jsp	7

Term Work

1. 25 marks for performance in practical and experiments as part of continuous evaluation
2. 25 marks for Two Practical Tests and oral (Each of 25 Marks) to be conducted during the semester.

Practical

- Minimum 15 experiments should be conducted based on above topics and covering following list. At least two experiments should be conducted on each unit in the syllabus.
19. Create a class called Employee that includes three pieces of information as instance variables- first name, a last name and a monthly salary. Your class should have a constructor that initializes the three instance variables. Provide a set and a get method for each instance variable. If the monthly salary is not positive, set it to 0.0. Write a test application named Employee Test that demonstrates class

Employee's Capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again.

20. Create class Savings Account. Use a static variable annual Interest Rate to store the annual interest rate for all account holders. Each object of the class contains a private instance variable savings Balance indicating the amount the saver currently has on deposit. Provide method calculate Monthly Interest to calculate the monthly interest by multiplying the savings Balance by annual Interest Rate divided by 12 this interest should be added to savings Balance. Provide a static method modify Interest Rate that sets the annual Interest Rate to a new value

Write a program to test class Savings Account. Instantiate two savings Account objects, saver1 and saver2, with balances of Rs 2000.00 and Rs 3000.00, respectively. Set annual Interest Rate to 4%, then calculate the monthly interest and print the new balances for both savers. Then set the annual Interest Rate to 5%, calculate the next month's interest and print the new balances for both savers.

21. Create Vehicle Interface with name, max Passanger, and maxSpeed variables. Create Land Vehicle and Sea Vehicle Inteface from Vehicle interface. L and Vehicle has num Wheels variable and drive method. Sea Vehicle has displacement variable and launch method. Create Car class from Land Vehicle, Hover Craft from Land Vehicle and Sea Vehicle interface. Also create Ship from SeaVehicle. Provide additional methods in Hover Craft as enterLand and enterSea. Similarly provide other methods for class Car and Ship. Demonstrate all classes in a application.

22. Create abstract class Shape which has instance variables side, area and perimeter And methods calculate Area(), calculate Perimeter() as abstract methods and display() as concrete method. Write subclasses which extend Shape class like Triangle, Rectangle, Circle, Cube and Squere and override abstract methods and display methods in subclass take instance variable if needed as per the formula. And use parameterized constructor to initialize instance variables using "this" reference variable

Write Test class and Create a reference variable of Shape which will hold the objects of all the sub classes and calculate respective area, perimeter and display the results.

23. Create the interface stack which has variable size, abstract methods push(), pop(), display(), overflow() and underflow(). We need to implement 3 subclasses Integer Stack, String Stack and Double Stack respectively by implementing interface. All the methods in interface are declared for string. And in subclass for integer Stack convert string to integer. Same thing to all other. Create one test class and check for the working of all the classes.
24. Develop a mathematical package for Statistical operations like Mean, Median, Average, Standard deviation. Create a sub package in the math package -convert. In "convert" package provide classes

- package, and build executable jar file of it.
25. Develop application which can handle any 5 combination of predefined compile time and runtime exceptions using multiple catch blocks. Use throws and finally keywords as well.
 26. Develop a BankAccount class which should contain all methods of Bank i.e.balanceEnquiry(), withdraw(), transfer() and deposit(). You should create at least two objects of BankAccount using array and do all operations mentioned above. Also generate user defined exception LowBalance Exception, Negative Number Exception and Password Mismatch Exception whenever required. To transfer amount from one account to another use two Bank Account objects.
 27. Take file name as input to your program through command line, If file is existing the open and display contents of the file. After displaying contents of file ask user – 1.do you want to add the data at the end of file or 2.replace specified text in file by other text. Based on user's response, then accept data from user and append it to file. If file is not existing then create a fresh new file and store user data into it. Also. User should type exit on new line to stop the program. Do this program using Character stream classes.
 28. Take Student information such as name, age, weight, height, city, phone from user and store it in the file using Data Output Stream and File Output Stream and Retrieve data using Data Input Stream and File Input Stream and display the result. Use Serialization concept and Byte stream classes.
 29. Develop a Swing GUI based standard calculator program. Use event handling, Layout of swing package.
 30. Create Stop Watch with Swing GUI and Multithreading. Provide Facility for Lap Counting.
 31. Write a program to read a text file one line at a time. Read each line as a String and place that String object into a LinkedList. Print all of the lines in the LinkedList in reverse order.
 32. Fill a HashMap with key-value pairs. Print the results to show ordering by hash code. Extract the pairs, sort by key, and place the result into a Linked HashMap. Show that the insertion order is maintained.
 33. Write a GUI based program to create a student registration and Login. Store Registration data in Database and take Login information from Database.
 34. Create GUI Based chat application using TCP or UDP.
 35. Design a student registration form which contains all the registration details and after registration display success page which should display all the entered details. And also design login form , home page and logout form using servlet.
 36. Write a program to store the above form information in database. And while login check with database. Display all student names in home page. Give one search field and button to search for particular student record and display all his information as search result using servlet and jsp using

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Core Java- Volume I Fundamentals	Cay Horstmann and Gary Cornell	Pearson, Eight edition	Unit 1 to Unit 4
2	Core Java- Volume II Advanced Features	Cay Horstmann and Gary Cornell	Pearson, Eight edition	Unit 5 and Unit 6
3	Java Servlet Programming	Jason Hunter	O'Reilly Publication, 2nd Edition	Unit 6
4	Core-Servlet and JavaServer Pages Volume – 1	Marty Hall, Larry Brown	Pearson Education	Unit 6

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	JAVA-The Complete Reference	Herbert Schildt	Mcgraw Hill, Oracle Press	Ninth edition
2	Head First Java	Eric Freeman Elisabeth Robson Bert Bates Kathy Sierra	O'Reilly Publication	3 rd edition
3	Head First Servlets and JSP	Bryan Basham, Kathy Sierra, Bert Bates	O'Reilly Publication	2nd Edition

7. Business English (HM-CS507)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : ---	Theory : -- CIE : : --
Tutorial : 2 Hrs./Week	Term work: 25 Marks
Practical: ---	Oral : 25 Marks

Pre-requisites:

- 1) Knowledge of functional grammar and vocabulary in English
- 2) Knowledge of the importance of business English in their career path
- 3) Knowledge of linguistic competence and understand intricacies involved in technical communication

Course Objectives

6. Develop basic skills to deal with people in business situations
7. Increase their knowledge of key business concepts worldwide
8. Write and read basic business reports, letters, e-mails etc
9. Expand vocabulary related to general business situations
10. Develop confidence to deal with people and basic issues in the business world

Course Outcomes

6. Learn to communicate with others in practical, business oriented situations
7. Learn to express themselves in English with greater fluency, accuracy and confidence
8. Learn to handle themselves in English in a variety of business contexts, from negotiating, to using the telephone, to making presentations, to socialising
9. Enhance the skills of listening, speaking, pronunciation skills, as well as business vocabulary
10. Acquire the communicative competencies crucial for appropriate workplace behavior

UNIT NO.	UNIT NAME & DETAILS
1.	<p>Getting acquainted with professional culture</p> <ul style="list-style-type: none"> • First day at work • Induction program • Company hierarchy • Behavior pruning
2.	<p>Vocabulary building and Reading comprehension</p> <ul style="list-style-type: none"> • Reading techniques and comprehension skills • Synonyms and antonyms • One-word substitution • Prefixes and Suffixes • Idioms and phrases

	<ul style="list-style-type: none"> • Irregular verbs like (write, wrote, written) • Situational vocabulary
3.	<p>Effective vocal Communication</p> <ul style="list-style-type: none"> • Effective Meetings • Video Conferencing • Effective Telephonic Communication • Breaking Bad news
4.	<p>Effective written Communication</p> <ul style="list-style-type: none"> • Business letters • Resume Writing • E-mail writing • Report writing • Minutes of meeting • Memo writing
5.	<p>Public speaking and Presentation Skills</p> <ul style="list-style-type: none"> • Preparing and conducting presentation • Body language • Overcoming stage fear • Best practices • Interviewing and being interviewed
6.	<p>Miscellaneous</p> <ul style="list-style-type: none"> • Group Discussion • Handling Complains • Negotiation Skills • Business Etiquettes

Term Work

- Individual Performance or Presentation to be Evaluated Continuously
- Group Activity Performance to be Evaluated in the Batch
- Assignments or Write up (Minimum 10)

Assignment List

11. Case study of organizational hierarchy
12. Match the following on antonyms & synonyms
13. Irregular verb list (like choose, chose, chosen)
14. Word building by using prefixes suffixes (eg. ir-regular, im-possible)
15. Minutes of Meeting – writing
16. Report writing (any report)
17. Comprehension/paragraph writing

18. Business letter / resume writing / email writing

19. PPT presentation on any non-technical topic. PPT handout should be attached

20. Do's & Dont's of group discussion & Business etiquettes

Textbooks / Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	Technical Communication	Ashraf Rizvi	Tata McGraw Hill, 2005	1, 2, 3, 4, 6
2	English for Technical Communication	K. R. Laxminarayan	SCITECH 2 nd Edition 2014	2, 4, 3
4.	Technical English	Dr. M. Hemamalini	Wiley, 2014	2, 3, 4, 5

T. Y. B. Tech (Computer Science and Engineering) Sem – VI

1. Compiler Construction (PCC-CS601)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :	Term work: 25 Marks
Practical: 2 Hrs./Week	Oral : --

Pre-requisites: C- programming , System Programming, Data structures

Course Objectives

4. To introduce the fundamentals of compilers and their phases.
5. To design and implement phases of a compiler.
6. To expose the students to various tools like LEX and YACC.

Course Outcomes

7. Recall the compiler phases and compiler construction tools like LEX and YACC.
8. To design and implement Lexical Analyser for a simple language.
9. To design and implement Syntax analyser for a simple expression.
10. To apply Syntax directed translations and Syntax Directed definitions to generate intermediate code.
11. To identify appropriate code optimizing transformation for the given code.
12. To explain concept of code generation.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	UNIT I: Introduction Compilers, Phases of a compiler, Compiler construction tools, cousins of the compiler.	5
2.	UNIT 2- Lexical Analysis: Role of a Lexical analyzer, input buffering, specification and recognition of tokens, finite automata implications, designing a lexical analyzer generator.	6
3.	UNIT 3- Syntax Analysis: Role of Parser, Writing grammars for context free environments, Top-down parsing, Recursive descent and predictive parsers (LL), Bottom-Up parsing, Operator precedence parsing, LR, SLR and LALR parsers	7

Student Information	UNIT 4- Syntax Directed Translation and Intermediate Code Generation:	
4.	Syntax directed definitions, construction of syntax tree, S-attributed definitions, L-attributed definitions, Intermediate languages, assignment statements, back patching.	7
5.	UNIT 5- Code Optimization: Principle sources of optimization, optimization of Basic Blocks, loops in flow graphs, Peephole optimization	5
6.	UNIT 6- Code Generation: Issues in design of a code generator and target machine, Run time storage management, Basic blocks and flow graphs, Next use information and simple code generator, Issues of register allocation, code generation from Dags.	6

Term Work

Minimum of 10 to 12 experiments should be carried out based on the following experiments based on following list.

Practical List

Minimum of 10 to 12 experiments should be carried out based on the following experiments.

10. Design of preprocessor for C program.
11. Design a complete lexical analyzer for C language.
12. Program to create a symbol table generator.
13. Design a syntax analyzer for simple expression in c language using top down parsing.
14. Program to create a syntax tree for simple expression in c language using recursive descent parsing.
15. To implement intermediate code generator for Boolean expression in three address code format.
16. Implement intermediate code generator for the conditional statements in three address code format.
17. Implement any one bottom up parsing [LR, SLR, LALR, Operator precedence] technique.
18. To implement a program for code generator from labeled tree.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	Compilers - Principles, Techniques and Tools	A.V. Aho, R. Shethi and J.D. Ullman	Pearson Education	ALL Units

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	Compiler construction	D.M. Dhamdare	Mc-Millan	-

Student	Information Manual 2025-26	SEM I		
2.	LEX & YACC	Dong Brown, John	O'Reilly 2nd	Refer for
		Levine, Tony Mason	Edition	Practical's

2. Operating System -II(PCC-CS602)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 4 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial : ---	Term work: 25 marks
Practical: 2 Hrs./Week	Practical : ---

Pre-requisites: Data Structures , Concepts of Process, deadlock and System calls.

Course Objectives

8. Fundamental architecture of UNIX operating system kernel.
9. Detail algorithms of buffer cache management.
10. Internal File system organizations and related algorithms in UNIX.
11. System calls for UNIX file system.
12. Process structure, creation and management in UNIX.
13. Architecture and algorithms of process scheduling and memory management.
14. I/O subsystem architecture and algorithms.

Course Outcomes

Upon Completion of this course, students will be able to:

7. To understand UNIX kernel, its architectural components like file subsystem, process control subsystem, memory management.
8. To understand a concrete way (UNIX i-nodes) of organizing a file system on a physical storage medium.
9. To maintain UNIX directories, files, manage processes, manipulate data with proper use of pipes and file redirection, UNIX filters.
10. To implement and handle various UNIX system calls.
11. To explain the principles of paging, virtual memory (VM) and describe the data structures and components (both hardware and software) that are necessary to implement it.
12. To perform shell programming involving decision control, looping and control flow statements on UNIX based machines.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	Introduction and buffer cache: General Overview of the System - History, System Structure, User Perspective, Operating System Services, Assumptions About Hardware, Architecture of the UNIX OS, Introduction to System Concepts, Kernel Data Structure, System Administration. Buffer Cache: - Buffer Headers, Structure of the Buffer	10

Student Information	Pool Number	2025-26	Review
			Removal of a Buffer, Reading and Writing Disk Blocks, Advantages and Disadvantages of Buffer Cache.
2.			Internal Representation of Files: I-nodes, Structure of the Regular File, Directories, Conversion of a Pathname to I-node, Super Block, I-node Assignment to a New File, Allocation of Disk Blocks, Other File Types.
3.			System Calls for File System: Open, Read, Write, File and Record Locking, Adjusting the Position of FILE I/O-LSEEK, Close, File Creation, Creation of Special Files, Change Directory and Change Root, Change Owner and Change Mode, Stat and FStat, Pipes, Dup, Mounting and Un-mounting File Systems, Link, Unlink, File System Abstractions, File System Maintenance.
4.			The Structure of Processes: Process States and Transitions, Layout of System Memory, The Context of a Process, Saving Context of a Process, Manipulation of the Process Address Space.
5.			Process Control and Scheduling: Process Control: - Process Creation, Signals, Process Termination, Awaiting Process Termination, Invoking Other Programs, The User ID of a Process, The Shell, System Boot and the Init Process. Process Scheduling: - Process Scheduling, System Calls for Time, Clock.
6.			Memory management and I/O Subsystem: Swapping, Demand Paging, A Hybrid System with Demand Paging and Swapping. Driver Interfaces, Disk Drivers, Terminal Drivers, Streams.

Term Work

- It should consist of minimum 10-12 experiments based on the above topics and covering the following list of assignments. (Reference book – Linux System Programming by Robert Love may be referred for the assignments listed below.)
16. Demonstration of how the Linux Kernel implements and Manages files.
 17. Implement User Buffer I/O using ‘C’ program.
 18. Study & Implement file management using low level file access system calls.
 19. Implementation of various operations on Files (Create, Open, Read, Write, Append, Fstat, Dup etc.,)
 20. Implementation of various system call (OPEN, READ, WRITE) by reader & writer process.
 21. Study & Implementation of pipe() system call.
 22. Demonstration of Unix Process Management – from process creation to process termination.
 23. Study & Implementation of signal() system call.
 24. Study and demonstration of different Memory Management Techniques.

26. Client - Server communication using IPC mechanism: Unnamed pipe, Named pipe.
27. Implementation of Shell Scripts.
28. Implementation of system call for UNIX/Linux.
29. Study of boot loader like “Grub”
30. Study of compilation of Linux kernel.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	The design of Unix Operating System	Maurice J. Bach	PHI	All Units

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Linux System Programming	Robert Love	SPD, O’ REILLY
2	Unix concepts and administration	Sumitabha Das	Tata McGraw Hill, 3rd Edition

3. Database Engineering (PCC-CS603)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 4 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial : - -	Term work: 25 marks
Practical: 2 Hrs./Week	Practical : 50 Marks

Pre-requisites: Set Theory, Operating System, Data Structures

Course Objectives

4. To understand fundamental concepts and algorithms of Database Systems.
5. To gain familiarity with SQL and DBMS.
6. To learn database design techniques.

Course Outcomes

7. Understand fundamentals of database management systems.

9. Analyze & construct good database design.
10. Apply SQL queries to design & manage the database.
11. Understand transactions, concurrency control and apply to database system.
12. Understand failures in database and appropriate recovery techniques.

UNIT NO.	UNIT Name and Contents	NO. OF LECTURES
1.	INTRODUCTION TO DATABASES [Text Book 1] Database System Applications, Purpose of Database Systems, View of Data, Database Languages, Database Users & Administrators, Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.	8
2.	E-R MODEL AND DATABASE DESIGN [E-R Model: Text Book 1] [Normalization: Text Book 2] E-R Model: The Entity-Relationship Model, Mapping Constraints, Keys, Entity-Relationship Diagrams, Reduction to Relational Schemas, Extended ER features-Specialization, Generalization, Aggregation.	10
	Normalization: Data Redundancies & Update Anomalies, Functional Dependencies. Canonical Cover, The Process of Normalization, First Normal Form, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form, Fourth Normal Form, Fifth Normal Form.	
3.	STRUCTURED QUERY LANGUAGE (SQL) [Text Book 1] Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Aggregate Functions, Nested sub Queries, Modification of Databases, Join expression, Views.	8
4.	DATA STORAGE & INDEXING [Text Book 1] Physical storage media, File Organization, Organization of records in File, Data Dictionary Storage, Database Buffer, Basic Concepts indexing & hashing, Ordered Indices, B+ Tree Index files, Multiple-Key Access, Static Hashing, Dynamic Hashing.	8
5.	TRANSACTION MANAGEMENT [Text Book 1] Transaction Concept, A Simple Transaction Model, Transaction Atomicity and Durability, Transaction Isolation, Serializability, Lock-Based Protocols, Timestamp-Based Protocols, Validation-Based Protocols.	9

Student Information	RECOVERY SYSTEM [Text Book 1]	
6.	Failure Classification, Storage, Recovery and Atomicity, Recovery Algorithm, Failure with Loss of Nonvolatile Storage, Remote Backup Systems.	5

Term Work

Minimum 12 -14 Experiments based on the following topics.

1. Draw an E-R Diagram of any organization.
2. Reduce above mentioned E-R Diagram into tables.
3. Normalize any database from first normal form to Boyce-Codd Normal Form (BCNF).
4. Write a program of Database connectivity with any object oriented language.
5. Use DDL Queries to create, alter (add, modify, rename, drop) & drop Tables.
6. Use DML Queries to insert, delete, update & display records of the tables.
7. Create table with integrity constraints like primary key, check, not null and unique.
8. Create table with referential integrity constraints with foreign key, on delete cascade and on delete set null.
9. Display the results of set operations like union, intersections & set difference.
10. Display the results of Join Operations like cross join, self join, inner join, natural join, left outer join, right outer join and full outer join.
11. Display the records using Aggregate functions like min, max, avg, sum & count. Also use group by, having clauses.
12. Display the results using String operations.
13. Create & Update views for any created table.
14. Write java program to implement dense and sparse indexing
15. Write java program to implement B+ tree indexing.
16. Write java program to implement static hashing.
17. Study of NoSql

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Database System Concepts	A. Silberschatz, H.F. Korth, S. Sudarshan	6 th Edition, Mc Graw Hill Education.	5

Student Info	Database Systems 2025-26	SEM I		
2	A practical approach to Design, Implementation and Management	Thomos Connolly, Carolyn Begg	3rd Edition, Pearson Education	1

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Database Systems – Design, Implementation and Management	Rob & Coronel	5th Edition Thomson Course Technology	3
2	Fundamentals of Database Systems	Ramez Elmasri, Shamkant B. Navathe	4 th Edition, Pearson Education	2

4. Machine Learning (PCC-CS604)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :1 Hrs./Week	Term work: 25 marks
Practical:	Practical : ---

Pre-requisites

Linear Algebra, Statistics, Probability Theory.

Course Objectives

4. To understand Machine Learning Aspects.
5. To understand primitives in learning process by Computer.
6. To understand nature of problems solved with Machine Learning.

Course Outcomes On

completion of the course, student will be able to

5. Explain Machine Learning concepts.
6. Analyze the Machine Learning model.
7. Design solution using Machine Learning techniques.
8. To tackle real world problems in domain of data mining, information retrieval, computervision,

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
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Student Inform	Introduction to Machine Learning:	
1.	Introduction to Probability and Statistics, Machine Learning: Definition, Terminology, Types of learning, Machine Learning Problem categories, Machine learning architecture, process, Lifecycle, Performance measures, tools and framework, data visualization.	06 Hrs
2.	Regression: Simple regression – hypothesis, cost function, parameter learning with gradient descent, learning rate, Gradient Descent for linear regression, examples, simple regression in matrix form. Multivariate Linear Regression – Multiple features, hypothesis functions, Gradient Descent for multiple variables, Feature	06 Hrs
	scaling, polynomial regression	
3.	Classification- logistic regression & Naïve Bayes : Logistic Regression – Definition, Hypothesis representation, decision boundary, cost function, Gradient Descent for Logistic Regression. Multiclass Classification, Regularization - Overfitting & Under fitting, cost function, Regularized Linear Regression, Regularized Logistic Regression, Conditional probability and Naïve Bayes Classifier. Instance-based classifier – K- Nearest Neighbor Classifier, Bayesian Network, Hidden Markov Model.	07Hrs
4.	Classification- Decision trees and Support Vector Machine: Decision trees: definition, terminology, the need, advantages, and limitations. Constructing and understanding Decision trees, common problems with Decision trees, Decision tree algorithms, random forest, examples. Support Vector Machine: What is SVM, Kernel Trick, Cost Function, Decision Trees vs Support Vector Machine.	06 Hrs
5.	Unsupervised learning : Clustering, K Means clustering, Hierarchical clustering, Association Rule mining.	04Hrs
6.	Neural Network & Recommendation System: Neural Networks- Neuron representation and model, Hypothesis for neuron, cost function, solution of a problem using single neuron. Gradient descent for a neuron. Neural network, Multiclass classification with neural network. Learning in neural network-back propagation algorithm Recommendation System: Popularity based recommender engines, Content based recommendation engines, Classification based recommendation engine, Collaborative filtering.	07Hrs

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Machine Learning	Tom M. Mitchell	McGraw Hill Education; First Edition	1,2,3,4,5
2	Practical Machine Learning	Sunila Gollapudi	Packt Publishing Ltd	1,2
3	Machine Learning with Python- an approach to applied ML	Abhishek Vijayvargia	BPB Publications	All Units

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Machine Learning for dummies	John Paul Muller	Wiley Publication	
2	Introduction to Machine Learning	Ethem Alpaydin	PHI 2nd Edition-2013	1,2
3	http://neuralnetworksanddeeplearning.com/			6

Open Elective -II (OEC-CS605)

E- Commerce & Digital Marketing (OEC-CS605)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs./Week	Theory : ESE 70 Marks CIE 30 Marks
Tutorial :	Term work :
Practical :	Practical :

Course Objectives:

5. To get the knowledge about business advantages of the e-commerce and digital marketing and its importance
6. To develop a digital marketing plan and to make SWOT analysis
7. To get introduced with various digital channels, business tools in social networking
8. To understand the optimization of a Web site and SEO optimization

Course Outcomes :

5. Students will be able to identify the importance of the e-commerce and digital marketing for business success
6. Students will be able to create a digital marketing plan, starting from the SWOT analysis and defining a target group
7. Students will be able to identifying digital channels, business tools used in social networking
8. Students will be able to demonstrate the optimization of web site using business tools.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	Introduction to E-commerce, frameworks & architectures Introduction: The term “E-Commerce”, Business models related to E-Commerce, Technical and economic challenges Frameworks and architectures: Actors and stakeholders, Fundamental sales process, Technological elements	(4)

Student Information	B2C business, B2B business	(5)
2.	<p>B2C Business: The process model and its variants, The pricing challenge, The fulfillment challenge, The payment challenge, B2C-business and CRM, B2C software systems</p> <p>B2B business: The process model and its variants, B2B software systems</p>	
3.	<p>Introduction to Digital Marketing</p> <p>How digital technologies transformed marketing?, Definitions-digital marketing and multichannel marketing- Paid, owned and earned media, the growing range of digital marketing platform, digital marketing strategy-key features of digital marketing strategy, applications of digital marketing, benefits of digital marketing, alternative digital business models, difference between e-commerce and e-business, challenges in developing and managing digital marketing strategy</p>	(6)
4.	<p>Online marketplace analysis & macro environment</p> <p>Introduction: situation analysis for digital marketing, the digital marketing environment, understanding customer journeys, online consumer behavior and implications for marketing, business models for e-commerce</p> <p>Online macro environment: Technological forces, economic forces, political forces, Legal forces, social forces and cultural forces</p>	(8)
5.	<p>Digital Marketing Strategy and relationship marketing</p> <p>Digital Marketing strategy development: how to structure digital marketing strategy, strategy implementation</p> <p>Relationship marketing using digital platforms: Introduction, the challenge of customer engagement, customer lifecycle management</p>	(6)
6.	<p>Marketing Communications</p> <p>Marketing Communications using digital media channels: Introduction, search engine marketing, online public relations, e-mail marketing and mobile text messaging, social media and viral marketing, offline promotion techniques.</p> <p>Case study: How the ministry of food processing took to social media or world food India 2017.</p>	(7)

~~Text Books.~~

1. Introduction to E-commerce: Combining Business & Information Technology 1st Edition, (2016) MartinKutz. & bookboon.com
2. Digital Marketing: Strategy, Implementation and Practice, 6th Edition by Dave Chaffey, Fiona Ellis-Chadwick, Pearson Education.

Reference Books:

3. The Beginner's Guide to Digital Marketing (2015). Digital Marketer. Pulizzi,J.(2014) Epic Content Marketing, Mcgraw Hill Education.
4. "Electronic Commerce" , Jeffrey F Rayport and Bharat Bhasker, Tata McGraw Hill.

It should consist of assignments on following topics within group of 4-5 students & its evaluation will be considered for CIE

6. Define a target group (working in groups)
7. Creating web sites, MS Expression (working in groups)
8. Writing the SEO content (working in groups)
9. Google AdWords (working in groups)
10. CRM strategy (working in groups)

1. Cyber Security (OEC-CS606)

TEACHING SCHEME	EXAMINATION SCHEME
Theory: 3 Hrs/Week	Term work: -
Tutorial: --	Theory: ESE 70 Marks CIE 30 Marks
Credits:- 3	

Prerequisite: Fundamental knowledge of Data Communication, Networking and Information Security.

Course Objectives:

1. To gain knowledge about securing both clean and corrupted systems, protect personal data, and secure computer networks
2. To examine secure software development practice
3. To understand key terms and concepts in I.T. ACT
4. To incorporate approaches for incident analysis and response

Course Outcomes:

On completion of the course, student will be able to

1. Explain the cyber security concepts.
2. Describe the cyber security vulnerabilities and prevention techniques.
3. Explain the different rules and regulations under I.T. ACT.
4. Explain the concepts of digital forensics & incident management

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	Computer and Network Security Introduction to Computer Security - Introduction, How Seriously Should You Take Threats to Network Security?, Identifying Types of Threats, Basic Security Terminology, Concepts and Approaches, Online Security Resources Networks and the Internet : Introduction, Network Basics, How the Internet Works, Basic Network Utilities , Advanced Network Communications Topics	07

Student Information	Cyber Frauds, DoS, Viruses	07
2.	Cyber Stalking, Fraud, and Abuse: Introduction, How Internet Fraud Works, Identity Theft, Cyber Stalking, Protecting Yourself Against Cyber Crime. Denial of Service Attacks: Introduction, DoS, Illustrating an Attack, Malware: Introduction, Viruses, Trojan Horses, The Buffer-Overflow Attack. The Sasser Virus/Buffer Overflow, Spyware, Other Forms of Malware, Detecting and Eliminating Viruses and Spyware	
3.	Techniques Used by Hackers Introduction, Basic Terminology, The Reconnaissance Phase, Actual Attacks, Malware Creation, Penetration Testing	06
4.	Computer Security Technology Introduction, Virus Scanners, Firewalls, Antispyware, IDS, Digital Certificates, SSL/TLS, Virtual Private Networks, Wi-Fi Security	06
5.	I.T. ACT Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, I.T. Act	06
6.	Introduction to Forensics Introduction, General Guidelines, Finding Evidence on the PC, Finding Evidence in System Logs , Getting Back Deleted Files, Operating System Utilities, Operating System Utilities, Mobile Forensics: Cell Phone Concepts	06

Text Books :

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	Computer Security Fundamentals	Chuck Easttom	Pearson ,third edition	

Reference Books :

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1.	Incident Response & Computer Forensics	Jason Luttgens, Matthew Pepe, Kevin Mandia,	McGrawHill Osborne Media, 3 rd edition , 2014.	
2	Computer Security and Incident Response,	Keith J. Jones, Richard Bejtlich, Curtis W. Rose	Real Digital Forensics: Paperback – Import, 2005.	
3	Hacking Exposed: Network Security Secrets & Solutions	Stuart McClure, Joel Scambray and George Kurtz,	McGraw-Hill, 2005.	
4	Ethical Hacking	Thomas Mathew	OSB Publisher, 2003	
5	Virtualization Security: Protecting Virtualized Environments	Dave Shackleford	John Wiley & Sons, 2012.	
6	. Hacking Exposed Network Security: The Complete Reference	BRAGG	McGraw Hill Professional, 2012	

T.Y.B. Tech (Computer Science and Engineering) Sem – VI

6. C# Programming (PCC-CS607)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 2Hrs./Week	Theory :--- CIE :---
Tutorial :	Term work: 25 marks
Practical: 2 Hrs./Week	Practical : 50 marks

Pre-requisites : C++, Java, HTAML

Course Objectives

- Understand code solutions and compile C# projects within the .NET framework
- Demonstrate knowledge of object-oriented concepts using C#.NET application
- Create and manipulate GUI components in C# and interact with database using ADO.NET in window based application
- Create network based and multithreaded applications using C#
- Creating ASP.Net applications using standard .net controls
- Maintain session and controls related information for users in multi-user web applications

Course Outcomes

- Students will be able to develop correct, well-documented programs using the C# programming language.
- Students will be able to learn to develop object-oriented programs using C# classes and objects
- Students will be able to learn to use Windows Forms and WPF to create GUI-based programs
- Students will be able to build networking and multithreading based programs using C#
- Students will be able to design web applications using ASP.NET using ASP.NET controls in web applications.
- Students will be able to debug and deploy ASP.NET web applications and create database driven ASP.NET web applications.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
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1.	<p>.Net architecture and C# Basics: .Net Architecture: The Relationship of C# to .NET, The Common Language Runtime, A Closer Look at Intermediate Language, Assemblies, .NET Framework Classes, Namespaces, C# basics: Predefined data types, The Main () Method, More on Compiling C# Files, Console I/O, Using Comments# Programming Guidelines, Dynamic variables, DLL creation & calling.</p>	3
2.	<p>Object oriented programming in C# : Classes and Structs, Class Members, Anonymous Types, Structs, Partial Classes, Static Classes, The Object Class, Extension Methods, Inheritance: Types of Inheritance, Implementation Inheritance, Modifiers, Interfaces</p>	4
3.	<p>Arrays, Operators and casts and strings: Arrays: Simple Arrays, Multidimensional Arrays, Jagged Arrays, Array Class, Array and Collection Interfaces, Enumerations Operators and casts: Operators, Type Safety, Comparing Objects for Equality, Operator Overloading, User-Defined Casts, String: System. String, Building Strings, String Builder Members, Format Strings, Regular Expressions.</p>	4
4.	<p>Windows Form & Database with ADO.NET: Introduction to GUI application & components –add data control programmatically, Link data to control, process all control, track the visible forms, Find all MDI child forms, Save configuration setting for form, Force list box to scroll items, Restrict text box, Use of auto complete combo box ,Sort a list view, Database with ADO.NET-Overview of Ado.NET, Data components in Visual Studio .NET.</p>	5
5.	<p>Threading and Networking: Threading: Overview, Asynchronous Delegates, the Thread Class</p>	4
	<p>and Thread Pools, Threading Issues, Synchronization, Timers. Networking: Networking-Obtain information about Local network, Detect changes in network, Download data over HTTP or FTP, Download a File & Process using Stream, Respond to HTTP request from your application.</p>	
6.	<p>Introduction to ASP.NET 4.5 ONE ASP.NET: Introducing One ASP.NET, Simplifying a Complex Ecosystem, How Do You Benefit? ASP.NET web form structure: Application Location Options, The ASP.NET Page Structure Options, ASP.NET 4.5 Page Directives, ASP.NET Page Events, Dealing with Postbacks, Cross-Page Posting ,ASP.NET Application Folders, Compilation, Build Providers, Global.aspx</p>	4

Term Work

3. It should consist of 10 to 12 experiments based on the above syllabus covering following list of assignments
4. 50% of the experiment should be console based & 40 % experiment should be windows form application. and 10% should be web-based application

Practical List:

20. Language Introduction (Includes console-based application, creation of dll, running a program without IDE) calling a method from another program.
21. OOPS concepts in C#-Class, Implementation Inheritance, Extension methods (Use Any application).
22. Develop DLL file and use it in application program. (Use Any application)
23. Implementation of Interface Inheritance (Use Any Application).
24. Implementation of Multidimensional & Jagged array (Use Any application).
25. Use of properties in any application.
26. Implementation of Operator overloading (Any application).
27. String manipulation using String & String builder(Any application)
28. Develop program to use Regex. Matches method and Regular Expression pattern matching.
29. Design a Windows Form based application for different controls.(Any application)
30. Design a Windows Form based MDI application with different controls.(Any application)
31. Design a Windows Form based application for field validation.(Any application)
32. Design a any Windows Form based application with Database connectivity with all field validation.(Any application)
33. Develop a Win1dows Form application that performs SELECT, INSERT, UPDAE & DELETE queries and also displays the List of Books available in a Library System by fetching the details from a database. The C# application must also contain the filter capability.
34. Implement console-based networking application to obtain information of network & detect changes in network.
35. Design a Windows form application to download file & process it using stream.
36. Simple ASP.NET web application deployment in IIS server
37. Design simple login and registration page using client-side validation controls in ASP.NET
38. Do the server-side validation by using database connectivity for above problem and display all the records of database when successfully logged in using ASP.NET.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Professional C# 2012 & .Net 4.5	Christian Nagel, Bill, Evjen, Jay Glynn, Morgan Skinner, Karli Watson	Wrox Publication	1 to 2 and unit 3 (threading)
2	A Programmer's Guide to ADO.Net in C#	Mahaesh Chand	Apress Publication	Unit 3 Windows app and ADO.NET
3	Visual C# 2010 Recipes- A Problem-Solution Approach	Allen Jones, Adam Freeman, Matthew MacDonald, Rakesh Rajan	Apress Publication	Unit 3 Windows app and ADO.Net and Unit 4 networking
4	Professional ASP.NET 4.5 in C# and VB	John Wiley & Sons Inc.	WROX publication	Unit 4 ASP part and Unit 5 and 6

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	ASP.NET 4.5- Black book	Kogent	Dreamtech Publication

T.Y. B. Tech (Computer Science and Engineering) Sem – VI

Domain Specific Mini-project (PW- CS608)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : --	Term work: 25 Marks
Tutorial : --	Theory :--
Practical: 02 Hrs./Week	Practical : 50 Marks

Pre-requisites :

Software Engineering Concepts
Object Oriented Concepts

Course Objectives

To expose the students to use engineering approach to solve domain specific real time problem.
To use the appropriate and newer technologies while developing the project.
To learn the skills of team building and team work.

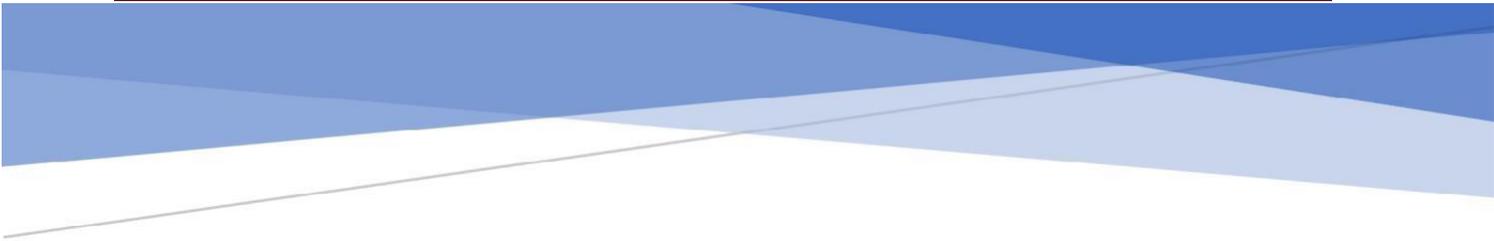
Course Outcomes

Upon successful completion of this course, the student will be able to –

1. Identify specific problem statement from a selected domain.
2. Analyze the problem and prepare SRS and design document.
3. Write code and carry out testing.
4. Write a report covering details of the project and give presentation on a project.

Contents

The students should form group of 4 to 5 students and every group is supposed to choose a specific domain (preferably from Smart India Hackathon problem statement, ACM programming contests, codechef portal) to do the mini project. Further the group should identify the relevant problem in the selected domain and propose the solution, which can be implemented as a mini-project using suitable technology. The mini-project work should be evaluated by a team of teachers appointed by the department. The evaluation and marking should include Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) during which the group should give presentation and demonstration of their work done. Care should be taken to avoid out-sourcing of the work.



COURSE DETAILS/SYLLABUS

Final Year B. Tech (Computer Science and Engineering) Sem – VII

Final Year B. Tech (Computer Science and Engineering) Semester-VII

a. Advanced Computer Architecture (PCC-CS701)

TEACHING SCHEME EXAMINATION SCHEME

Theory :4 Hrs./Week **Theory** : ESE 70 Marks
CIE 30 Marks

Tutorial :1 Hrs./Week **Term work: 25 Marks**

Practical :- NA Practical :NA

Pre-requisites: Digital systems and microprocessors, computer organization and architectures.

Course Objectives

1. To make students know about the Parallelism concepts in Programming
2. To give the students an elaborate idea about the different memory systems and buses.
3. To introduce the advanced processor architectures to the students.
4. To make the students know about the importance of multiprocessor and multi- computers.
5. To study about data flow computer architectures

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Demonstrate concepts of parallelism in hardware/software.
2. Discuss memory organization and mapping techniques.
3. Describe architectural features of advanced processors.
4. Interpret performance of different pipelined processors.
5. Explain data flow in arithmetic algorithms.
6. Development of software to solve computationally intensive problems.

The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis:

- a) Parallel Processing Mechanisms
- b) Parallel Computer Structures: Pipeline Computers
- c) Array Processors
- d) Multiprocessor Systems
- e) Architectural classification Schemes: Multiplicity of Instruction-Data Streams
- f) Trends in power and energy in Integrated Circuits
- g) Trends in Cost
- h) Dependability

2.

Principles of Pipeline:

- a) Principles of linear pipeline
- b) Classification of Pipelined Processors
- c) Interleaved memory organization
- d) Hazard detection and resolution
- e) Basic compiler Techniques for Exposing ILP

3.

Memory Hierarchy Design :

- a) Introduction
- b) Ten Advanced optimizations of cache performance

4.

Data Level Parallelism in Vector, SIMD and GPU Architecture:

- a) Vector Processing requirement: Characteristics of vector processing
- b) Multiple vector Task dispatching
- c) Pipelined vector processing methods
- d) Associative Array Processing: Associative Memory Organization
- e) Associative processors (PEPE and STARAN)
- f) Data Level Parallel in Vector :Introduction
- g) Vector Architecture

7

5.

Data Level Parallelism in SIMD and GPU Architecture:

- a) SIMD ARRAY PROCESSORS: SIMD Computer organization
- b) Masking and Data Routing Mechanism
- c) SIMD Instruction set extension for Multimedia
- d) Graphics Processing Units : Programming the GPU
- e) NVIDIA GPU Computational structures
- f) NVIDIA GPU Instruction set Architecture
- g) Conditional Branching in GPU
- h) NVIDIA GPU Memory Structure

7

6.

Multiprocessor Architecture :

- a) Introduction
- b) Multiprocessor Architecture: Issues and Approach
- c) Challenges of parallel processing
- d) Centralized shared memory Architecture: Multiprocessors Cache coherence
- e) Basic schemes for enforcing coherence
- f) Snooping Coherence Protocols
- g) Distributed shared memory and directory based coherence
- h) Directory Based cache coherence protocol :The basics

7

Term Work

- It should consist of minimum 8-10 assignments with emphasis on solving exercise problems

Text Books

1. Computer architecture and Parallel Processing Kai Hwang and Faye A Briggs Tata McGraw- Hill
2. Computer Architecture: A Quantitative Approach John L. Hennessy and David A. Patterson Morgan Kaufmann

2. Cloud Computing (PCC – CS702)

TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week Theory : ESE 70 Marks
CIE 30 Marks

Tutorial : NA Term work: 25 Marks

Practical : 2 Hrs./Week Practical :NA

Pre-requisites: Operating Systems, Fundamentals of Computer Networks.

Course Objectives

1. To become familiar with Cloud Computing and its ecosystem.
2. To learn basics of virtualization and its importance.
3. To evaluate in-depth analysis of Cloud Computing capabilities.
4. To give technical overview of Cloud Programming and Services.
5. To understand security issues in cloud computing.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Describe the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing.
2. Explain the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Collaboratively research on the state of the art (and open problems) in cloud computing.
4. Identify problems, and explain, analyze, and evaluate various cloud computing solutions.
5. Choose the appropriate technologies, algorithms, and approaches for the related issues.
6. Display new ideas and innovations in cloud computing.

UNIT NAME & DETAILS

1. Overview of computing paradigm: Recent trends in Computing - Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing. Evolution of cloud computing - Business driver for adopting cloud computing.

Introduction to Cloud Computing: Cloud Computing - Introduction to Cloud Computing, History of cloud Computing, Cloud service providers. Properties, Characteristics & Disadvantages - Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing. Role of Open Standards.

2. Cloud Computing Architecture: Cloud computing stack - Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of Networks in Cloud computing, protocols used, Role of Web services. Service Models (XaaS) - Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS). Deployment Models, Public cloud, Private cloud, Hybrid cloud, Community cloud

3. Virtualization:

Introduction and benefits, Implementation Levels of Virtualization, Virtualization at the OS Level, Virtualization Structure, Virtualization Mechanism, Open-Source Virtualization Technology, Xen Virtualization Architecture, Binary Translation with Full Virtualization, Paravirtualization, Virtualization of CPU, Memory and I/O Devices

4. Infrastructure as a Service (IaaS): Introduction to IaaS – IaaS definition, Introduction to virtualization, Different approaches to virtualization, Hypervisors, Machine Image, Virtual Machine (VM).

Resource Virtualization - Server, Storage, Network. Virtual Machine(resource) provisioning and manageability, storage as a service, Data storage in cloud computing (storage as a service). Renting, EC2 Compute Unit, Platform and Storage, pricing, customers.

Platform as a Service (PaaS): Introduction to PaaS - What is PaaS, Service Oriented Architecture (SOA). Cloud Platform and Management - computation, storage **Software as a Service (SaaS):** introduction to SaaS, Web services, Web 2.0, Web OS, Case Study on SaaS

5.Service Management in Cloud Computing: Service Level Agreements (SLAs), Billing& Accounting, Comparing Scaling Hardware: Traditional vs. Cloud, Economics of scaling: Benefitting enormously, Managing Data - Looking at Data, Scalability & Cloud Services, Database & Data Stores in Cloud, Large Scale Data Processing **Cloud Security:** Infrastructure Security - Network level security, Host level security, Application-level security. Data security and Storage - Data privacy and security Issues, Jurisdictional issues raised by Data location: Identity & Access Management, Access Control, Trust, Reputation, Risk, Authentication in cloud computing, Client access in cloud, Cloud contracting Model, Commercial and business considerations

6.Case study on Open Source and Commercial Clouds – Amazon EC2, Google Compute Engine, Microsoft Azure, Cloud foundry, OpenStack

Experiment List

1. Working and Implementation of Infrastructure as a service.
2. Working and Implementation of Software as a service.
3. Working and Implementation of Platform as a services.
4. Practical Implementation of Storage as a Service.
5. Installing a private cloud.
6. Installing OS on a Virtual Machine Monitor.
7. Offline migration of virtual OS.
8. Live migration of virtual OS.
9. Study and implementation of infrastructure as Service using Open Stack.
10. Assignment to install and configure Google App Engine.
11. Hands on virtualization using Xen Server.
12. Hands on containerization using Docker.
13. Deployment and Configuration options in Amazon (AWS).
14. Deployment and Configuration options in Google Cloud.
15. Deployment and Configuration options in Microsoft Azure.
16. Building a 'HelloWorld' app for the cloud.
17. Deploying the 'HelloWorld' app for the cloud.
18. Case study on Amazon EC2 to learn about Amazon EC2, Amazon Elastic Compute Cloud is a central part of Amazon.com's cloud computing platform, Amazon Web Services. How EC2 allows users to rent virtual computers on which to run their own computer applications.

Text Books

1. Cloud Computing for Dummies Judith Hurwitz, R. Bloor, M.Kanfman, F.Halper Wiley India Edition
2. Cloud Computing Black Book Jayaswal, Kallakurchi, Houde, Shah Dreamtech Press
- 3 Cloud Security Ronald Krutz and Russell Dean Vines Wiley-India
- 4 Enterprise Cloud Computing Gautam Shroff Cambridge

3. Advanced Database Systems (PCC- CS703)

TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week (3 Credits)

Theory : ESE 70 Marks

CIE 30 Marks

Tutorial :NA Term work: 25 Marks

Practical :2 Hrs. /Week (1 Credit) POE : 50 Marks

Pre-requisites: -

Course Objectives

1. To learn Basics of design of databases.
2. To acquire knowledge on parallel and distributed databases and its applications.
3. To study the usage and applications of SQL and NOSQL databases.
4. To Understand and perform common database administration tasks, such as database monitoring, performance tuning, data transfer, and security.
5. To understand the usage of advanced data models.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Understand and identify issues arising from parallel and distributed processing of data.
2. Select appropriate database and construct solution to real world problems of storing large data.
3. Compare and Contrast NoSQL databases with each other and Relational Database Systems.
4. Make use of SQL cursors, triggers, stored procedures, and procedural SQL to write complex SQL scripts.
5. Learn database administration tasks and security measures.

UNIT NAME & DETAILS

Unit I: Parallel and Distributed Databases

Database System Architectures: Centralized and Client – Server Architectures, Server System Architectures, Parallel Systems, Parallel Database Architectures, Parallel Databases --I/O Parallelism – Inter and Intra Query Parallelism – Inter and Intra operation Parallelism, Design of Parallel Systems, Distributed Systems, Distributed Database Concepts, Distributed Data Storage, Distributed Transactions, Commit Protocols, Concurrency Control, Distributed Query Processing, Case Studies- Distributed Databases in Oracle.

Unit II: Advanced SQL

Relational Set Operators, SQL Join Operators, Subqueries and Correlated Queries, SQL Functions, Oracle Sequences, Synonyms, Database Links, Updatable Views, Procedural SQL, Triggers, Stored Procedures, PL/SQL Processing with Cursors, PL/SQL Stored Functions, Embedded SQL, Dynamic SQL. Case study-PostgreSQL.

Unit III: NoSQL Database Management

NOSQL: Definition and Introduction, Features and Types of NOSQL databases, Sorted Ordered Column-Oriented Stores, Key/Value Stores, Document Databases, Graph Databases. **NOSQL: Getting Initial Hands-On Experience**, Storing and Accessing Data, Storing Data in and Accessing Data from MongoDB, Querying MongoDB, **Interfacing and Interacting with NOSQL**, Case Study- CouchDB, CouchDB vs. MongoDB, Compass / Atlas GUI Tools for MongoDB.

Section - II

Unit IV: Database Administration and Security

The Need for and Role of a Database in an Organization, The Evolution of the Database Administration Function, The Database Environment's Human Component Security, Database Administration Tools: The Data Dictionary, ASE Tools, developing a Data Administration Strategy, The DBA at Work: Using Oracle for Database Administration.

Unit V: Business Intelligence and Data Warehouses

The Need for Data Analysis, Business Intelligence, Business Intelligence Architecture, Decision Support Data, The Data Warehouse, Online Analytical Processing, Star Schemas, Implementing a Warehouse, Data Mining, SQL Extensions for OLAP, Materialized Views, Case Study- Fire Base-Google.

Unit VI: Data analysis and exploration

Mathematical models for decision making, data mining, data preparation, data exploration. Data mining tasks - association rules.

Experiment List

1. Installation of Oracle / MySQL and practicing DDL & DML commands.
Execute basic utilities used to interact with Oracle DBMS / MySQL.
2. Design and implement the Fragmentation schema & the Replication schema for the social networking websites / online e-shopping / e-learning websites.
3. Implementation of 2 Phase Commit protocol for distributed databases.
4. Execute partitioning queries on parallel databases.
5. Implementation of Relational Set Operators, SQL Join queries, Subqueries and Correlated Queries, Oracle Synonyms and Sequence.
6. Demonstrate SQL Functions, Procedures, Cursors, and triggers using PL/SQL, Views.
7. Installation of MongoDB and Apache Cassandra.
8. Exploring MongoDB, and Apache Cassandra basics, Identify the schema design and data modeling techniques in MongoDB.
9. Accessing MongoDB and Apache Cassandra from some of the popular high-level programming languages. Perform Create, Retrieve, Update and Delete or CRUD operations in MongoDB.
10. Install CouchDB on Windows.
11. Create and delete CouchDB database. Run CouchDB query with Mongo.
12. Case study of Oracle Database Administration and Security.
Study of database administrator's responsibilities like –
 - i) Installing and upgrading the database server and/or application tools.
 - ii) Creating user's profiles and ensuring system security by careful allocation of user permissions.
 - iii) Monitoring technical support for both database systems and related applications.
13. Study of CASE concept and tools.
14. Demonstrate all OLAP operations and cube operator in OLAP.
15. Consider a case study of any Big Data system of your choice and design the distributed database architecture and analyze the probable solutions available in the market.
16. Demonstrate data analysis and visualization using any BI Tool.

Text Books

1. Database System Concepts Silberschatz, Korth, Sudarshan MGH, 6th Edition (International edition) 2010
2. Database Systems, Design, Implementation and Management Coronel-Morris- Rob
3. Professional NOSQL Shashank Tiwari John Wiley & Sons, Inc. 2011
4. Business Intelligence - Data Mining and optimization for Decision Making- - Carlo Vercellis Wiley Publications.

4. Artificial Intelligence (PCE– CS704) Elective-I

TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week (3 Credits)

Theory : ESE 70 Marks

CIE 30 Marks

Tutorial :1 Hr. /Week (1 Credit) **Term work: 25 Marks**

Practical : Practical : –

Pre-requisites: Basic Programming in Python, Data Structures

Course Objectives

1. To impart artificial intelligence principles, techniques, and its history.
2. To assess the applicability, strengths, and weaknesses of the basic knowledge representation, problem solving, and learning methods in solving engineering problems.
3. To develop intelligent systems by assembling solutions to concrete computational problems.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Evaluate Artificial Intelligence (AI) methods and describe their foundations.
2. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation and learning.
3. Demonstrate knowledge of reasoning and knowledge representation for solving real world problems.
4. Analyze and illustrate how search algorithms play vital role in problem solving.
5. Illustrate the construction of learning and expert system.
6. Discuss current scope and limitations of AI and societal implications.

UNIT NAME & DETAILS

1. Artificial Intelligence and Its Issues:

Definitions - Importance of AI, Evolution of AI - Applications of AI, Classification of AI systems with respect to environment, Knowledge Inferring systems and Planning, Uncertainty and towards Learning Systems.

2. Overview to Problem Solving & Heuristic Search:

Problem solving by Search, Problem space - State space, Blind Search - Types, Performance measurement. Types, Game playing mini-max algorithm, Alpha-Beta Pruning

3. Probabilistic Reasoning & Markov Decision process:

Probability, conditional probability, Bayes Rule, Bayesian Networks- representation, construction and inference, temporal model, hidden Markov model. MDP formulation, utility theory, utility functions, value iteration, policy iteration and partially observable MDPs.

4. Learning Systems & Expert Systems:

Forms of Learning Types - Supervised, Unsupervised, Reinforcement Learning, Learning Decision Trees. Expert Systems - Stages in the development of an Expert System - Probability based Expert Systems - Expert System Tools - Difficulties in Developing Expert Systems - Applications of Expert Systems.

5. Reinforcement Learning:

Passive reinforcement learning, direct utility estimation, adaptive dynamic programming, temporal difference learning, active reinforcement learning- Q learning.

6. AI with Python:

Study of important inbuilt libraries of Python like NumPy, SciPy, matplotlib, nltk, Simple AI. Installing Python. Setting up PATH. Running Python. Study of real time applications of AI with Python, Case Studies: AI Platforms-Azure ML, Google AI, Swift AI, Tensor flow.

Tutorial List

1. Write a program to conduct uninformed and informed search.
2. Write a program to conduct game search.
3. Write a program to construct a Bayesian network from given data.

4. Write a program to infer from the Bayesian network.
5. Write a program to run value and policy iteration in a grid world.
6. Write a program to do reinforcement learning in a grid world.
7. Develop small AI based Mini Project like:
 - i) Predicting user's next location
 - ii) Detecting YouTube comment spam
 - iii) Identifying the genre of a song
 - iv) Shock front classification
8. Case Study on any one real time AI application.

Text Books

1. Artificial Intelligence - A Modern Approach Russell, S. and Norvig, P. 3rd edition, Prentice Hall.2015
2. Artificial Intelligence: Foundations of Computational Agents Poole, D. and Mackworth, A. Cambridge University Press.2010

5. Software Testing and Quality Assurance (PCE- CS704) Elective-I

TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week Theory : ESE 70 Marks
CIE 30 Marks

Tutorial : 1 Hrs/Week Term work: 25 Marks

Practical : -- Practical : –

Pre-requisites: Software Engineering, SDLC and STLC.

Course Objectives

1. To understand software testing and quality assurance as a fundamental component of software life cycle
2. To understand the fundamentals of software verification
3. To efficiently perform Testing & QA activities using modern software tools
4. To understand and compare testing web applications and desktop applications

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Understand fundamental component of software life cycle
2. Apply and use the modern software testing tools
3. Compare and analyze the web and desktop application testing
4. Explore newer software project assessment methods

UNIT NAME & DETAILS

1. Introduction :

Some Software Failures, Testing Process, Some Terminologies, Limitations of Testing, The V Shaped software life cycle model

2. Software Verification:

Verification Methods, SRS document verification, SDD document verification, Source code reviews, User documentation verification, Software project audit **Creating test cases from SRS and Use cases:** Use Case Diagram and Use Cases, Generation of test cases from use cases, Guidelines for generating validity checks, strategies for data validity, Database testing

3. Regression Testing:

What is regression testing?, Regression Test cases selection, Reducing the number of test cases, Risk analysis, Code coverage prioritization techniques Object oriented testing: What is Object orientation?, What is object oriented testing?, Path testing, State based testing, Class testing

4. Software Testing Tools:

Selecting and Installing Software Testing tools, Automation and Testing Tools, Load Runner, Win runner and Rational Testing Tools, Silk test, Java Testing Tools,

5. Testing Process :

Seven Step Testing Process – I: Overview of the Software Testing Process, Organizing of Testing, Developing the Test Plan, Verification Testing, Validation Testing.

6.

Testing Web applications

What is web testing? functional testing, UI testing, Usability testing, configurations and compatibility testing, security testing, performance testing, database testing, post deployment testing, web metrics. **Automated Test data generation:** Automated Test Data generation, Approaches to test data generation, Test data generation tools.

Tutorial List:

It should consist of 8-10 assignments based on the following topics:

1. Software Testing Process, its need and limitations
2. Verification at different phases of SDLC for particular case study (SRS document verification, SDD document verification, Source code reviews, User documentation verification, Software project audit etc.)
3. Creating test cases from SRS and Use cases for particular case study
4. Generation of validity checks for particular case study
5. Regression testing with Test cases selection / Regression testing with reducing the number of test cases / Regression testing with code coverage prioritization techniques
6. Generation of test cases using Path testing/ State based testing/Class testing for particular case Study
7. Measurement in Software Engineering
8. Software Metrics: Object oriented Metrics used in testing
9. Calculation of Software Quality attributes using different prediction models
10. Measurement of Internal / External Product Attributes
11. Generation of test cases in different key areas of Web application testing
12. Automated test data generation

Text Books

1. Software testing: Yogesh Singh, Cambridge University Press, First Edition.
2. Effective Methods for Software Testing ,William E. Perry, Third edition, Wiley India, 2009
3. Software Testing – Principles and Practices (Chapter 12) Naresh Chauhan, Oxford University Press, 2010

6. Image Processing (PCE – CS704) Elective-I

TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week Theory : ESE 70 Marks
CIE 30 Marks

Tutorial : 1 Hrs./Week Term work: 25 Marks

Practical : Practical : –

Pre-requisites:

Course Objectives

1. To learn the fundamental concepts of Digital Image Processing
2. To study basic image processing operations.
3. To cover the basic analytical methods which are widely used in image processing.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Describe the basic issues and the scope of image processing, and the roles of image processing and systems in a variety of applications.
2. Explore different techniques in image acquisition and color transformation
3. Understand how digital images are represented
4. Evaluate the mathematical principles of digital image enhancement
5. Explore and apply the concepts of Edge detection, segmentation and object recognition

UNIT NAME & DETAILS

Introduction

Concept of Digital Image Processing, Steps in Image Processing, Components of Image Processing System, Applications areas, Image representation, Grey scale and color images.

1. Image Enhancement and Processing :

Basic Grey level transformation, Histogram Processing techniques, Color Fundamentals, color models, Pseudo color image processing.

2. Image Restoring and Reconstruction:

Noise models, Noise Reduction, Inverse filtering, MMSE filtering.

3. Image Compression :

Fundamental of Redundancies, Basic Compression Methods, Huffman coding, Arithmetic coding, LZW coding, JPEG compression, Standard.

4. Image Segmentation:

Detection of Discontinuities, Point, Line and Edge detection, Thresholding, Region based Segmentation.

5. Image Processing Applications:

Biometric Pattern Recognition, Face Recognition. Preprocessing of Signature Patterns, Lung Disease Identification.

Text Books

1. Digital Image Processing R.C.Gonzalez and R.E.Woods Pearson Edition 1 to 6

7. WEB TECHNOLOGIES (PCC- CS705) TEACHING SCHEME EXAMINATION SCHEME

Theory :3 Hrs./Week Theory : NA

Tutorial :NA Term work: 50 Marks

Practical : 4 Hrs./Week POE : 50 Marks

Pre-requisites: Object oriented Programming, Basics of HTML and CSS.

Course Objectives

1. Introduce students with front end web designing.
2. Motivate the students to develop web applications using PHP.
3. To introduce emerging Web technology concepts and tools.
4. To learn database access technologies and state management techniques.
5. To expose students to XAMPP web services.

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Apply knowledge of client side scripting.
2. Develop web application using PHP.
3. Design web application using MVC and Angular JS.

4. Demonstrate use of server side technologies.
5. Explore newer tools for web development.

UNIT NAME & DETAILS

1. Front End Web Designing HTML and CSS:

HTML Design Patterns: HTML Structure, XHTML, DOCTYPE, Header Elements, Conditional Style Sheet, structural Block Elements, Terminal Block Elements, Multipurpose Block Elements, Inline Elements, Class and ID Attributes, HTML Whitespaces CSS Selector and Inheritance: Type, Class and ID Selector, Position and Group Selectors, Attribute Selectors, Pseudo-element Selectors, Pseudo-class Selectors, Subclass Selector, Inheritance, Visual Inheritance, and Bootstrap

2. Javascript Basics:

Introduction to javascript, Basic program of javascript, variables, functions, conditions, loops and repetition, Function, Arrays – DOM, Built-in Objects, Regular Expression, Exceptions, Event handling In Javascript, Validating HTML form data using javascript, Validation- AJAX - JQuery

3. Angular Node JS:

Angular - Web Application architecture, MVC and MVVM design pattern, Angular architecture, Angular building blocks, Forms implementation, Filters, Services, Consuming REST Web Services, Modules: Built-in and custom, Directives: Built-in and custom, Routing and Navigation, Animations, Testing Angular application. Node, Node Js architecture ,Modules: Built-in and custom, Event loop, Asynchronous application , Events, Listeners, Timers, and Callbacks in Node.js. Testing node application. Introduction to Mongo DB- Accessing MongoDB from Node.js.

4. PHP basic:

PHP Basics: Embedding PHP code in Your Web Pages, Commenting Your Code, Outputting Data to the Browser, PHP supported Data Types, Identifiers, Variables, Constants, Expressions, String Interpolation, and Control Structures Functions: Invoking a Function, Creating a Function, Function Libraries Array: What is Array?, Creating an array, outputting an Array, Merging, slicing, splicing and Dissecting Arrays, Other useful Array, Functions.

5. PHP session management (state management):

Session Handlers: What Is Session Handling, Configuration Directives, Working with Sessions, practical Session-Handling Examples, Creating Custom Session Handlers, PHP cookies, Uploading Files with PHP

6. PHP Database and small app using Laravel and Code to generate:

Installation Prerequisites, Using the MySQLi Extension, Interacting with the Database, Executing Database Transactions.

Experiment List

1. Create html pages for website like login, registration and about us pages.
2. Apply and design the created HTML pages using CSS
3. Write a program demonstrating javascript functions and different validations.
4. Write a program to read and write HTML contents with JQuery.
5. Create a simple Testing Angular application.
6. Write a program demonstrating NodeJs application.
7. Write a program to handle the error in NodeJs..
8. Write a study experiment for Installing Apache and PHP on Linux, Configuring PHP at Build Time on Linux. Or Installation of XAMPP.
9. Hello world Program-Embedded HTML with PHP.
10. Program based on PHP variables, Expression, arrays, control structure.
11. Experiment Based on OOP and Advance OOP PHP
12. Form validation using PHP using regular expressions
13. Upload various types of file from client side to server with validation
14. Write a program to create and handle a session, cookie in PHP

15. Insert user entered data in form to MySQL database using PHP
16. Update user's data stored in MySQL database using PHP
17. Write a program to manage session in PHP having login facility in any web application
18. Write a program to show stored cookies, update, retrieve and delete from browser.

Text Books

1. Pro HTML5 and CSS3 Design Patterns Michael Bowers, Dionysios Synodinos and Victor Sumner Apress edition (Unit I & II)
2. Beginning PHP and MySQL: From Novice to Professional W. Jason Gilmore Fourth Edition Unit IV to VI
3. MEAN Web Development Amos Q. Haviv PACKT PUBLISHING LTD Unit III

Final Year B. Tech (Computer Science and Engineering) Sem–VII

8. Project-I (PW- CS706)

TEACHING SCHEME EXAMINATION SCHEME

Theory : NA Theory : NA

Tutorial : NA Term work: 50 Marks

Practical : 4 Hrs./Week Demo & OE: 50 Marks

Pre-requisites: Software Engineering, Mini Project.

Course Objectives

1. Identify the area of project work
2. Recognize the need and ability to engage in lifelong learning
3. Function effectively on teams and to communicate effectively
4. Able to prepare the technical report

Course Outcomes

Upon successful completion of this course, the students will be able to:

1. Explain the need of a software project for the society
2. Identify requirement analysis like functional and technical requirements for the project
3. Come up with design documents for the project consisting of Architecture, Dataflow diagram, Class Diagram, Algorithmic descriptions of various modules, collaboration diagram, ER Diagrams, Database Design Documents, Sequence Diagram, Use Case Diagram
4. Able to demonstrate analysis and design.
5. Prepare the technical report consisting of Requirement specification, Analysis and Design of Project

Contents

The project work is to be carried out in two semesters of Final Year Computer Science and Engineering.

The project should be undertaken preferably by group of 4-5 students who will jointly work and implement the project in the two semesters.

In Semester VII, the group will select a project with the approval of the Guide (staff member) and submit the Name of the project with a synopsis of the proposed work of not more than 02 to 08 pages before second week of August in the academic year. The group is expected to complete detailed system design, analysis, data flow design, procurement of hardware and/or software, implementation of a few modules of the proposed work at the end of semester –VIII as a part of the term work submission in the form of a joint report.

The term work assessment will be done jointly by teachers appointed by Head of the

Institution.

The oral examination will be conducted by an internal and external examiner

Note:

1. Project work should be continually evaluated based on the contributions of the group members, originality of the work, innovations brought in, research and developmental efforts, depth and applicability, etc.
2. Two mid-term evaluations should be done, which includes presentations and demos of the work done.
3. **Care should be taken to avoid copying and outsourcing of the project work.**

9. Internship (SI-CS707)

TEACHING SCHEME EXAMINATION SCHEME

Theory : NA Practical:1 Credit

Tutorial :NA Term work: 50 Marks

Practical :Minimum4 Weeks duration Mode of Evaluation : –Internship Report, Presentation and Project Review.

Pre-requisites: Completion of minimum of Six semesters, Knowledge of Basic Programming Languages, Database Software.

Course Objectives

The course is designed to expose the students to industry environment and to take up on-site assignment as trainees or interns.

Course Outcomes

At the end of this internship the student should be able to:

1. Have an exposure to industrial practices and to work in teams
2. Communicate effectively
3. Understand the impact of engineering solutions in a global, economic, environmental, and societal context
4. Develop the ability to engage in research and to involve in life-long learning
5. Comprehend contemporary issues
6. Engage in establishing his/her digital footprint

Duration: Minimum 4 Weeks

Details:

Four weeks of work at industry site. Supervised by an expert at the industry.

Term Work

1. Mode of Evaluation: Internship Report, Presentation and Project Review.
2. Collect the Internship Completion Letter given by authorized industry.
3. Assess the work based on progress report (signed by industry)



TEACHING PLAN

Dept Of Computer Science and Engineering (SY B-Tech Sem I 2023-24)	
Lecture Plan: Applied Mathematics	
Lecture No	Unit 1: Correlation and Lines of Regression, Curve fitting
01	Correlation
02	Lines of regression of Bivariate data
03	Fitting of Straight Line
04	Fitting of exponential curves
05	Fitting of second degree parabolic curves
06	examples
	Unit 2 : Probability Distribution
07	Defn, Introduction, Random Variables, Types
08	Probability Distributions
09	Binomial Distribution
10	Poisson Distribution
11	Normal Distribution
12	Examples
	Unit 3 : Numerical Integration
13	Introduction : Newton Cotes formulae
14	Trapezoidal Rule
15	Simpson's 1/3 rd rule
16	Simpson's 3/8 th rule
17	Weddle's Rule
18	examples
	Unit 4 : Introduction to fuzzy sets
19	Fuzzy sets versus crisp sets
20	Membership function
21	Alpha cuts & Strong Alpha cuts
22	Scalar cardinality of fuzzy sets
23	Degree of subset hood of fuzzy sets
24	examples
	Unit 5 : Fuzzy Arithmetic
25	Fuzzy numbers
26	Arithmetic operations on Fuzzy numbers
27	Fuzzy cardinality
28	Fuzzy equations $A+X=B$, $A.X=B$
29	examples
30	examples
	Unit 6: Assignment Problem
31	Balanced assignment problems- Hungarian method
32	Unbalanced assignment problems
33	examples
34	Travelling Salesman Problem
35	Transportation problem
36	examples

Dept Of Computer Science and Engineering (SY B-Tech Sem I 2023-24)	
Lecture Plan: Discrete Mathematics & Structures	
Lecture No	Unit 1: Mathematical Logic
01	Statements & Notations, Connectives,
02	Statement Formulas & truth table,
03	Well formed formulas, Tautologies
04	Equivalence of formulas, Duality law,
05	Tautological Implications,
06	Functionally complete set of connectives
07	Other connectives,
08	Normal Forms,
09	Theory of Inference for statement calculus.
10	Theory of Inference for statement calculus.
	Unit 2 Set Theory
11	Basic concepts of set theory
12	Operations on Sets
13	Ordered pairs & n-tuples,
14	Cartesian product
	Unit 3 : Relations & Functions
15	Relations. Properties of binary relations.
16	Matrix & Graph Representation of Relation
17	Partition & covering of Set, Equivalence Relations
18	Composition of Binary Relation
19	POSET & Hasse Diagram, Functions
20	Types of Functions, Composition of functions..
	Unit 4 : Algebraic Systems
21	Algebraic Systems: Examples & general Properties,
22	Semi groups & Monoids.,
23	Groups: Definitions & Examples,
24	Groups: Definitions & Examples,
25	Subgroup & Homomorphism
26	Subgroup & Homomorphism
	Unit 5 : Lattice and Boolean Algebra
27	Lattice as partially ordered sets
28	Lattice as Algebraic Systems.,
29	Special Lattices
30	Boolean Algebra: Definitions & examples
31	Boolean Algebra: Definitions & examples, unctions.
32	Boolean Functions F
33	Representation & Minimization of Boolean
34	Representation & Minimization of Boolean
35	Minimization of Boolean Functions
	Unit 6 : Graph Theory
36	Basic concepts of graph theory
37	Paths, Reachability & Connectedness,
38	Matrix, Representations of Graphs.
39	Storage Representation & Manipulations of Graphs
40	PERT & Related technologies.

Dept Of Computer Science and Engineering (SY B-Tech Sem I 2023-24)		
Lecture Plan: Data Structures		
Lect.No.	Unit No.	Details of syllabus planned
01	1	Definition, Types of data structures, Control Structure
02		Array , Data Structure Operations,
03		Algorithms: Complexity, Time and Space complexity.
04	2	Linear and Binary Search
05		Hashing-Definition ,Hash Function's, Collision
06		Bubble sort, Selection sort,
07		Insertion sort,
08		Merge sort,
09		Quick sort
10		Radix sort, Complexity and analysis
11	3	Stack Definition, representation, operations
12		Static implementation and application of stack
13		Queue Definition, representation, operations
14		Static implementation and application of queue
15		Circular Queue Definition, representation, operations
16		Static implementation and application of Circular Queue
17		Priority Queue, Deque
18	4	Singly Linked List Definition, representation, operations
19		Singly Linked List Implementation and applications
20		Doubly Linked List Definition, representation, operations
21		Doubly Linked List Implementation and applications
22		Circular Linked List Definition, representation, operations
23		Circular Linked List Implementation and applications
24		Implementation of stack and queue using linked list
25	5	Binary tree, traversal methods
26		Binary Search tree,AVLsearch tree
27		B-tree ,B+ tree
28		Heaps operations, implementation and .
29		Heap Application and Heap Sort
30	6	Basic Concept of graph theory
31		Storage representation
32		Graph traversal technique
33		BFS
34		DFS
35		Graph using Sparse matrix

Dept Of Computer Science and Engineering (SY B-Tech Sem I 2023-24)		
Lecture Plan : Computer Networks		
Lect. No.	Ch.No.	Details of syllabus planned
1.	1	Introduction to Computer Network: Basic Introduction Computer Network
2.		Overview of OSI layer Model
3.		Overview of TCP/IP protocol model
4.		Addressing
5.		Underlying technologies
6.	2	Data Link Layer: Design issues for Data Link Layers
7.		Framing methods
8.		Error control: detection and correction, Flow control
9.		Elementary Data Link protocols
10.		Sliding window Protocols
11.		Go back n, Selective repeat.
12.	3	Medium Access Control Sub layer: Static and Dynamic channel allocation
13.		Multiple Access protocols ALHOA
14.		CSMA
15.		Collision Free Protocols
16.		Ethernet: IEEE 802.3, IEEE 802.4
17.		IEEE 802.5, standards, Wireless LANS 802.11 standards

18.	4	Network Layer: IPv4 Addresses
19.		Classful Addressing Other Issues
20.		Sub-netting and Super netting
21.		Class less Addressing, Delivery
22.		Forwarding and routing
23.		Routing methods: Shortest path, Link state, Distance vector routing
24.		broadcast routing, Congestion control algorithms : Principles
25.		Congestion prevention policies
26.		Congestion control in datagram subnet, Load Shedding, Jitter Control.
27.	5	Internet Protocol: IP Datagram format,
28.		Fragmentation models
29.		Reassembly models
30.		ARP
31.		RARP
32.		ICMP
33.		IGMP
34.	6	Transport Layer: The Transport service primitives
35.		UDP: Process to Process communication
36.		User Datagram Format
37.		Operation and uses of UDP.
38.		TCP: TCP Services and Features
39.		TCP segment format
40.		TCP Connections
41.		Flow and error

42.		control in TCP, TCP Timers
43.		Berkeley Sockets: Socket Addresses, Elementary Socket system calls byte ordering
44.		Connectionless iterative server,
45.		connection oriented concurrent server
46.		TCP and UDP Client server Programs.

Dept Of Computer Science and Engineering (SY B-Tech Sem I 2023-24)		
Lecture Plan: C Programming		
Lect. No.	Unit No.	Details of syllabus planned
01		The Form of a C Program, The Library and Linking, Separate Compilation
02		Compiling a C Program, C's Memory Map
03	1	Expressions – The Basic Data Types, Modifying the Basic Types, Identifies Names
04		Variables, The Four C Scopes, Type Qualifiers-const,volatile
05		Storage Class Specifiers; Statements - Selection Statements, Iteration Statements,
06		Jump Statements, Expression Statements, Block Statements.
07	2	Console I/O: Reading and Writing Characters
08		Reading and Writing Strings, Formatted Console I/O
09		printf(), scanf(), Suppressing Input
10		Arrays and its types- Two-Dimensional Arrays with example
11		Strings- Arrays of Strings, Multidimensional Arrays with example
12		Array Initialization, Variable-Length Arrays with examples
13	3	The General Form of a Function, Understanding the Scope of a Function
14		Parameter passing, Passing arrays to functions-single array element/whole array,
15		Function Arguments- call by value ,call by reference,
16		argc and argv-Arguments to main() ,The return Statement, main() Return value
17		Recursion, Function Prototypes
18		Declaring Variable Length Parameter Lists, The inline Keyword
19	4	Pointers, declaring and Initialization of pointer variables,
20		Pointer operations ,Pointer expressions
21		Pointers and arrays, arrays of pointers
22		Multiple Indirection, Initializing Pointers
23		Pointers to Functions and structures
24		Dynamic Allocation Functions, restrict-Qualified Pointers, Problems with Pointers.
25		5
26	Passing Structures to Functions, Structure Pointers	
27	Arrays and Structures Within Structures	
28	Union and its memory allocation scheme	
29	Bit-Fields, Enumerations,	
30	Using sizeof to Ensure Portability, typedef	
31		FileI/O, StandardC vs. UnixFileI/O

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32	6	Streams and Files, File System Basics
33		fread() and fwrite()
34		fseek() and Random-Access I/O
35		fprintf() and fscanf(),
36		The Standard Streams.

T.Y B.TECH

1. Information Security (PCC-CS501)

Class: TY B.Tech CSE Sem.: I

Subject: Information Security

Lecture Plan

Lect. No.	Ch.No.	Details of syllabus planned
01	1	The OSI Security Architecture
02		Symmetric Cipher Models
03		Substitution Techniques
04		Transposition Techniques
05		Block Cipher Principles
06		The Data Encryption Standard
07	2	Principles of Public-Key Cryptosystems,
08		The RSA Algorithm,
09		Key Management,
10		Diffie-Hellman Key Exchange,
11		Authentication requirements,

12		Authentication functions,
13		MAC and Hash functions and their requirements
14	3	Digital Signature,
15		Digital Signature Standard,
16		Authentication applications - Kerberos,
17		Authentication applications - Kerberos,
18		X.509 Authentication service
19		4
20	S/MIME, IP Security - IP Security Architecture	
21	Authentication Header and Encapsulating	
22	Authentication Header and Encapsulating	
23	Security Payload.	
25	5	

26		Secure Electronic Transaction
27		Intruders, Intruder Detection
28		Password Management
29		Firewall Design Principles
30		Trusted Systems
31	6	Non-Cryptographic Protocol Vulnerabilities - DoS and DDoS
32		Session Hijacking and Spoofing
33		Pharming attacks. Software
34		Vulnerabilities – Phishing
35		Buffer Overflow
36		Format String attacks, SQL Injection

2.

System Programming (PCC-CS502)

Class	TY B.Tech CSE	Sem.: I
Course	System Programming	

Lecture Plan

Lect. No.	Ch No.	Details of syllabus planned
01	1	Introduction to Language Processors
02		Language processing activities
03		Fundamentals of language processing
04		Fundamentals of language
05		Specification
06		Language Processing Development Tools: LEX
07		Language Processing Development Tools: YAC
08	2	Introduction to Assemblers
09		Elements of assembly language programming
10		A simple assembly scheme
11		pass structure of assemblers

12		Design of a two pass assemble
13	3	Introduction to Macro
14		Macro definition and call
15		Macro expansion
16		Nested macro calls
17		Advanced macro facilities
18		Design of macro pre-processor: Design Overview
19		Data structure of Macro pre-processor with and Example
20	4	Aspects of compilation
21		Memory allocation: Static and Dynamic memory allocation
22		Memory Allocation in block Structure language
23		Compilation of expressions
24		Code optimization: Local
25		Code optimization: and Global optimization and Optimization technique
26		Interpreters
27	5	Introduction to Linkers
28		Relocation and linking concepts
29		Self- relocating programs

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30		linking for overlays
31		Loaders

32	6	Introduction to Software tools
33		Software tools for program development
34		Editors, Debug
35		Monitors, Programming Environments,
36		User Interface

3. Object Oriented Modeling and Design (PCC-CS503)

Class	TY B.Tech CSE	Sem.: I
Course	Object Oriented Modeling and Design	

Lecture Plan

Lect. No.	Ch.No.	Details of syllabus planned
1.	1	Object oriented themes, modeling as a design technique.
2.		Object, classes
3.		Link & association, advanced link & Association
4.		Generalization & Inheritance, grouping constructs
5.		Aggregation, abstract classes
6.	2	Generalization as extension & restriction
7.		Multiple inheritance, metadata
8.		Candidate key & constraints
9.		Events & states, operations
10		Nested state diagrams, concurrency.
11		Advanced dynamic modeling concepts, simple dynamic model
12	3	Relation of object dynamic models, functional model
13		Data flow diagrams, specifying operations, constriction
14		A simple functional model
15		Relation of functional to object & dynamic model
16		OMT methodology, Impact of an object-oriented approach,
17		Analysis, system design with examples, combining models, design algorithms
18		Design optimization, implementation of controls, design association & physical

		packaging
19	4	An overview of the UML
20		Conceptual Model of UML
21		Conceptual Model of UML
22		Architecture of UML
23		Architecture of UML
24		Structure modeling Using UML: Classes, Relationship
25		Structure modeling Using UML: Diagrams, Class Diagrams
26	5	Interactions, Use Case
27		Use Case Diagram, Interaction diagrams
28		Activity diagrams, Events & Signals
29		State Machines, Process & Threads
30		Time & Space, State chart diagrams
31	6	Components, Deployment
32		Collaboration,
33		Patterns & frameworks
34		Patterns & frameworks
35		Component diagrams
36		Deployment diagrams

4. Computer Algorithm (PCC-CS504)

Class	TY B.Tech CSE	Sem.: I
Course	Computer Algorithm	

Lecture Plan

Lect. No.	Unit.No.	Details of syllabus planned
1.	1	Introduction : What is algorithm & its Specification
2.		Algorithm Specification, Recurrence relations
3.		Performance Analysis
4.		Randomized Algorithms
5.		Divide and Conquer: The general method
6.		Binary search & its analysis
7.		Finding the maximum and minimum
8.		Merge sort & its analysis
9.		Quicksort & its analysis
10.		Selection sort and its analysis
11.	2	The general method, Knapsack problem
12.		Job sequencing with deadlines
13.		Minimum-cost spanning trees – Prim's and Kruskal's Algorithms
14.		Optimal storage on tapes
15.		Optimal merge patterns
16.		Single source shortest paths
17.	3	The general method
18.		Multistage graphs
19.		All pair shortest paths

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20.		Optimal binary search trees
21.		0/1 knapsack
22.		Reliability design Problem
23.		Traveling Sales person problem
24.	4	Basic Traversal and Search Techniques
25.		Techniques for Binary Trees & Game Tree
26.		Techniques for Graphs – Breadth First Search & Traversal
27.		Depth First Search & Traversal
28.		AND/OR graphs, Connected components and Spanning Tree
29.		Bi-connected components
30.		Bi-connected components
31.		Depth first search
32.		Backtracking: The general method
33.		8-queen problem
34.		Sum of subsets
35.		Knapsack Problem
36.		Hamiltonian Cycle
37.		Graph Coloring
38.	5	Basic Concepts
39.		Introduction
40.		Introduction to NP Hard Graph Problems
41.		Introduction to NP Hard Graph Problems
42.	6	Computational Model
43.		Fundamental Techniques
44.		Algorithms
45.		PRAM
46.		MESH
47.		HYPERCUBE
48.		MESH
		HYPERCUBE

B.TECH (C.S.E)

1.

Advanced Computer Architecture (PCC-CS701)

Class: B.Tech CSE Sem.: I

Subject: Advanced Computer Architecture

 Lecture Plan

Lect. No.	Ch No.	Details of syllabus planned
01	1	The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: a) Parallel Processing Mechanisms
02		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: b) Parallel Computer Structures: Pipeline Computers
03		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: c) Array Processors
04		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: d) Multiprocessor Systems
05		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: e) Architectural classification Schemes: Multiplicity of Instruction-Data Streams
06		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: f) Trends in power and energy in Integrated Circuits g) Trends in Cost
07		The Concept of Computer Architecture and Fundamentals of Quantitative Design and Analysis: h) Dependability
08	2	Introduction of pipeline
09		Principles of Pipeline: a) Principles of linear pipeline
10		Principles of Pipeline: b) Classification of Pipelined Processors

11		Principles of Pipeline: c) Interleaved memory organization
12		Principles of Pipeline: d) Hazard detection and resolution
13		Principles of Pipeline: e) Basic compiler Techniques for Exposing ILP
14	3	Memory Hierarchy Design : a) Introduction
15		Ten Advanced optimizations of cache performance : Compiler Optimizations to Reduce Miss Rate, Small and Simple First-Level Caches to Reduce Hit Time and Power
16		Way Prediction to Reduce Hit Time, Pipelined Cache Access to Increase Cache Bandwidth, Pipelined Cache Access to Increase Cache Bandwidth
17		Multi-banked Caches to Increase Cache Bandwidth, Critical Word First and Early Restart to Reduce Miss Penalty, Critical Word First and Early Restart to Reduce Miss Penalty
18		Hardware Prefetching of Instructions and Data to Reduce Miss Penalty or Miss Rate, Hardware Prefetching of Instructions and Data to Reduce Miss Penalty or Miss Rate
19		Data Level Parallelism in Vector, SIMD and GPU Architecture: a) Vector Processing requirement: Characteristics of vector processing
20	4	Data Level Parallelism in Vector, SIMD and GPU Architecture: b) Multiple vector Task dispatching
21		Data Level Parallelism in Vector, SIMD and GPU Architecture: c) Pipelined vector processing methods
22		Data Level Parallelism in Vector, SIMD and GPU Architecture: d) Associative Array Processing: Associative Memory Organization
23		Data Level Parallelism in Vector, SIMD and GPU Architecture: e) Associative processors (PEPE and STARAN)
24		Data Level Parallelism in Vector, SIMD and GPU Architecture: f) Data Level Parallel in Vector : Introduction
25		Data Level Parallelism in Vector, SIMD and GPU Architecture: g) Vector Architecture
26	5	Data Level Parallelism in SIMD and GPU Architecture: a) SIMD ARRAY PROCESSORS: SIMD Computer organization
27		Data Level Parallelism in SIMD and GPU Architecture: b) Masking and Data Routing Mechanism
28		Data Level Parallelism in SIMD and GPU Architecture: c) SIMD Instruction set extension for Multimedia
29		Data Level Parallelism in SIMD and GPU Architecture: d) Graphics Processing Units : Programming the GPU

30		Data Level Parallelism in SIMD and GPU Architecture: e) NVIDIA GPU Computational structures
31		Data Level Parallelism in SIMD and GPU Architecture: f) NVIDIA GPU Instruction set Architecture
32		Data Level Parallelism in SIMD and GPU Architecture: g) Conditional Branching in GPU h) NVIDIA GPU Memory Structure
33	6	Multiprocessor Architecture : a) Introduction
34		b) Multiprocessor Architecture: Issues and Approach
35		c) Challenges of parallel processing
36		d) Centralized shared memory Architecture: Multiprocessors Cache coherence
37		e) Basic schemes for enforcing coherence
38		f) Snooping Coherence Protocols
		g) Distributed shared memory and directory based coherence
39		h) Directory Based cache coherence protocol :The basics

2. Cloud Computing (PCC – CS702)

Class	B.Tech CSE Sem.: I
Course	Cloud Computing
Faculty Name	

Lecture Plan

Lect. No.	Ch.No.	Details of syllabus planned
1.	1	Overview of computing paradigm: Recent trends in Computing, Grid Computing, Cluster Computing, Distributed Computing ,Utility Computing, Cloud Computing.
2.		Evolution of cloud computing - Business driver for adopting cloud computing.
3.		Introduction to Cloud Computing, History of Cloud Computing, and Cloud service providers. Properties
4.		Characteristics & Disadvantages - Pros and Cons of Cloud Computing
5.		Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing. Role of Open Standards.
6.	2	Cloud Computing Architecture: Cloud computing stack - Comparison with traditional computing architecture (client/server)
7.		Services provided at various levels, How Cloud Computing Works
8.		Role of Networks in Cloud computing, protocols used
9.		Role of Web Services. Service Models (XaaS)
10.		Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS).
11.		Deployment Models, Public cloud, Private cloud, Hybrid cloud, Community cloud.
12.	3	Virtualization: Introduction and benefits, Implementation Levels of Virtualization
13.		Virtualization at the OS Level, Virtualization Structure
14.		Virtualization Mechanism, Open-Source Virtualization Technology
15.		XenVirtualization Architecture
16.		Binary Translation with Full Virtualization, Para virtualization
17.		Virtualization of CPU, Memory and I/O Devices

Lect. No.	Ch.No.	Details of syllabus planned
18	4	Infrastructure as a Service (IaaS): Introduction to IaaS – IaaS definition
19		Resource Virtualization - Server, Storage, Network. Virtual Machine(resource) provisioning and manageability, storage as a service,
20		Data storage in cloud computing (storage as a service). Renting, EC2 Compute Unit, Platform and Storage, pricing, customers.
21		Platform as a Service (PaaS): Introduction to PaaS - What is PaaS, Service Oriented Architecture (SOA).
22		Cloud Platform and Management - computation, storage
23		Software as a Service (SaaS): Introduction to SaaS, Web services, Web 2.0, Web OS, Case Study on SaaS
24	5	Service Management in Cloud Computing: Service Level Agreements (SLAs), Billing & Accounting, Comparing Scaling
25		Hardware: Traditional vs. Cloud, Economics of scaling: Benefitting enormously,
26		Managing Data - Looking at Data, Scalability & Cloud Services, Database & Data Stores in Cloud, Large Scale Data Processing
27		Cloud Security: Infrastructure Security - Network level security, Host level security, Application-level security
28		Data security and Storage - Data privacy and security Issues,
29		Jurisdictional issues raised by Data location: Identity & Access Management, Access Control, Trust, Reputation, Risk,
30		Authentication in cloud computing, Client access in cloud, Cloud
31	6	Case study on Open Source and Commercial Clouds – Amazon EC2
32		Google Compute Engine
33		Microsoft Azure
34		Cloud foundry
35		OpenStack

3. Advanced Database Systems (PCC- CS703)

Class	B.Tech CSE Sem.: I
Course	Advanced Database Systems

□ **Lecture Plan** □

Lect. No.	Ch.No.	Details of syllabus planned
1.	1	Database System Architectures, server system architecture
2.		Parallel systems , Parallel Database architecture
3.		Parallel databases , I/O parallelism
4.		Inter and Intra Query Parallelism , Inter and Intra operation Parallelism
5.		Design of parallel systems, Distributed Database Concepts
6.		Data storage, Distributed Transactions
7.		Commit Protocols , Concurrency Control , Distributed Query Processing
8.	2	Relational Set Operators, SQL Join Operators
9.		Subqueries and correlated queries, SQL functions, oracle sequence and synonyms
10		Database Links, Updatable Views, Procedural SQL, Triggers
11		Stored Procedures, PL/SQL Stored Functions, Embedded SQL
12		Dynamic SQL. Case study-Postgrey SQL
13	3	NOSQL: Definition and Introduction , Features and Types of NOSQL
14		Sorted Ordered Column-Oriented Stores
15		Key/Value Stores, Document Databases, Graph Databases
16		NOSQL: Getting Initial Hands-On Experience , Storing and Accessing data
17		Storing Data in and Accessing Data from MongoDB
		Querying MongoDB, Interfacing and Interacting with NOSQL
		Case Study- CouchDB, CouchDB vs. MongoDB
		Atlas GUI Tools for MongoDB
	4	The Need for and Role of a Database in an Organization

		The Evolution of the Database Administration Function
		The Database Environment's Human Component Security
		The Database Environment's Human Component Security
		Database Administration Tools, CASE Tools
		Developing a Data Administration Strategy
		The DBA at Work: Using Oracle for Database Administration
	5	The Need for Data Analysis, Business Intelligence
		Business Intelligence Architecture
		Decision Support Data, The Data Warehouse
		Online Analytical Processing
		Star Schemas, Implementing a Warehouse, Data Mining
		SQL Extensions for OLAP
		Materialized Views, Case Study- FireBase-Google
	6	Mathematical models for decision making
		data mining, data preparation
		Data exploration
		Data mining tasks - association rules.

5. WEB TECHNOLOGIES (PCC- CS705)

Class	B.Tech CSE Sem.: I
Course	WEB TECHNOLOGIES
Faculty Name	

Lecture Plan

Lect.No.	Ch.No.	Details of syllabus planned
	1	Front End Web Designing HTML and CSS:
1		HTML Design Patterns: HTML Structure, XHTML, DOCTYPE, Header Elements, Conditional Style Sheet, Structural Block Elements
2.		Terminal Block Elements, Multipurpose Block Elements, Inline Elements, Class and ID Attributes, HTML Whitespaces
3.		CSS Selector and Inheritance: Type, Class and ID Selector, Position and Group Selectors
4.		Attribute Selectors, Pseudo-element Selectors
5.		Pseudo-class Selectors, Subclass Selector,
6.		Inheritance, Visual Inheritance, and Bootstrap
	2	Javascript Basics:
7.		Introduction to javascript, Basic program of javascript
8.		variables, functions, conditions, loops and repetition
9.		, Function, Arrays –
10		DOM, Built-in Objects, Regular Expression,
11		Exceptions, Event handling In Javascript
12		Validating HTML form data using javascript
13		Validation- AJAX -
13		JQuery
	3	Angular Node JS:
14		Angular - Web Application architecture, MVC and MVVM design pattern, Angular architecture, Angular building blocks,
15		Forms implementation, Filters, Services, Consuming REST Web Services, Modules: Built-in and custom, Directives

16		Built-in and custom, Routing and Navigation, Animations, Testing Angular application.
17		Node, NodeJsarchitecture ,Modules: Built-in and custom, Event loop, Asynchronous application , Events, Listeners, Timers, and Callbacks in Node.js.
18		Testing node application. Introduction to Mongo DB- Accessing MongoDB from Node.js.
	4	PHP basic:
19		PHP Basics: Embedding PHP code in Your Web Pages, Commenting Your Code, Outputting Data to the Browser,
20		PHP supported Data Types, Identifiers, Variables, Constants, Expressions, String Interpolation, and Control Structures
21		Functions: Invoking a Function, Creating a Function, Function Libraries
22		Array: What is Array, creating an array, outputting an Array,
23		Merging, slicing, splicing and Dissecting Arrays, Other useful Array, Functions
		PHP session management (state management)
24		Session Handlers: What Is Session Handling, Configuration
25		Directives, Working with Sessions
26		Practical Session-Handling Examples
27		Creating Custom Session Handlers,
28		PHP cookies,
29		Uploading Files with PHP
		PHP Database and small app using Laravel and Code to generate:
30		Installation Prerequisites
31		Using the MySQL Extension
32		Interacting with the Database.
33		Interacting with the Database
34		Interacting with the Database
35		Executing Database Transactions
36		Executing Database Transactions



Project/Seminar Review Form

U.G. Students Project Schedule

Sr. No.	Activity	Nature of Activity	Marks for each Activity	Date of Activity
1	A1	Submission of Project topics with name of group members, Submission of synopsis with guide's signature	04	15/07/2024 31/07/2024
2	A2	Presentation-I : Synopsis Presentation in front of DRC	04	3/08/2024
3	A3	Presentation-II : Presentation on Introduction and literature review of the project	12	21/09/2024
4	A4	Presentation-III : Presentation of Methodology and future work of project.	15	05/10/2024
5	A5	Guide Marks & Teamwork Marks Finalization	15	11/10/2024
		Total	50	

U.G. Students Project Marking Scheme

Sr. No.	Activity	Marks
Semester - I		
01	Submission of project topic with names of group member	$A1 = 0.08 \times TM1$
02	Submission of synopsis duly signed by students and guide	$A2 = 0.08 \times TM1$
03	Introduction and literature review presentation	$A3 = 0.24 \times TM1$
04	Methodology and future work presentation	$A4 = 0.30 \times TM1$
05	Guides mark	$A5 = 0.30 \times TM1$
Semester – II		
06	Progress presentation 1	$A6 = 0.20 \times TM2$
07	Progress presentation 2	$A7 = 0.20 \times TM2$
08	Final presentation before DRC along with submission of spiral bound copy	$A8 = 0.30 \times TM2$
09	Guides mark	$A9 = 0.30 \times TM2$

Notes: -

1. TM1 = Total term work marks allotted by SUK for project work in semester I.
2. TM2 = Total term work marks allotted by SUK for project work in semester II.
3. Distribution of marks is given in form of multiplying factor.

4. Round up or down the marks to get the whole number as per requirement.
5. In rubrics also distribution of marks is given in form of multiplying factor.

U.G. Students Project Rubric for Marking Scheme of Semester – I

Level →	Unsatisfactory	Developing	Satisfactory	Excellent
Activity ↓				
Submission of project topic with names of group member	Submitted after scheduled date. (0.0 × A1)	Submitted on scheduled date, but without clear title. (0.4 × A1)	Submitted before scheduled date with clear title. (0.8 × A1)	Submitted well before scheduled date with research based title. (1.0 × A1)
Submission of synopsis duly signed by students and guide	Submitted after scheduled date, copied topic. (0.0 × A2)	Submitted on scheduled date, duly signed by group members and Guide. Copied topic but added own value. (0.4 × A2)	Submitted before scheduled date duly signed by group members and Guide. Sufficient number of references. Filling gap of existing work. (0.8 × A2)	Submitted well before scheduled date duly signed by group members and Guide. Sufficient number of references. Innovative idea. (1.0 × A2)
Introduction and Literature review presentation	Presented after scheduled date. No coordination between group members. No collection of literature. (0.25 × A3)	Presented on scheduled date. Poor coordination between group members. Little collection of literature. (0.60 × A3)	Presented on scheduled date. Good coordination between group members. Sufficient collection of literature. (0.85 × A3)	Presented on scheduled date. Excellent coordination between group members. Full collection of literature. Presented

				novel idea. (1 × A3)
Level →	Unsatisfactory	Developing	Satisfactory	Excellent
Activity ↓				
Methodology and future work presentation	Presented after scheduled date. No coordination between group members. Little idea about methodology, future work and conclusion. (0.25 × A4)	Presented on scheduled date. Poor coordination between group members. Clear about methodology and future work, but no clear idea about conclusion. (0.6 × A4)	Presented on scheduled date. Good coordination between group members. Clear about methodology, future work and conclusion. (0.9 × A4)	Presented on scheduled date. Excellent coordination between group members. Clear about methodology and future work. Confident about conclusion. (1 × A4)
Guides mark	Not reporting regularly. Reporting individually. Unable to explain. (0.25 × A5)	Reporting regularly and in group. Partially explaining, need guides' help. (0.6 × A5)	Reporting regularly and in group. Fully explaining without guides' help. (0.9 × A5)	Reporting regularly and in group. Fully explaining with clear concepts. (1 × A5)

U.G. Students Project Rubric for Marking Scheme of Semester – II

Level →	Unsatisfactory	Developing	Satisfactory	Excellent
Activity ↓				
Progress presentation 1	Presented after scheduled date. No coordination between group members. No progress. (0.2 × A6)	Presented on scheduled date. Poor coordination between group members. Little progress. (0.65 × A6)	Presented on scheduled date. Good coordination between group members. Satisfactory progress. (0.9 × A6)	Presented on scheduled date. Excellent coordination between group members. Excellent progress. (1 × A6)
Progress presentation 2	Presented after scheduled date. No coordination between group members. No progress. (0.2 × A7)	Presented on scheduled date. Poor coordination between group members. Little progress. (0.65 × A7)	Presented on scheduled date. Good coordination between group members. Satisfactory progress. (0.9 × A7)	Presented on scheduled date. Excellent coordination between group members. Excellent progress. (1 × A7)

Level →	Unsatisfactory	Developing	Satisfactory	Excellent
Activity ↓				
Final presentation before DRC along with submission of spiral	Presented after scheduled date. No coordination between group members. No	Presented on scheduled date. Poor coordination between group members.	Presented on scheduled date. Good coordination between group	Presented on scheduled date. Excellent coordination between

<p>bound copy</p>	<p>submission of spiral bound. Lack of info. Poor format and poor grammar in presentation. Work done not as per submitted synopsis. (0.25 × A8)</p>	<p>Submitted spiral bound. Little info. Poor format and poor grammar in presentation. (0.7 × A8)</p>	<p>members. Submitted spiral bound. Sufficient info. Perfect format, but poor grammar in presentation. (0.95 × A8)</p>	<p>group members. Submitted spiral bound. Lot of info. No mistake in presentation. (1 × A8)</p>
<p>Guides mark</p>	<p>Not reporting regularly. Reporting individually. Unable to explain. Final bound submitted after scheduled date. (0.25 × A9)</p>	<p>Reporting regularly and in group. Partially explaining, need guides' help. Final bound submitted on scheduled date. (0.7 × A9)</p>	<p>Reporting regularly and in group. Fully explaining without guides' help. Final bound submitted before scheduled date. (0.95 × A9)</p>	<p>Reporting regularly and in group. Fully explaining with clear concepts. Final bound submitted well before scheduled date. (1 × A9)</p>



EXPERIMENT LIST AND ASSIGNMENT LIST

1. Computer Networks – I (PCC-CS304)

Lecture		Practical	Tutorial		Total Hr/Wk
3		2	NA		5
Theory	CIE	T/W	OE	POE	Total Marks
70	30	25	--	--	125

Class	SY B.Tech CSE	Sem.: I
Course	Computer Networks	

SR.NO	TITLE OF EXPERIMENTS
1.	Study and demo of LAN, WAN and various connecting devices and components (List out component and devices required for a std. LAN, WAN)
2.	Implementation of framing method character count program.
3.	Implementation of framing method by bit stuffing .
4.	Implementation of framing method byte stuffing using socket programming.
5.	Implementation of Error correction using hamming code .
6.	Program to understand IP classful addressing.
7.	Study and demo Networking Commands <ul style="list-style-type: none"> · IP config · Ping · Hostname · Netstat · Tracert · Nslookup · Route · ARP

8.	Implementation of data transfer using connection oriented (TCP) client-server using socket programming
9.	Implementation of data transfer using connection less (UDP) client-server using socket programming
10	Implementation of TCP chat server.

2. C Programming (PCC-CS306)

Lecture		Practical	Tutorial		Total Hr/Wk
3		4*2	NA		11
Theory	CIE	T/W	OE	POE	Total Marks
--	--	50	--	50	100

Class	SY B.Tech CSE	Sem.: I
Course	C Programming	

Expt No.	Name of the Experiment	Nature of Experiment
1.	Study of Branching Statements in C. (if, if-else, switch)	Performing
2.	To study looping statements: for loop, while loop, do-while loop and implement loop statements.	Performing
3.	To study basics of array: One-dimensional and Multidimensional Array. Implement array in c.	Performing
4.	To study function and parameter passing: call by value and call by reference and implement function.	Performing
5.	To study Structure and implement it in C	Performing
6.	To study Union and implement in C.	Performing
7.	To study pointers in C and implement pointer and double pointer.	Performing
8.	To study and implement file read write operations on file in C	Performing
9.	To study and implement stack and its operations in C.	Performing
10.	To study and implement queue and its operations in C.	Performing
11.	To study linked lists and its operations in C and implement linked list in c.	Performing

T.Y B.TECH

1. Information Security (PCC-CS501)

Class: TY B.Tech CSE Sem.: I

Subject: Information Security

□ **List of Experiments** □

Sr. No	Name of the Experiment
1	Write a program to find out the Modular multiplicative inverse under modulo.
2	Write a program to implement the Substitution Cipher from cryptography and its Analysis.
3	Write a program to implement the RSA algorithm..
4	Write a program to implement and analyze the Deffie-Hellman key exchange algorithm.
5	Single round of DES algorithm/Double DES/ Triple DES and its analysis.
6	Implementation and analysis of Message Digest Algorithm 5.
7	Implementation and analysis of SHA 1 (Secure Hash Algorithm 1).
8	Usage of PGP security package and S/MIME features.
9	Experimenting with SSL/TLS/E-Commerce Applications and identifying their Vulnerabilities.
10	Demo and usage of network traffic analysis tools.
11	Experimentation on identifying non-cryptographic Protocol Vulnerabilities and remedies thereon.
12	Experimenting on identifying software Vulnerabilities using various tools/techniques and their analysis.

2. System Programming (PCC-CS502)

Class	TY B.Tech CSE	Sem.: I
Course	System Programming	

□ **List of Experiments** □

Sr. No	Name of the Experiment
1	To study language processing development tool LEX and YACC
2	To study & implement pass one of assembler
3	Implementation of Macros
4	Implementation of Nested Macro
5	Study of Macro Pre-processor
6	Implementation of Parameter passing Mechanism
7	Implementation of code improving transformations
8	Implementation - symbol table generation for input file
9	Study of software tools

TY B.TECH

1. Information Security (PCC-CS501)

Class: TY B.Tech CSE Sem.: I

Subject: Information Security

□ **List of Assignments** □

Assig. No	Questions
1	1. Describe in brief. <ol style="list-style-type: none"> a. Types of Attacks. b. Symmetric Cipher
2	1. What are the principal elements of public-key cryptosystem? 2. What types of attack are addressed by message authentication? 3. What is message authentication code? 4. Briefly explain Diffie-Hellman key exchange.
3	1. Users A and B uses Diffie-Hellman key exchange technique with a common prime $q = 71$ and a primitive root $a = 7$. <ol style="list-style-type: none"> 1) If user A has a private key $X_A = 5$, what is A's public key Y_A? 2) If user B has private key $X_B = 12$, what is B's public key Y_B? 3) What is the shared secret key? 2. What are the properties a digital signature should have? 3. Write and explain the Attacks and Forgeries in digital signature. 4. What a note on Kerberos.
4	1. What is a public key certificate ? 2. What is the purpose of the X.509 standard? 3. Explain in detail X.509 certificate revocation ?
5	1. Comment on <ol style="list-style-type: none"> a. Web Security Threats. b. SSL Record Format 2. Explain in detail SSL Architecture 3. Write a note on Handshake Protocol
6	1. State in details: Software Vulnerabilities, Prevention and Detection.

2. Object Oriented Modeling and Design (PCC - CS503)

Class	TY B.Tech CSE	Sem.: I
Course	Object Oriented Modeling and Design	

□ List of Assignments □

Sr. No	Name of the Assignments
1	<ol style="list-style-type: none"> 1. What is abstract class and abstract operation? 2. Explain object modeling themes. 3. Explain difference between aggregation, association and generalization
2	<ol style="list-style-type: none"> 1. Explain the nested state diagrams. 4. Draw and explain data flow diagrams for ATM. 5. Example dynamic model
3	<ol style="list-style-type: none"> 1 Impact of object oriented approach. 2. Explain choosing algorithm and choosing data structure 3. What is implementation of control? Explain with example.
4	<ol style="list-style-type: none"> 1. Explain four kinds of things in UML 2. Explain the terms and concepts in UML
5	<ol style="list-style-type: none"> 1. Explain the terms and concepts in behavior modeling. 2. Explain with example : Action state and activity state 3. Explain time and concept in advanced behavior modeling

6	<ol style="list-style-type: none"> 1. Explain terms and concepts of components 2. What is modeling processors and devices? 3. What is pattern and architecture in architecture modeling?
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3.Computer Algorithm (PCC-CS504)

Class	TY B.Tech CSE	Sem.: I
Course	Computer Algorithm	

□ **List of Assignments** □

Sr. No	Name of the Assignments
1	Introduction to algorithm
2	Performance Analysis
3	Recurrence Relation
4	Divide & Conquer-Search and Sort Algorithms
5	Greedy Method
6	Basic Search and Travels
7	Backtrack
8	Dynamic Programming
9	NP Hard and NP Complete Problem
10	Introduction to Parallel algorithm

FINAL YEAR B.TECH

1. Cloud Computing (PCC – CS702)

Class	B.Tech CSE	Sem.: I
Course	Cloud Computing	

Experiment List

Expt No.	Ch.No.	Details of syllabus planned
1		Study of various service models in cloud-IaaS, Paas and SaaS.
2		Working and Implementation of Software as a Service-Make Google Forms, Spreadsheets, Google Classroom.
3		Working and Implementation of Platform as a Service-Working in Codenvy
4		Working and Implementation of Storage as a Service- Dropbox, JustCloud.
5		Installing a private cloud
6		Installing OS on a Virtual Machine Monitor
7		Study of Virtual Machine Migration.
8		Working and Installation of Google App Engine
9		Working and Installation of Microsoft Azure/Amazon Web Service
10		Study of Amazon EC2 and S3
11		

2. Advanced Database Systems (PCC- CS703)

Class	B.Tech CSE	Sem.: I
Course	Advanced Database Systems	

□ **Experiment list** □

Exp. No.	Ch.No.	Name of the Experiment
1.		Installation of Oracle / MySQL and practicing DDL & DML commands. Execute basic utilities used to interact with Oracle DBMS / MySQL.
2.		Design and implement the Fragmentation schema & the Replication schema for the social networking websites / online e-shopping / e-learning websites.
3.		Implementation of 2 Phase Commit protocol for distributed databases.
4.		Execute partitioning queries on parallel databases.
5.		Implementation of Relational Set Operators, SQL Join queries, Subqueries and Correlated Queries, Oracle Synonyms and Sequence.
6.		Demonstrate SQL Functions, Procedures, Cursors, and triggers using PL/SQL, Views

7.		Installation of MongoDB and Apache Cassandra
8.		Exploring MongoDB, and Apache Cassandra basics, Identify the schema design and data modeling techniques in MongoDB.
9.		Accessing MongoDB and Apache Cassandra from some of the popular high-level programming languages. Perform Create, Retrieve, Update and Delete or CRUD operations in MongoDB.
10		Install CouchDB on Windows.
11		Create and delete CouchDB database. Run CouchDB query with Mongo.
12		<p>Case study of Oracle Database Administration and Security. Study of database administrator's responsibilities like –</p> <p>i) Installing and upgrading the database server and/or application tools.</p> <p>ii) Creating user's profiles and ensuring system security by careful allocation of user permissions.</p> <p>iii) Monitoring technical support for both database systems and related applications.</p>
13		Study of CASE concept and tools.
14		Demonstrate all OLAP operations and cube operator in OLAP.

15	Consider a case study of any Big Data system of your choice and design the distributed database architecture and analyze the probable solutions available in the market.
16	Demonstrate data analysis and visualization using any BI Tool.

3. WEB TECHNOLOGIES (PCC- CS705)

Class	B.Tech CSE	Sem.: I
Course	WEB TECHNOLOGIES	

Experiment List

Lect. No.	Experiment
1.	Create html pages for website like login, registration and about us pages.
2.	Apply and design the created HTML pages using CSS
3.	Write a program demonstrating javascript functions and different validations.
4.	Write a program to read and write HTML contents with JQuery
5.	Create a simple Testing Angular application.
6.	Write a program demonstrating NodeJs application.
7.	Write a program to handle the error in NodeJs.
8.	Write a study experiment for Installing Apache and PHP on Linux, Configuring PHP at Build Time on Linux. Or Installation of XAMPP.
9.	Hello world Program-Embedded HTML with PHP.
10.	Program based on PHP variables, Expression, arrays, control structure.
11.	Experiment Based on OOP and Advance OOP PHP
12.	Form validation using PHP using regular expressions
13.	Upload various types of file from client side to server with validation
14.	Insert user entered data in form to MySQL database using PHP
15.	Update user's data stored in MySQL database using PHP
16.	Write a program to show stored cookies, update, retrieve and delete from browser.

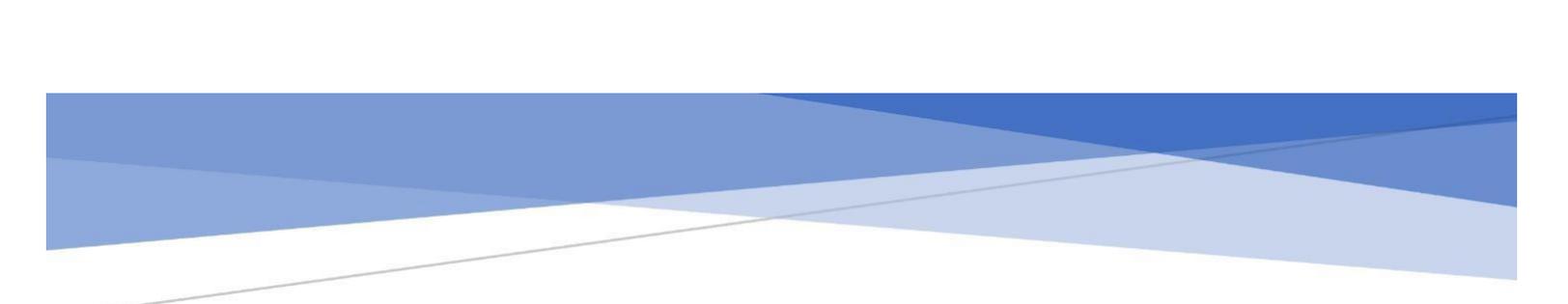


FACULTY LIST

DEPARTMENT FACULTY LIST

Academic Year- 2025-2026

Sr. No.	Faculty Name
01	Dr. A. M. Chougule
02	Prof. R. D. Mane
03	Prof. P. S. Ambupe
04	Prof. S. A. Narade
05	Prof. S. S. Chougule
06	Prof. A. V. Gundvade
07	Prof. A. H. Pudale
08	Prof. S. R. Mali
09	Prof. A. S. Patil



STAFF LIST

DEPARTMENT STAFF LIST

Academic Year- 2025-2026

SEM- I

Sr. No.	Faculty Name
01	Mr. S.M. Swami (Tech. Assistant)
03	Mr. D. B. Mane (Peon)



ACTIVITY RECORD



ACADEMIC CALENDAR

S. Y.B.Tech, T.Y.B.Tech and Final Year B.Tech,MCA-II
 (A.Y. 2025-26, SEMESTER-I)

Week No.	Month	Week Days							Events
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	
1	July 2025	7	8	9	10	11	12	13	> 07 – Commencement of Academic Sem-I, > 07-16 – Declaration of Theory and Lab ISE Components, Updating ERP and LMS > 11-Expert session-Selection of good projects and Synopsis writing” - R&D section
2		14	15	16	17	18	19	20	> 16 – S.Y.B.Tech Induction Program > 18-Counsellor’s session for Final Year > 19-NSS -Guest lecture-Disaster Mgt
3		21	22	23	24	25	26	27	> 25-Synopsis presentation and DRC meeting-R&D Section > Last Week-Saral Seva Bharati examination preparation session > Gate Opportunities session
4		28	29	30	31				> 31 – AMC (Academic Monitoring Committee) Meeting > Feedback By Dean Academics
Instruction Days: 20									
4	August 2025					1	2	3	> 01-02 – Display of Attendance and Counseling of Defaulters for the Month of July > 01-02-Academic Audit(External-LAY) > 01-Annabhau Sathe Jayanti Celebration-NSS > 02-NSS activity,Education Abroad session > 02-Expert session on Publication-R&D section
5		4	5	6	7	8	9	10	> 07-One day Workshop-Professional Ethics-IQAC > 09-Feedback By Principal > 10-Woman Cell Inauguration
6		11	12	13	14	15	16	17	> 14-Dr J J Magdum Death Anniversary > 15 – Independence Day and Parsi New Year, > 16-Tree Plantation-NSS > Second week-MPSC/UPSC exam preparation > Sessionn ,Forien Language training session
7		18	19	20	21	22	23	24	
8		25	26	27	28	29	30	31	> 27 – Ganesh Chaturthi, Ecofriendly Ganesh festival-NSS > 29-30 – Formative Feedback and Academic Audit – I(Internal), > 30 – AMC Meeting,Cleaning activity at vil:ege-NSS > Last Week-Gate Prepeation Session > SORT Inuaguration-R&D Section > 30-Forst Project Assesment-R&D Section30- > First project assessment-R&D section
Instruction Days: 22									
9	Sept. 2025	1	2	3	4	5	6	7	> 02 – Gauri-Ganapati Visarjan, > 03-04 – Display of Attendance and Counseling of Defaulters for the Month of August, > 03-04-CIE-1 > 04-IPR session -R& D Section



ACADEMIC CALENDAR

S. Y.B.Tech, T.Y.B.Tech and Final Year B.Tech,MCA-II

(A.Y. 2025-26, SEMESTER-I)

									<ul style="list-style-type: none"> ➤ 05 – Eid-E-Milad, Literacy Day awareness at village-Library ➤ 06 – Anant Chaturdashi ➤ 04-Expert session on IPR session-faculty-R&D Session
10		8	9	10	11	12	13	14	<ul style="list-style-type: none"> ➤ Counsellor’s session of FY ➤ 15-Engineers Day-Cultural
11		15	16	17	18	19	20	21	<ul style="list-style-type: none"> ➤ Expert session on IPR session-faculty-R&D Session ➤ 15 – Mid Semester Examination Result Declaration ➤ Opportunities after GATE session
12		22	23	24	25	26	27	28	<ul style="list-style-type: none"> ➤ 26-SORT activity-R&D section ➤ 30 – AMC Meeting ➤ 30-Feedback By Academic Dean,Dandiya-Cultural
13		29	30						
Instruction Days: 24									
13	Oct. 2025			1	2	3	4	5	<ul style="list-style-type: none"> ➤ 02 – Mahatma Gandhi Jayanti and Dasara, ➤ 03-04 – Display of Attendance and Counseling of Defaulters for the Month of September ➤ 04-Se-Expert session on IPR session-faculty-R&D Session-Expert session on IPR session-faculty-R&D Session,second project assesment ➤ 08-Counsellor’s session-FY
14		6	7	8	9	10	11	12	<ul style="list-style-type: none"> ➤ 18-Plastic collection-NSS, HEC activity
15		13	14	15	16	17	18	19	<ul style="list-style-type: none"> ➤ Blood donation camp-NSS ➤ 14-Kavya Sandhya
16		20	21	22	23	24	25	26	<ul style="list-style-type: none"> ➤ 21 – Diwali (Laxmipujan), 22 – Diwali (Balipratipada), ➤ 23 – Bhaubij ➤ 24-NSS day ➤ 24-25 – Summative Feedback
17		27	28	29	30	31			<ul style="list-style-type: none"> ➤ 30 – AMC Meeting, ➤ 31-National Unity Day celebration
Instruction Days: 21									
17	Nov. 2025						1	2	<ul style="list-style-type: none"> ➤ 01-02-CIE-2 ➤ 03-End Of Academic Activity ➤ 04-Health Awareness camp for Women ➤ 01-07 – Remedial Classes
18		3	4	5	6	7	8	9	<ul style="list-style-type: none"> ➤ 04 – Submission of ISE Marks, ➤ 05 – Gurunanak Jayanti, ➤ 06 – Display of Attendance and Defaulters in the Semester, Finalization of List of Detained Students and Submission to the Office of Dean Academics cc To Principal ➤ 08– Freezing of Attendance and ISE (Theory and LAB) Marks ➤ 09-Expert lect for Rules and regulation of Prevention of sexual harrashment



ACADEMIC CALENDAR

S. Y.B.Tech, T.Y.B.Tech and Final Year B.Tech, MCA-II

(A.Y. 2025-26, SEMESTER-I)

19		10	11	12	13	14	15	16	>	15-21 – End Semester Examination (Lab POE/ OE)
20		17	18	19	20	21	22	23	>	
21		24	25	26	27	28	29	30	>	25 – Start of End Semester Examination (Theory) 26-Indian Constitution DAY-NSS
Instruction Days: 04										>
22	Dec. 2025	1	2	3	4	5	6	7	>	
23		8	9	10	11	12	13	14	>	
24		15	16	17	18	19	20	21	>	16-Human Rights Day 17 – End of End Semester Examination (Theory)
25		22	23	24	25	26	27	28	>	25 – Christmas
26		29	30	31					>	31-Dr J J Magdum Jayanti
Note:	A Common Mentoring Activity Slot is to be included during the Last Slot in the Regular Time-Table.									
	An In-House Training Slot is to be included in the Regular Time-Table.									
	The Probable Date of Result Declaration of End Semester Examination will be 3 rd January, 2026.									
	The Probable Date of Reopening/ Commencement of Academic Year 2025-26 Sem – II (Even Semester) will be 06 th January, 2026.									
Mentor Mentee meetings Monthly Two Times										
Activities			Public Holidays				Examination			
Total Instruction Days: 90										
Commencement of Academics		End of Academic Activities (Including Remedial Classes)			CIE-1	CIE-2	End Semester Examination (Theory + Lab)		Make-Up Examination	
07 th July 2025		7 th November, 2025			03-04 SEPT 2025	01-02 NOV 2025	15 th November to 17 th December, 2025		In the Month of January, 2026	
Approved By-										
COE PRINCIPAL			DEAN ACADEMICS ACADEMIC COUNCIL							