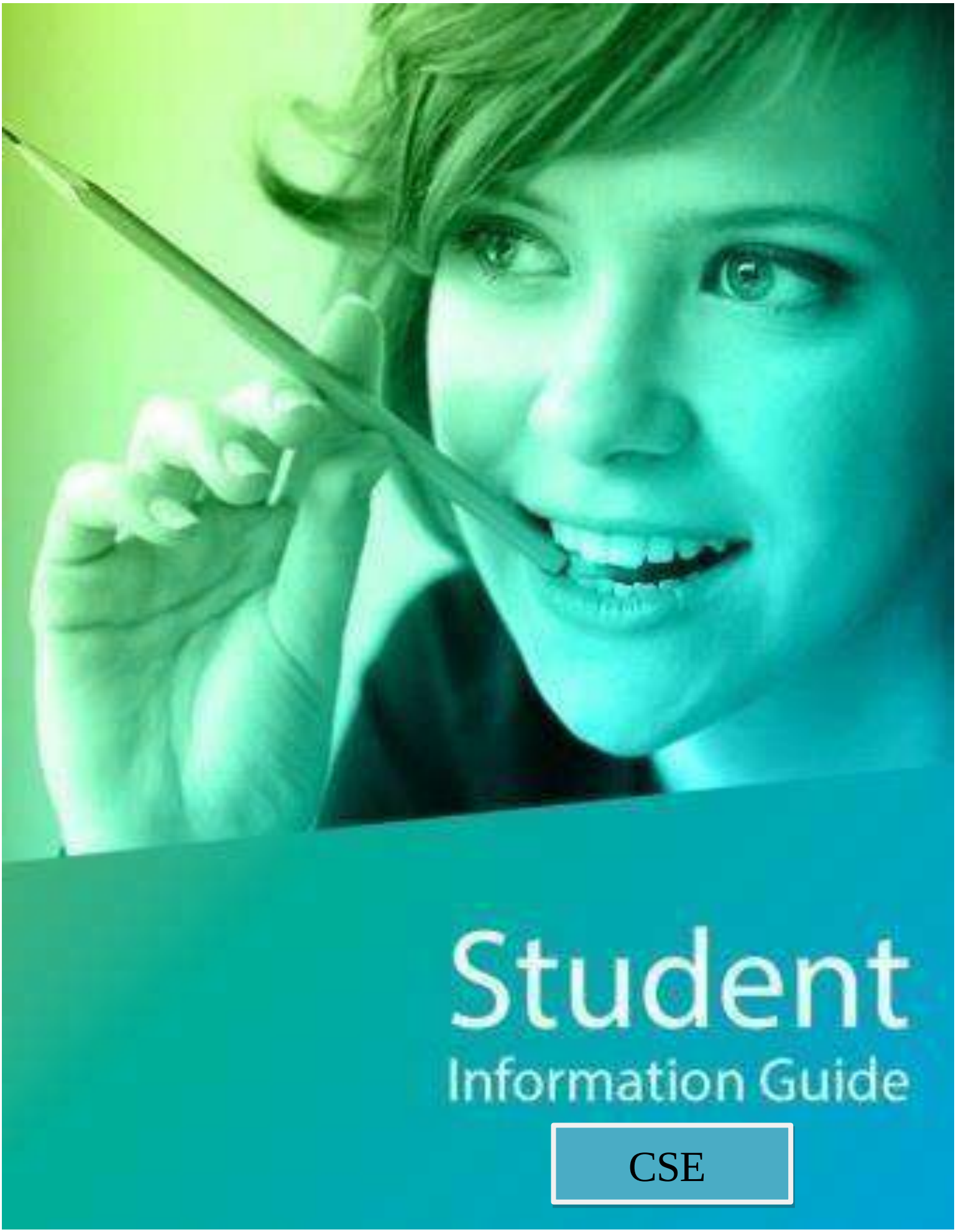

Student Information Guide

CSE

Student Information Manual (SIM)

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INSTITUTEINFORMATION

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 specious 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.

PROGRAM OUTCOMES

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching- learning processes.

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.

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 To develop an ability for pursuing higher studies, research and development computer science and engineering, consultancy a

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 under-standing 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 invitesevere punishment/disciplinary action
- Attempted or actual theft of and/or damage to property of the College, or property of a member ofthe 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 anysoftware or settings in the computer without permission
- Based on the prime priority, users may be requested by the lab in-charge, to leave the workstationany 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 notebook 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 orworking 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 allpersons.
- 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 2023-24 SEM-II

Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Computer Science And Engineering
Calendar of Events for the Academic Year 2023-24 (Even Semester)

Week No.	Month	Weekdays							No of working days	Events
		MON	TUE	WED	THU	FRI	SAT	SUN		
1	December	25	26	27	28	29	30	31	5	
2	January	1	2	3	4	5	6	7	6	Alumni Interaction-5th Jan
3	January	8	9	10	11	12	13	14	5	Expert lecture- 9th Jan , Guest lecture B.Tech-12th Jan
4	January	15	16	17	18	19	20	21	6	EDC-Expert lecture, MOU Activity- 15th Jan, Augmentation tech 16th jan ,Technical event under COMPESA-19th Jan, Project presentation B.Tech – 20th Jan
5	January	22	23	24	25	26	27	28	4	**Annual Sports (Rann Bhoomi) – 22nd to 28th January**
6	January February	29	30	31	1	2	3	4	6	Expert lecture -29th Jan**, CMC Meeting 1 (TY & B.Tech) – 29th to 31st January,**
7	February	5	6	7	8	9	10	11	5	**Formative Feedback (TY & B.Tech) – 5th to 9th February,** Augmentation Technical - 6th feb, Guest lecture TY-8th feb
8	February	12	13	14	15	16	17	18	6	Augmentation non tech 13th Feb, Community activity by B.Tech -12th feb , project presentation-II B.Tech- 17th Feb
9	February	19	20	21	22	23	24	25	4	**Shivajayanthi celebrations - 19th February** **Annual Social Gathering - 20th and 21st February** Alumni expert lecture- 22nd feb, FDC activity- 23rd Feb
10	February March	26	27	28	29	1	2	3	6	**CMC Meeting 2 (TY & B.Tech) – 26th to 28th FebruaryCMC Meeting 1 (SY) - 26th to 28th February** Guest lecture SY- 27th feb ,**Innovate 2K24 – 29th February** **Technical Fest (Ashwamedh) – 1st and 2nd March**
11	March	4	5	6	7	8	9	10	4	**CIE – I (TY & B.Tech) – 5th – 7th March,** Augmentation non tech-4th march, Guest lecture B.Tech-7th march
12	March	11	12	13	14	15	16	17	6	**Parents Meet (TY & B.Tech) – 11th to 16th March,** Expert lecture- 15th march, Final project presentation B.Tech- 16th March
13	March	18	19	20	21	22	23	24	5	**Formative Feedback (SY) – 18th to 22nd March**
14	March	25	26	27	28	29	30	31	4	**CIE – I (SY) - 26th to 28th March,** Expert lecture- 28th march, Guest lecture TY- 29th march, DAB meeting-30th March
15	April	1	2	3	4	5	6	7	6	**Summative Feedback (TY & B.Tech) – 1st to 6th April CMC Meeting 2 (SY) – 1st to 3rd April, CIE – II (TY & B.Tech) – 4th-6th April**
16	April	8	9	10	11	12	13	14	3	**CMC Meeting 3 (TY & B.Tech) – 8th to 10th April**

17	April	15	16	17	18	19	20	21	5	**Parents Meet (SY) – 15th to 20th April**
18	April	22	23	24	25	26	27	28	5	
19	April May	29	30	1	2	3	4	5	5	**CIE – II (SY) – 2nd to 4th May**
20	May	6	7	8	9	10	11	12	5	**Summative Feedback (SY) – 6th to 10th May**
21	May	13	14	15	16	17	18	19	6	**CMC Meeting 3 (SY) – 13th to 15th May**
22	May	20	21	22	23	24	25	26	4	
No. of Working Days		19	21	20	20	19	12		111	

Important Dates:

Courses	Term Commencement	End of Term
F.Y B.Tech. & S.Y. B.Tech. 2nd Sem	**19.01.2024**	**25.05.2024**
T.Y. B.Tech. & B.Tech. 2nd Sem	**26.12.2023**	**15.04.2024**

Holidays	CIE	Feedback

Note: Proctor meeting – In 1st and 3rd week of every month

DEPARTMENTAL TIME TABLE

B.tech timetable 2023-24 sem II

Dr. J. J. Magdum Trust's

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

Department of Computer Science and Engineering

tAcademic Year: 2023-24
Class: B.Tech.
Class Teacher: Prof. R. D. Mane

Semester: VIII
Classroom No.: C-102
W.e.f.: 26/12/2023

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	B1-BDA(OS)-NHS B2-NLP-TUT(PL)-KAD & PS-TUT(PL)-DAN B3-DL-TUT(CN)-PSA &BCT-TUT(CN)-SAN B4-PJ-II(PJ)	B1-NLP-TUT(PL)-KAD &PS-TUT(PL)-DAN B2-BDA(OS)-NHS B3-MAD(PJ)-RDM B4-NLP-TUT(CN)-KAD &-PS-TUT(CN)-DAN	MAD-RDM (C-102)	B1-DL-TUT(WT)-PSA &BCT-TUT(WT)-SAN B2-MAD(CN)-RDM B3-PJ-II(PJ) B4-PJ-II(DB)	DL-PSA (C-102)	
10.30 am-11.30 am			BDA-NHS (C-102)		MAD-RDM(C-102)	
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	DL-PSA (C-102)	DL-PSA (C-102)	B1-MAD(CN)-RDM B2- PJ-II(PJ) B3- PS-TUT(PL)-DAN &NLP-TUT(PL)-KAD B4- BCT-TUT(WT)-SAN &DL-TUT(WT)-PSA	NLP-KAD (C-102)	BDA-NHS (C-102)	
12.40 pm -01.40pm	MAD-RDM (C-102)	NLP-KAD (C-102)		BDA-NHS (C-102)	BCT-SAN (C-102)	
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	BCT-SAN (C-102)	B1-PJ-II (DS) B2-MAD(CN)KAD B3-PJ-II(PL) B4-MAD(DB)-RDM	NLP-KAD (C-102)	B1-PJ-II(DB) B2-PJ-II(WT) B3-MAD(CN)-RDM B4-BDA(PL)-NHS	B1-MAD(PL)-KAD B2- BCT-TUT(WT)-SAN & DL-TUT(WT)-PSA B3- BDA(OS)-NHS B4-MAD(CN)-RDM	
03.30 pm-04.30 pm	BDA-NHS (C-102)		BCT-SAN (C-102)			

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Blockchain Technologies	BCT	Prof. S. A. Narde (SAN)	------
Big Data Analysis	BDA	Prof. N. H. Sayyad (NHS)	Operating System Lab
Mobile Application Development	MAD	Prof. R. D. Mane (RDM)	Computer Network
Deep Learning	DL	Prof. P.S. Ambupe (PSA)	------
Professional skills	PS	Dr. D. A. Nikam (DAN)	------
Natural Language Processing	NLP	Prof. K. A. Doiphode (KAD)	
Project-II	PJ-II		Project lab

Head of Department

Dean Academics

Principal

Ty timetable 2023-24 sem II

Dr. J. J. Magdum Trust's

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

Department of Computer Science and Engineering

Academic Year: 2023-24
Class: TY B.Tech
Class Teacher: Prof. K.A. Doiphode

Semester: VI
Classroom No.: C-102
W.e.f.: 26/12/2023

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	ML-DAN (C-102)	C #- PVK(C-102)	OS-II- SSC (C-102)	ML-DAN (C-102)	T1-C #(PL)-PVK T2-DB(DB)-AVG T3-DSMP(PJ)-NHS T4-CC(WT)-SAN	
10.30 am-11.30 am	OEC-RDM (C-102)	OS-II-SSC (C-102)	CC-SAN (C-102)	OS-II-SSC (C-102)		
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	T1-CC(WT)- SAN T2-OS-II (OS)- SSC T3-C#(PL)-PVK T4- DB(DB)-AVG	T1-OS-II (OS)- SSC T2-C #(PL)-PVK T3-CC(WT)-SAN T4-DSMP(PJ)-RDM	ML-DAN (C-102)	T1-DB(DB)-AVG T2-CC(WT)- SAN T3-OS-II (OS)- SSC T4-OS-II (OS)- SSC	T1,T2,T3, T4 ML(TUT)-DAN (C-102)	
12.40 pm -01.40pm			C #- PVK (C-102)		OEC-RDM (C-102)	
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	OEC-RDM (C-103)	DB-AVG(C-102)	T1-DSMP(OS)- NHS T2-DSMP(OS)- NHS T3- DB(DB)-AVG T4- C #(PL)- PVK	DB-AVG (C-102)	OS-II- SSC (C-102)	
03.30 pm-04.30 pm	DB-AVG (C-103)	CC-SAN (C-102)		DB-AVG (C-102)	CC-SAN (C-102)	

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Compiler Construction	CC	Prof. S. A. Narde (SAN)	Web Technology Lab
Operating System-II	OS-II	Prof. S. S. Chougule (SSC)	Operating System Lab
Database Engineering	DB	Prof. A. V. Gundavade (AVG)	Database Lab
Machine Learning	ML	Dr. D. A. Nikam (DAN)	------
E-Commerce & Digital Marketing	OEC	Prof. R. D. Mane (RDM)	------
C# Programming	C#	Prof. P. V. Kothawale (PVK)	Programming Lab
Domain Specific Mini Project	DSMP	Prof. N. H. Sayyad (NHS) Prof. R. D. Mane (RDM)	Operating System Lab/ Project Lab

Head of Department

Dean Academics

Principal

SY timetable 2023-24 sem II

Dr. J. J. Magdum Trust's

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

Department of Computer Science and Engineering

Academic Year: 2023-24
Class: SY B.Tech
Class Teacher: Prof. P.S.Ambupe

Semester: IV
Classroom No.: C-103
W.e.f.: 19/01/2024

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	SE-PVK (C-103)	COA-PSA(C-103)	S1-OS-I (WT)-PSA S2-OOP(DB)-AVG S3-CN-II(OS)-KAD	CN-II-KAD (C-103)	OOP-SSC (C-103)	
10.30 am-11.30 am	ENV-PAC (C-103)	ENV-PAC (C-103)		AT-NHS (C-103)	CN-II- KAD(C-103)	
11.30 am -11.40 am	BREAK					
11.40 am -12.40 pm	CN-II- KAD (C-103)	AT-NHS (C-103)	OS-I-AVG (C-103)	COA-PSA(C-103)	S1-MP(PJ)-PVK S2-CN-II(OS)-KAD S3-OOP(WT)-PSA	
12.40 pm -01.40pm	AT-NHS (C-103)	OS-I-AVG (C-103)	OOP-SSC (C-103)	SE-PVK (C-103)		
01.40 pm-02.30 pm	LUNCH BREAK					
02.30 pm-03.30 pm	S1-CN-II(DB)-KAD S2- OS-I (WT)-PSA S3-OOP(OS)-SSC	S1-OOP(OS)-SSC S2- MP(PJ)-PVK S3-OS-I (WT)- PSA	COA-PSA (C-103)	S1-OOP(OS)-PSA S2-OOP(OS)-SSC S3-MP(PJ)-PVK	SE-PVK (C-103)	
03.30 pm-04.30 pm			OOP/CO/CN (C-103)		OS-I-AVG (C-103)	

Name of the Subject	Abb.	Name of the Faculty	Practical Venue
Software Engineering	SE	Prof. P. V. Kothawale (PVK)	------
Computer Network-II	CN-II	Prof. K. A. Doiphode (KAD)	Operating System Lab
Automata Theory	AT	Prof. N.H. Sayyad (NHS)	-------
Computer Organization and Architecture	COA	Prof. p. S. Ambupe (PSA)	-------
Environmental Studies	ENV	Prof. P.A. Chougule(PAC)	--------
Operating System -I	OS-I	Prof. A. V. Gundavade (AVG) Prof. p. S. Ambupe (PSA) - Practical	Web Technology Lab
Object Oriented Programming	OOP	Prof. S. S. Chougule (SSC)	Database Lab
Mini Project	MP	Prof. P. V. Kothawale (PVK)	Project Lab

Head of Department

Dean Academics

Principal

STRUCTURE OF SYLLABUS

SECOD YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																						
SEMESTER - IV																						
		TEACHING SCHEME									EXAMINATION SCHEME											
		THEORY			TUTORIAL			PRACTICAL			THEORY					PRACTICAL			TERMWORK		
Sr. No.	Course Subject / Title	Credits	N0. Of Lectures	Hours	Credits	No. of Hours	Hours	Credits	No. of Hours	Hours	Hours	mode	marks	Total Marks	MIN.	Hours	MAX	MIN.	Hours	MAX	MIN.
1	PCC-CS401 Automata Theory	3	3	3								CIE	30	100	40	AS PER BOS GUIDELINES			AS PER BOS GUIDELINES		
												ESE	70								
2	PCC- CS402 Computer Networks - II	3	3	3				1	2	2		CIE	30	100	40		50	20		25	10
												ESE	70								
3	PCC- CS403 Computer Organization and Architecture	3	3	3								CIE	30	100	40						
												ESE	70								
4	PCC- CS404 Operating Systems - I	3	3	3				1	2	2		CIE	30	100	40					25	10
												ESE	70								
5	PCC- CS405 Software Engineering	3	3	3								CIE	30	100	40						
												ESE	70								
6	PCC- CS406 Object Oriented Programming	2	2	2				2	4	4							50	20		50	20
7	PW- CS407 Mini Project							1	2	2							50	20		50	20
8	MC-CS408 Environmental Studies	2	2	2	1	1	1					CIE ESE	30 70	100	40						
	Total (SEM –IV)	*19*	*19*	*19*	*1*	*1*	*1*	*5*	*10*	*10*				*600*			*150*			*150*	
	Total	37	37	37	3	3	3	10	20	20				1100			275			325	

THIRD YEAR COMPUTER SCIENCE AND ENGINEERING - CBCS PATTERN																	
SEMESTER - VI																	
		TEACHING SCHEME							EXAMINATION SCHEME								
		THEORY			TUTORIAL		PRACTICAL		THEORY				ORAL / PRACTICAL		TERMWORK		
Sr. No.	Course Subject / Title	Credits	N0. 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** E-Commerce & Digital Marketing **OEC - CS606** ii) Cyber Security	3	3	3					CIE	30	100	40				
									ESE	70						
6	**PCC- CS607** C# Programming	2	2	2			1	2					50	20	25	10
7	**PW- CS608** Domain Specific Mini Project						1	2					50	20	25	10
	Total (SEM –VI)	*19*	*19*	*19*	*1*	*1*	*5*	*10*			*500*		*150*		*150*	
	Total (SEM - V+ SEM - VI)	38	38	38	3	4	9	18			1000		250		350	

• 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 COURSE-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 COURSE-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

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 ESE	30 70	100	40	50	20	25	10
2	PCC- CS802 Deep Learning	3	3	3	1	1			CIE ESE	30 70	100	40			25	10
3	PCE- CS803 Elective-II	3	3	3	1	1			CIE ESE	30 70	100	40			25	10
4	PCE- CS804 Elective-III	3	3	3	1	1			CIE ESE	30 70	100	40			25	10
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**	

• Candidate contact hours per week : 30 Hours (Minimum)	• Total Marks for Final Yr. Sem VII & VIII : **800 + 800 =1600**
• Theory and Practical Lectures : 60 Minutes Each	• Total Credits for Final Yr. Sem VII & VIII: **50 (SEM-VII: 25 + SEM -VIII: 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. **PCE-CS:**ProfessionalCoreElective–ComputerScienceandEngineeringarecompulsory
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–IV

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

1. Automata Theory(PCC-CS-401)

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

Prerequisite: Basic Mathematical Concepts, Sets, graphs. **Course Objectives:**

1. To introduce students to the mathematical foundations of computation, the theory of formallanguages and grammars
2. To strengthen the students' ability to understand and conduct mathematical proofs forcomputations
3. To make the students understand the use of automata theory in Compliers & System Programming.
4. To analyze and design finite automata, pushdown automata, grammars & Turing machines

Course Outcomes:

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

1. Understand basic concepts of Regular Language and Regular Expressions
2. Select appropriate abstract machine to recognize a given formal language.
3. Generate complex languages by applying Union, Intersection, Complement, Concatenation andKleene * operations on simple languages.
4. Apply parsing concepts for syntax analysis.
5. Be familiar with thinking analytically and intuitively for problem solving situations in related areasof theory in computer science.

Unit No	Contents	No. of Lectures
1	**Regular Languages and Finite Automata** Proofs, Recursive Definitions, Regular expressions and regular languages, Finite Automata,unions,intersection&complementsofregularlanguages,Applications of FA	7
2	**Nondeterminism and Kleene's Theorem** Nondeterministic finite automata, NFA with null transition, Equivalence of FA's, Kleene's Theorem (Part I & Part II), Minimal Finite Automata	6
3	**Context free Grammars** Definition, Union, Concatenation and Kleene *'s of CFLs, Derivation trees and ambiguity, Simplified forms and normal forms	5

4	**Parsing and Pushdown Automata** Definition of Pushdown Automata, Deterministic PDA, Equivalence of CFG's& PDA's, Top down parsing, bottom up parsing.	6
	Context free languages	
5	CFL's and non CFL's**,** Pumping Lemma, intersections and complementsof CFLs	5
	Turing Machines	
6	Definition,TMaslanguageacceptors,combiningTuringMachines**,**Computing partial function with a TM, Multi-tape TMs, and Universal TM	7

Text Books:

1. Introduction to Languages & the Theory of Computations – John C. Martin (Tata MGHEdition)
2. Discrete Mathematical Structures with applications to Computer Science – J .P. Trembley & R. Manohar (MGH)

Reference Books:

1. Introduction to Automata Theory, Languages and computation – John E. Hopcraft,Raje
2. Motwani, Jeffrey D. Ullman (Pearson Edition)
3. Introduction to theory of Computations – Michael Sipser (ThomsonBooks/Cole)
4. Theory of Computation –Vivek Kulkarni

2. Computer Networks-II (PCC-CS-402)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs/Week	**Theory :** ESE 70Marks CIE 30Marks
Tutorial : ---	**Term work:** 25 marks
Practical: 2 Hrs/Week	**Practical :** 50Marks
Credits:- 4	

Prerequisite: Computer Network-I.

Course Objectives:

1. To understand the Client server model & socket interface
2. To perceive IPv6 addressing and protocol
3. To explain and learn basic internet technology protocols
4. Simulate protocols using software tools.

Course Outcomes:

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

1. program the client server model using sockets
2. understand and apply next generation protocol and addressing model
3. elaborate the fundamentals of Domain Name Systems
4. apply the concepts of Remote login and FTP in network applications
5. learn fundamentals of web, HTTP and e-mail communication protocols.
6. understand multimedia streaming and relevant protocols.

Unit No	Contents	No. of Lectures
1	**Client server model & socket interface:** The Socket Interface, The Client Server model and Software design, Concurrent processing in client-server software, Algorithms and issues in Client-Server design, Multiprotocol Servers, Multiservice Servers, Concurrency in clients, Unix Internet Super server (inetd).	6
2	**Next Generation IPv6 and ICMPv6:** IPV6 addresses, packet format, ICMPV6, Transaction from IPV4 to IPV6	5
3	**BOOTP, DHCP and Domain name system:** Name Space, Domain Name Space, Distribution of name space, and DNS in internet, Resolution, DNS massages, Types of records, Compression examples, and encapsulation. BOOTP, DHCP	6

4 **Remote Login: TELNET and File Transfer FTP,TFTP:** 6

Concept, NVT, Embedding, Options & options/sub-option negotiation, controlling the server, Out-of-band signaling, Escape charter, Mode of operation, user interface.**FTP:** Connections, Communication, Command processing, File transfer, User interface, Anonymous FTP, TFTP.

Web Applications Service Protocols:

5 HTTP: Architecture, Web Documents, HTTP Transaction, Request and Response, HTTP Headers and Examples, Persistent Vs Non- Persistent HTTP, Proxy servers. **Electronic Mail:** Architecture, User agent, addresses, Delayed delivery, SMTP commands and responses, Mail transfer phases, MIME, POP3 7

Multimedia In Internet:

6 Streaming stored audio/video, Streaming live audio/video, Real time interactive audio/video, Real Time Transport Protocol (RTP), Real Time Transport Control Protocol (RTCP), Voice Over IP (VoIP), Session Initiation Protocol (SIP) 6

Text Books:

1. TCP/IP Protocol Suite by Behrouz A. Forouzan McGraw-Hill Publication, 4thEdition.
2. Computer Networks by Andrew S Tanenbaum.

Reference Books:

1. Data Communications and Networking by Behrouz AForouzan
2. Internetworking with TCP/IP by Douglas Comer
3. Computer Networking: A Top-Down Approach by Jim Kurose

Term work:

It should consist of minimum 8 - 10 experiments based on the following guidelines

1. Client program using UDP to connect to well known services (echo, time of the day serviceetc.).
2. Implementing concurrent TCP multiservice client/server.
3. Implementing Iterative UDP client/server.
4. Study of following DNS Tools with all its options. nslookup, dig, host,whois.
5. Implement trivial file transfer protocol (TFTP).
6. Configuration of basic services for FTP, HTTP, Telnet etc. on Linux Platform
7. Write program to send a mail using SMTP commands and receive a mail using POP3commands.
8. Capturing & Analyzing operation of various application layer protocols using network protocol analyzer. (Wireshark and tcp dump)
9. Study of various streaming multimedia protocols in Internet (Using various audio/video streaming services on the Internet)

3. Computer Organization and Architecture (PCC-CS-403)

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

Prerequisite: Basic Computer and Microprocessor

Course Objectives:

1. To provide a high-level overview of Computer organization.
2. To discuss the basic of I/O addressing and access.
3. To make the students aware of overall design and architecture of computer and itsorganization.
4. To analyze performance issues in processor and memory design of a digital computer.

Course Outcomes:

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

1. recapitulate the history of computer system and the basic concepts of computer architecture andorganization.
2. understand the concept of I/O organization.
3. apply the different algorithms to perform arithmetic operations.
4. articulate the design issues in the development of processor.
5. conceptualize instruction level parallelism.
6. understand the concept of memory techniques.

Unit No	Contents	No.of Lectures
1	**Computer Evolution and Performance** Evolution of computer – Mechanical Era: Babbage's Difference Engine, Electronic Era: First generation, IAS Computers, Instruction Set and Instruction Execution, Second generation, Input-Output Operation, Programming Language, Third generation and VLSI Era – IC Circuits, Performance Consideration and Measures, Speed up Techniques, Difference between RICS and CISC.	5
2	**Input and Output Organization** Accessing I/O devices, Direct Memory Access (DMA), Buses: Synchronous Bus and Asynchronous Bus, Interface Circuits, Standard IO Interface.	6
3	**Arithmetic** Addition and Subtraction of Signed Numbers, Design of fast Adders, Multiplication of Positive numbers , Signed Operand Multiplication, Fast Multiplication, Integer Division, Floating Point Number Operations: IEEE 754 Floating Point Format, Arithmetic Operations	8
4	**The Processing Unit** Some fundamental Concepts, Execution of complete Instruction, Multiple bus	6

	organization, Hardwired control, Micro programmed Control	
	Pipelining	
5	Basic Concepts: Role of Cache Memory, Pipeline Performance. Data Hazards: Operand Forwarding, Handling Data Hazards in Software and Side Effects and Instruction Hazards: Unconditional Branches and Conditional Branches and Branch Prediction	5
	Computer Memory System	
6	Some Basic Concepts, Types of Memories :ROM and RAM, Semiconductor RAM memory, Cache Memories: Mapping functions, Replacement Algorithms, Example of Mapping Techniques	6

Text Books:

1. Computer Architecture and Organization-John P Hayes (MGH) 3rdEdition
2. Computer Organization – Carl Hamacher, Zvonko Vranesic and Safwat Zaky . Publisher: TataMcGraw Hill. 5thEdition.

Reference Books:

4. Computer Systems Organization & Architecture – John D. Carpinelli (PearsonEducation)
5. http://cse.stanford.edu/class/sophomore-college/projects-00/risc/risccisc/(RISC vs.CISC)
6. http://www.cpu-world.com/sspec/

4. Operating System I (PCC-CS-404)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 3 Hrs/Week	**Theory :** ESE 70Marks CIE 30Marks
Tutorial : ---	**Term work:** 25 marks
Practical: 2 Hrs/Week	**Practical :---**
Credits:- 4	

Prerequisite: Computer Network-I.

Course Objectives:

1. To make the students understand basic concepts of operating system
2. To expose the students to various functions of the Operating system and their usage
3. To give hands on exposure to Linux commands and system calls.

Unit No.	Contents	No.of Lectures
1	**Overview of OS** Abstract view of an operating system, Fundamental principles of OS operations, OS interaction with the computer and user programs, Efficiency ,system performance and user service, Batch Processing System, Multiprogramming System, The Time Sharing System, The Real Time Operating System, Distributed operating system, Operation of OS, Operating system with monolithic structure, Virtual machine operating system, Kernel based operating system, Microkernel based operating system	6
2	**Processes, Threads and Synchronization** Processes andprograms,Implementing processes, Threads, Process synchronization, Race condition, Critical Section, Synchronization approaches, Classic process synchronization problems, Semaphores, Monitors	6
3	**Process Scheduling** Scheduling terminology and concepts, Non preemptive scheduling policies, Preemptive scheduling policies, Long, Medium and shortterm scheduling	6
4	**Deadlock** What is deadlock, Deadlock in resource allocation, Handling Deadlocks : Deadlock Detection and Resolution, Deadlock prevention, Deadlock avoidance	6
5	**Memory Management** Managing the memory hierarchy, Static and Dynamic Memory Allocation, Heap Management, Contiguous Memory Allocation and Non Contiguous Allocation, Segmentation and Segmentation with paging, Virtual memory basics, Demand paging, Page replace mentpolicies	6

6	**File systems and I/O systems** Overview of file processing, Files and file operations, Fundamental file organizations and access methods, Layers of the Input Output control system, Overview of I/O system	6

Text Books:

1. Operating Systems –A Concept Based approach –Dhananjay M Dhamdhere (TMGH).3rd edition.
2. Operating System Concepts –Abraham Silberschatz, Peter B. Galvin &Grege Gagne(Wiley)

Reference Books:

1. UNIX Concepts and Applications –Sumitabha Das(TMGH).
2. Operating System: Concepts and Design –Milan Milenkovic (TMGH)
3. Operating System with case studies in Unix, Netware and Windows NT –Achyut S. Godbole (TMGH).

Term work:

The tutorials should be conducted on the following guidelines.

1. Six assignments should be based on theoretical / analytical concepts, preferably from the exercises of the books covering all topics of the syllabus.
2. Four assignments should on usage of Unix / Linux commands and system calls concerned with General purpose utilities, file system, handling ordinary files, basic file attributes, the Shell, the Process and Filters using regular expressions as mentioned in the reference book at serial no.1.
3. Installation of any two operating system using Vmware.

These assignments should be practically conducted during the tutorial sessions.

5. Software Engineering (PCC-CS-405)

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

Course Objectives:

1. To expose the students to basic concepts & principles of software engineering.
2. To make the student aware of the importance of SDLC in their project development twork.
3. To expose the students to software testing techniques and software quality management.

Course Outcomes:

1. Comprehend systematic methodologies of SDLC(Software Development LifeCycle)
2. Discriminate competing and feasible system requirements indicating correct real world problem scope and prepare stepwise system conceptual model using stakeholder analysis and requirement validation.
3. Prepare SRS document for a project
4. Apply software design and development techniques
5. Develop a quality software project through effective team-building, planning, scheduling and risk
6. Understand testing methods at each phase of SDLC

Unit No.	Contents	No.of Lectures
1	**The software Problem** Cost, Schedule & Quality, Scale and Change, Software Processes: Process & Project, Component Software Processes, Software Development process Models, Project Management Process.	6
2	**Software Requirements Analysis & specification** Value of Good SRS, Requirement Process, Requirements Specification, Other Approaches for Analysis , Validation	5
3	**Software Planning & Scheduling** Responsibilities of Software Project Manager, Project Planning, Project Scheduling, Project Staffing, People CMM, Risk Management	6
4	**Design** Design Concepts, Function Oriented Design, Object Oriented Design, Detail Design, Verification, Metrics	6

5	**Coding & Testing** Coding & Code Review, Testing, Unit Testing, Black Box ,Testing, White Box Testing, Program Analysis Tools, Integration Testing, System Testing	7
6	**Software Reliability &Quality Management** Reliability, Software Quality, Software Quality Management System, ISO 9000, SEI capability Maturity Model, Six Sigma, Agile Software Development & Extreme Programming, Agile Project Management	6

Text Books:

1. Software Engineering: A precise Approach – Pankaj Jalote (Wiley India) (Unit1,2,4).
2. Fundamentals of Software Engineering – Rajib Mall (3rd Edition)(PHI) (Unit 5,6).
3. Software Engineering by Jan Sommerville (9th Edition) Pearson (Unit 6, 7 &6.8).
4. Software Engineering Principles & Practices by Rohit KhuranaITLESL (2nd Edition) VikasPublishing House Pvt. Ltd. (Unit3).

Reference Books:

1. Software Engineering – Concepts & Practices –Ugrasen Suman (CenageLearning)
2. Software Engineering Fundamentals –Behforooz& Hudson (Oxford: Indian Edition1st)

6. Object Oriented Programming (PCC-CS406)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : 2 Hrs/Week	**Theory :---**
Tutorial : ---	**Term work:** 50 marks
Practical: 4 Hrs/Week	**Practical :** 50marks
Credits:- 4	

Pre- requisites: Basics Of C Programming Language

Course Objectives:

1. To learn advanced features of the C++ programming language as a continuation of the previous course.
2. To learn the characteristics of an object-oriented programming language: data abstraction andinformation hiding, inheritance, and dynamic binding of the messages to the methods.
3. To learn the basic principles of object-oriented design and software engineering in terms of software reuse and managing complexity.
4. To enhance problem solving and programming skills in C++ with extensive programming projects.
5. To become familiar with the LINUX software development environment.

Course Outcomes:

After the completion of this course, a successful student will be able to do the following:

1) Use the characteristics of an object-oriented programming language in a program.
2) Use the basic object-oriented design principles in computer problem solving.
3) Use the basic principles of software engineering in managing complex software project.
4) Program with advanced features of the C++ programming language.
5) Develop programs in the LINUX programming environment.

Unit No.	Contents	No. of Lectures
1	**Basics of Object Oriented Programming** The Origins of C++,Features of Object Oriented Programming, relations of Classes & Structures, Classes & Objects, Encapsulation, Data Abstraction, Inheritance, Inline Function, Constructor &Destructor ,function overloading & Operator overloading, Static class member, Static Member Function, Scope resolution Operator, Access members Data member & member Function, Defining member functions, Passing Object to Functions, Nested classes, local classes, Friend functions, Friend class	5
2	**Pointers , Arrays, Dynamic allocation Operator** Arrays Of Object, Pointers to Object, THIS pointer, type checking C++ Pointers, Pointers to Derived types, Pointers to Class members Dynamic Allocation Pointers :-New & Delete Operator	3
3	**Functions & Operator Overloading** Functions Overloading, Operator Overloading, Types Of Constructors, Destructors, Operator Overloading Using Friend Function, Unary & Binary Operator Overloading(Arithmetic, Comparison Operator Overloading),Assignment Operator Overloading(=,+=)	4
4	**Inheritance & Virtual Function** Inheritance, Single Inheritance, Types of Derivations, Passing parameters to base ,Multiple Inheritance, Multilevel Inheritance, Hybrid Inheritance ,Hierarchical Inheritance , Virtual function, Calling a Virtual function through a base class reference, Virtual functions are hierarchical, Pure virtual functions, Abstract classes, Early and late binding.	5
5	**Templates & Exception handling** Function Template ,Class Template, Generic Classes ,Generic Functions, Applying Generic Functions Type Name, export keyword Power of Templates Standard Template Library (STL):-STL Container, STL Algorithm, STL iterator. Exception handling :-Exception handling fundamentals, Catching, Throwing ,& Handling Exception, Exception handling options,	5

6	**I/O System Basics, FileI/0** Streams ,File Pointers & Redirections Streams, C++ stream, C++ Predefined stream classes, Formatted I/O, C++ file I/O, manipulators, fstream and the File classes, File operations, namespaces, std namespaces	4

TERM WORK:

- It should consist of minimum 10-12 experiments based on the syllabusand concepts mention below. Students of different batches should implement different programs based on thefollowing guidelines
- Student should perform the Practicals on Linux platform

List of Experiments

1. Classes &objects
2. Constructors &destructors
3. Friend function and Friend class
4. Inline Function, Static data members & member functions,
5. Array, Array of Objects, Pointer to Object, THIS pointer, Dynamic allocation operators (New & Delete)
6. Function overloading, Operator overloading (unary/binary/arithmetic/comparison)
7. Inheritance (multilevel, multiple, hybrid, Hierarchical)
8. Virtual function and Virtual class, early and late binding
9. Generic function &classes
10. STL
11. Exception Handling
12. File handling

TEXT BOOKS:

1. The Complete Reference C++ by Herbert Schild(Tata McGraw Hill) 4th Edition and onwards.
2. Object oriented Programming in C++ by Rajesh K. Shukla(Wiley) India Edition

REFERENCE BOOKS:

1 Object-Oriented Programming with C++ by E. Balaguruswamy. (Tata McGraw-Hill) 6th Edition andonwards

2. Object oriented Programming with C++- by Sourav Sahay (Oxford) 2nd edition

7. Mini Project (PW-CS407)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : ---	**Theory** :---
Tutorial : ---	**Term work:** 50 marks
Practical: 2 Hrs/Week	**Practical** : 50marks
Credits:- 3	

Pre-requisites: Knowledge of software engineering and C/C++

Course Objectives:

1. To expose the students to solve the real world problems.
2. To utilize the techniques. Skills and modern Engineering tools for building the project.
3. To follow the methods and tasks as per SDOLC Approach

Course Outcomes:

1. Define the problem statement.
2. Organize, Plan and prepare the detailed project activities.
3. Construct Flowchart, System Architecture based on the project description
4. Implement the solution for their problem.

Platform: - C, C++

Course Contents/Description:-

The Mini Project should be undertaken preferably by a group of 3-4 students who will jointly work together and implement the project. The Mini Project topic should be based on the any one subject concepts that students have studied for their Academic Year. The group will select the project with the approval of the guide and submit the name of the project with asynopsis of the proposed work not more than 02 to 03 pages. In the Synopsis they have to state Flowchart, Usage of the logic, algorithm, functions and suitable data structure for implementing the solution. They have to implement project using C, C++languages

8. ENVIRONMENTAL STUDIES(PCC-CS408)

	TEACHING SCHEME	EXAMINATION SCHEME
	Theory : 2 Hrs/Week	**Term work:**
	Tutorial : 1 Hr/week	**Theory** 100
	Practical:	**Practical :**
	Credits:- 3	

COURSE DETAILS/SYLLABUS

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

T.Y.B.Tech (ComputerScienceandEngineering)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, System Programming, Data structures

Course Objectives

1. To introduce the fundamentals of compilers and their phases.
2. To design and implement phases of a compiler.
3. To expose the students to various tools like LEX and YACC.

Course Outcomes

1. Recall the compiler phases and compiler construction tools like LEX and YACC.
2. To design and implement Lexical Analyzer for a simple language.
3. To design and implement Syntax analyzer for a simple expression.
4. To apply Syntax directed translations and Syntax Directed definitions to generate intermediate code.
5. To identify appropriate code optimizing transformation for the given code.
6. To **e**xplain concept of code generation.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction:** Compilers, Phases of a compiler, Compiler construction tools, cousins of the compiler.	**5**
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.	**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**
4.	**Syntax Directed Translation and Intermediate Code Generation**: Syntax directed definitions, construction of syntax tree, S-attributed definitions, L-attributed definitions, Intermediate languages, assignment statements, back patching.	**7**

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.

1. Design of preprocessor for C program.
2. Design a complete lexical analyzer for C language.
3. Program to create a symbol table generator.
4. Design a syntax analyzer for simple expression in c language using top down parsing.
5. Program to create a syntax tree for simple expression in c language using recursive descent parsing.
6. To implement intermediate code generator for Boolean expression in three address code format.
7. Implement intermediate code generator for the conditional statements in three address code format.
8. Implement any one bottom up parsing [LR, SLR, LALR, Operator precedence] technique.
9. 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	-
2.	LEX & YACC	Dong Brown, John Levine, Tony Mason	O'Reilly 2nd Edition	Refer for 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

1. Fundamental architecture of UNIX operating system kernel.
2. Detail algorithms of buffer cache management.
3. Internal File system organizations and related algorithms in UNIX.
4. System calls for UNIX file system.
5. Process structure, creation and management in UNIX.
6. Architecture and algorithms of process scheduling and memory management.
7. I/O subsystem architecture and algorithms.

Course Outcomes

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

1. To understand UNIX kernel, its architectural components like file subsystem, process control subsystem, memory management.
2. To understand a concrete way (UNIX i-nodes) of organizing a file system on a physical storage medium.
3. To maintain UNIX directories, files, manage processes, manipulate data with proper use of pipes and file redirection, UNIX filters.
4. To implement and handle various UNIX system calls.
5. 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.
6. 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 BufferPool, Scenarios for Retrieval of a Buffer, Reading and Writing Disk Blocks, Advantages and Disadvantages of Buffer Cache.	**10**
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.	**8**
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.	**6**
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**.**	**8**
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.	**8**
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.	**8**

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.)

1. Demonstration of how the Linux Kernel implements and Manages files.
2. Implement User Buffer I/O using ‘C’ program.
3. Study & Implement file management using low level file access system calls.

4. Implementation of various operations on Files (Create, Open, Read, Write, Append, Fstat, Dup etc.,)
5. Implementation of various system call (OPEN, READ, WRITE) by reader & writer process.
6. Study & Implementation of pipe () system call.
7. Demonstration of UNIX Process Management – from process creation to process termination.
8. Study & Implementation of signal () system call.
9. Study and demonstration of different Memory Management Techniques.
10. Study and Implement Time, Sleep and Clock Management.
11. Client - Server communication using IPC mechanism: Unnamed pipe, Named pipe.
12. Implementation of Shell Scripts.
13. Implementation of system call for UNIX/Linux.
14. Study of boot loader like "Grub"
15. 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 & administration	Sumitabha Das	Tata McGrow 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

1. To understand fundamental concepts and algorithms of Database Systems.
2. To gain familiarity with SQL and DBMS.
3. To learn database design techniques.

Course Outcomes

1. Understand fundamentals of database management systems.
2. Represent logical design of database using E-R Diagram.
3. Analyze & construct good database design.
4. Apply SQL queries to design & manage the database.
5. Understand transactions, concurrency control and apply to database system.
6. 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. Normalization: Data Redundancies & Update Anomalies, Functional Dependencies. Canonical Cover, The Process of Normalization, First Normal Form, Second Normal Form, Third	**10**

	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**
6.	**RECOVERY SYSTEM [Text Book 1]** 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	6th Edition, McGraw Hill Education.	**1,3,4,5,6**
2	Database Systems - A practical approach to Design, Implementation and Management	Thomos Connolly, Carolyn Begg	3rd Edition, Pearson Education	**2**

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	4th Edition, Pearson Education	**2**

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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

1. To understand Machine Learning Aspects.
2. To understand primitives in learning process by Computer.
3. To understand nature of problems solved with Machine Learning.

Course Outcomes

On completion of the course, student will be able to

1. Explain Machine Learning concepts.
2. Analyze the Machine Learning model.
3. Design solution using Machine Learning techniques.
4. To tackle real world problems in domain of data mining, information retrieval, computer vision, linguistics and bioinformatics, etc.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction to Machine Learning:** 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
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 scaling, polynomial regression	06
3.	**Classification- logistic regression & Naïve Bayes :** **Logistic Regression** – Definition, Hypothesis representation, decision boundary, cost function, Gradient Descent for Logistic Regression. Multiclass Classification, **Regularization** - Over fitting &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.	07
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
5.	**Unsupervised learning :** Clustering, K Means clustering, Hierarchical clustering, Association Rule mining.	04
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.	07

Term Work

- It should consist of minimum 10-12 assignments based on the above topics.

Text Books

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

Reference Books

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

5. Open Elective Course - 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:

1. To get the knowledge about business advantages of the e-commerce and digital marketing and its importance

2. To develop a digital marketing plan and to make SWOT analysis

3. To get introduced with various digital channels, business tools in social networking

4. To understand the optimization of a Web site and SEO optimization

Course Outcomes:

1. Students will be able to identify the importance of the e-commerce and digital marketing for business success
2. Students will be able to create a digital marketing plan, starting from the SWOT analysis and defining a target group
3. Students will be able to identifying digital channels, business tools used in social networking
4. 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)**
2.	**B2C business, B2B business** **B2C Business:** The process model and its variants, The pricing challenge, The fulfillment challenge, The payment challenge, B2C-business and CRM, B2C software systems **B2B business:** The process model and its variants, B2B software systems	**(5)**

3.	**Introduction to Digital Marketing** 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	**(6)**
4.	**Online marketplace analysis & macro environment** **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 **Online macro environment**: Technological forces, economic forces, political forces, Legal forces, social forces and culturalforces	**(8)**
5.	**Digital Marketing Strategy and relationship marketing** **Digital Marketing strategy development**: how to structure digital marketing strategy, strategy implementation **Relationship marketing using digital platforms**: Introduction,the challenge of customer engagement, customer lifecycle management	**(6)**
6.	**Marketing Communications** 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. **Case study:** How the ministry of food processing took to social media or world food India 2017.	**(7)**

Text Books:

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

Reference Books:

1. The Beginner's Guide to Digital Marketing (2015). Digital Marketer.
   Pulizzi, J.(2014) Epic Content Marketing, McGraw Hill Education.
2. "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 beconsidered for CIE

1. Define a target group (working in groups)
2. Creating web sites, MS Expression (working in groups)
3. Writing the SEO content (working in groups)
4. Google AdWords (working in groups)
5. CRM strategy (working in groups)

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

5. Open Elective Course - II (OEC - CS606)

Cyber Security (OEC - CS606)

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

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	**06**
2.	**Cyber Frauds, DoS, Viruses:** Cyber Stalking, Fraud, and Abuse: Introduction, How Internet Fraud Works, Identity Theft, Cyber Stalking, Protecting Yourself	**06**

	Against Cyber Crime. Denial of Service Attacks: Introduction,DoS, Illustrating an Attack, Malware: Introduction, Viruses, Trojan Horses, The Buffer-Overflow Attack. The Sassier 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:

1. Computer Security Fundamentals - Chuck Easttom, Pearson, third edition.

Reference Books:

1. Jason Luttgens, Matthew Pepe, Kevin Mandia, Incident Response & Computer Forensics, McGraw-Hill Osborne Media, 3 rd edition , 2014.
2. Keith J. Jones, Richard Bejtlich, Curtis W. Rose, Real Digital Forensics: Computer Security and Incident Response, Paperback – Import, 2005.
3. John Sammons, the Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics Paperback, February 24, 2012.
4. Hacking Exposed: Network Security Secrets & Solutions, Stuart McClure, Joel Scambray and George.Kurtz, McGraw-Hill, 2005.
5. Ethical Hacking, Thomas Mathew, OSB Publisher, 2003.
7. Dave Shackleford, Virtualization Security: Protecting Virtualized Environments, John Wiley & Sons, 2012.
8. BRAGG, Network Security: The Complete Reference, McGraw Hill Professional, 2012

6. C# Programming (PCC - CS607)

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

***Pre-requisites*:** C++, Java, HTML

Course Objectives

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

Course Outcomes

1. Students will be able to develop correct, well-documented programs using the C# programming language.
2. Students will be able to learn to develop object-oriented programs using C# classes and objects
3. Students will be able to learn to use Windows Forms and WPF to create GUI-based programs
4. Students will be able to build networking and multithreading based programs using C#
5. Students will be able to design web applications using ASP.NET using ASP.NET controls in web applications.
6. 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
1.	**.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.	**3**

2.	**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	**4**
3.	**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.	**4**
4.	**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.	**5**
5.	**Threading and Networking:** **Threading:** Overview, Asynchronous Delegates, the Thread Class and Thread Pools, Threading Issues, Synchronization, and 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.	**4**
6.	**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 Post backs, Cross-Page Posting ,ASP.NET Application Folders, Compilation, Build Providers, Global.aspx	**4**

Term Work

1. It should consist of 10 to 12 experiments based on the above syllabus covering following list of assignments
2. 50% of the experiment should be console based & 40 % experiment should be windows form application. and 10% should be web-based application

Practical List:

1. Language Introduction (Includes console-based application, creation of DLL, running a program without IDE) calling a method from another program.
2. OOPS concepts in C#-Class, Implementation Inheritance, Extension methods (Use any application).
3. Develop DLL file and use it in application program. (Use Any application)
4. Implementation of Interface Inheritance (Use Any Application).
5. Implementation of Multidimensional & Jagged array (Use Any application).
6. Use of properties in any application.
7. Implementation of Operator overloading (Any application).
8. String manipulation using String & String builder(Any application)
9. Develop program to use Regex. Matches method and Regular Expression pattern matching.
10. Design a Windows Form based application for different controls.(Any application)
11. Design a Windows Form based MDI application with different controls.(Any application)
12. Design a Windows Form based application for field validation.(Any application)
13. Design a any Windows Form based application with Database connectivity with all field validation.(Any application)
14. Develop a Win1dows Form application that performs SELECT, INSERT, UPDAE & DELETEqueries and also displays the List of Books available in a Library System by fetching the details froma database. The C# application must also contain the filter capability.
15. Implement console-based networking application to obtain information of network & detect changes in network.
16. Design a Windows form application to download file & process it using stream.
17. Simple ASP.NET web application deployment in IIS server
18. Design simple login and registration page using client-side validation controls in ASP.NET
19. 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

7. Domain Specific Mini-project (PW - CS608)

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

Pre-requisites:

1. Software Engineering Concepts
2. Object Oriented Concepts

Course Objectives

1. To expose the students to use engineering approach to solve domain specific real time problem.
2. To use the appropriate and newer technologies while developing the project.
3. 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) 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– VIII

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

1. Big Data Analytics (PCC - CS801)

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

Pre-requisites: Operating Systems, Hadoop, Java, Networking, Machine Learning and Databases.

Course Objectives

1. Analyze several key technologies used in manipulating, storing, and analyzing big data.
2. Acquire clear understanding of R & Hadoop.
3. Acquire clear understanding of Integrating R & Hadoop and Acquire clear understanding of Hadoop Streaming and its importance.
4. Manage Big Data and analyze Big Data.
5. Apply tools and techniques to analyze Big Data.

Course Outcomes

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

1. Analyze several key technologies used in manipulating, storing, and analyzing big data.
2. Acquire clear understanding of R & Hadoop.
3. Acquire clear understanding of Integrating R & Hadoop and Acquire clear understanding of Hadoop Streaming and its importance.
4. Manage Big Data and analyze Big Data.
5. Apply tools and techniques to analyze Big Data.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**INTRODUCTION TO BIG DATA :** Big Data and its Importance – Four V's of Big Data – Drivers for Big Data –Introduction to Big Data Analytics – Big Data Analytics applications, Architecture Components, Massively Parallel Processing (MPP) Platforms, Unstructured Data Analytics and Reporting, Big Data and Single View of Customer/Product, Data Privacy Protection, Real-Time Adaptive Analytics and Decision Engines.	8
2.	**INTRODUCTION TO R &HADOOP :** Getting Ready to Use R and Hadoop, Installing R, Installing R Studio, Understanding the features of R language, Installing Hadoop, Understanding Hadoop features, Learning the HDFS and MapReduce architecture, Writing Hadoop MapReduce Programs, Introducing Hadoop MapReduce, Understanding the Hadoop MapReduce fundamentals, Writing a Hadoop MapReduce example, Learning the different ways to write Hadoop MapReduce in R, Hadoop Ecosystem, Hadoop YARN, Hbase, Hive, Pig and Pig latin, Sqoop, ZooKeeper, Flume, Oozie.	8
3.	**INTEGRATION OF R & HADOOP :** Integrating R and Hadoop, Introducing RHIPE, Understanding the architecture of RHIPE, Understanding RHIPE samples, Understanding the RHIPE function reference, Introducing RHadoop, Understanding the architecture of RHadoop, Understanding RHadoop examples, Understanding the RHadoop function reference. HADOOP STREAMING WITH R Using Hadoop Streaming with R - Introduction, Understanding the basics of Hadoop Streaming, Understanding how to run Hadoop streaming with R, Understanding a MapReduce application, Exploring the Hadoop Streaming R package.	8
4.	**DATA ANALYTICS WITH R AND HADOOP :** Understanding the data analytics project life cycle – Introduction, Identifying the problem, Designing data requirement, Preprocessing data, Performing analytics over data, Visualizing data, Understanding data analytics problems, Exploring web pages categorization Case Studies: Computing the frequency of stock market change, Predicting the sale price of blue book for bulldozers.	8

5.	**SPARK FOR BIG DATA ANALYTICS :** The advent of Spark, Limitations of Hadoop, Overcoming the limitations of Hadoop, Theoretical concepts in Spark: Resilient distributed datasets, Directed acyclic graphs, SparkContext, Spark Data Frames, Actions and transformations, Spark deployment options, Spark APIs, Core components in Spark: Spark Core, Spark SQL, Spark Streaming, GraphX, MLlib, The architecture of Spark	8
6.	**UNDERSTANDING BIG DATA ANALYSIS WITH MACHINE LEARNING :** Introduction to machine learning, Types of machine-learning algorithms, Supervised machine learning algorithms, Unsupervised machine learning algorithm, Recommendation algorithms, Steps to generate recommendations in R, Generating recommendations with R and Hadoop.	8

Term Work

- Minimum of 10-12 Experiments to be performed from the list given below.

Experiment List

1. Installation of Hadoop.
2. Building Hadoop MapReduce application for counting frequency of word/phrase in simple text file.
3. Study and demonstration of Hadoop YARN Administration command and User commands.
4. Configure Hive demonstrate following
    - Write and execute a Hive query
    - Define Hive External table
    - Define Partitioned Hive Table
5. Demonstrate following on Hive
    - Load data into Hive table from HDFS
    - Update row in Hive table
    - Delete row from a Hive Table
6. Working with operators in Pig - FOREACH, ASSERT, FILTER, GROUP, ORDERBY, DISTINCT, JOIN, LIMIT, SAMPLE, SPLIT,FLATTEN.
7. Write and execute a Pig script

- Load data into a Pig relation without a schema
- Load data into a Pig relation with a schema
- Load data from a Hive table into a Pig relation

8. Installation of R studio and demonstration of following
    - R basic Syntax.
    - Exploring basic R Data Types.
    - Drawing Pie chart, Bar Chart, Histogram, etc.
    - R array and Vector.
9. Working with R with data sets- create, read, write and R Tables- create, read, write.
10. Manipulating and processing data in R - merging datasets, sorting data, putting data into shape, managing data using matrices managing data using data frames.
11. Study of RHIPE (R and Hadoop Integrated Programming Environment)
    - Installing Hadoop.
    - Installing R.
    - Installing protocol buffers.
    - Setting up environment variables.
    - Installing rJava.
    - Installing RHIPE.
12. Identifying the frequency of all the words that are present in the provided input text files using RHIPE Environment.
13. Installation and configuration of Apache Spark on Local Machine.
14. Write an application to Read multiple text files into single RDD using Spark.
15. Implementation of Linear regression with R and Hadoop.
16. Case studies should consist of but not limited to following: Big Data Analytics in Healthcare, Big Data Analytics In Immunology: A Knowledge-Based Approach, Big Data Analytics Embedded Smart City Architecture For Performance Enhancement Through Real-Time Data Processing And Decision-Making.
17. Case Study How Data Science Helped in development COVID-19 Vaccine.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Big Data Analytics: Disruptive Technologies for Changing the Game	Arvind Sathi	IBM Corporation, 2012	Unit - I
2	Big Data Analytics with R and Hadoop	Vignesh Prajapati	Packt Publishing 2013	Unit - II, III, IV, VI
3	Practical Big Data Analytics	Nataraj Dasgupta	Packt Publishing 2018	Unit - V

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1.	Big Data (Black Book)	DT Editorial Services	Dreamtech Press
2.	Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Business	Michael Minelli, Michehe Chambers	AmbigaDhiraj, Wiely CIO Series, 2013.
3.	Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics	Bill Franks	Wiley and SAS Business Series, 2012
4.	Hadoop: The Definitive Guide	Tom White	O'reilly, 2012
5.	Big Data Analytics	Seema Acharya, Subhasini Chellappan	Wiley, 2015
6.	Big Data Analytics with Hadoop 3	Sridhar Alla	Packt Publishing, 2018
7.	Big Data Analytics: Methods and Applications	Jovan Pehcevski	Arcler Press

2. Deep Learning (PCC - CS802)

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

Pre-requisites: Machine Learning**.**

Course Objectives

1. Understand the basic concepts of deep learning networks
2. Introduce different models of deep learning to work with various types of inputs.
3. Learn effects of different parameters and hyper-parameters on deep learning model output.

Course Outcomes

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

1. Describe basic concepts of artificial intelligence and deep learning.
2. Develop different deep learning models for given tasks.
3. Devise the correct parameters and hyper-parameters of developed model for getting improved results.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Neural Network and Deep Learning** Introduction to AI, ML and Deep Learning, A brief history, Need of Deep Learning, Basics of neural network, Data representation for neural network, Gradient based optimization, anatomy of neural network.	7
2.	**Introduction to Tensor flow, Keras and hyperparametersTensor flow:** Introduction, Downloading and installation of Tensor flow, The computation graph, Modelling cyclic dependencies, Building and running visualization, Computing graph and distribution, Simple math operation and distribution, Tensors, Rank of tensors, Tensor math, Numpy and tensors, Tensorflow example, **Keras:** Introduction, Models, Layers, Pre-	7

	processing, Deep Learning case studies, **Hyperparameters:** Learning rate, No of iterations, hidden layers, hidden units, choice of activation function, momentum, mini batch size, Overfitting and underfitting, regularization	
3.	**Convolutional Neural Networks** The convolutional operation, The max pooling operation, Training a convnet from scratch on a small dataset, Using pre-trained convnet, Visualizing what convnet learn	6
4.	**Sequence Models** One hot encoding, Using word embeddings, A recurrent layer in Keras, Understanding the LSTM and GRU layers, Example of LSTM in Keras, Advanced use of Recurrent Neural Network	6
5.	**Advanced Deep Learning Best Practices** Going beyond the sequential model: The Keras functional API, Inspecting and monitoring deep learning models using Keras callbacks and Tensor Board, Getting the most out of your models	5
6.	**Generative Deep Learning** Text generation with LSTM, Deep Dream, Neural Style Transfer, Generating images with variational auto encoders, Introduction to generative adversarial network.	5

Term Work

- Minimum of 10 Tutorials to be performed from the list given below.
- Practical should include the implementation and use of the following mechanisms/Algorithms/Tools /Techniques

Tutorial List

1. Installing of Anaconda or Miniconda and working with Tensorflow and Keras
2. Introduction and working with Google Colab for using GPUs and TPUs for large projects
3. Developing simple perceptron (single layer neural network)
4. Developing simple multilayer neural network for different tasks
5. Designing and developing basic CNN for given task
6. Using transfer learning in CNN
7. Designing and developing simple RNN for given task
8. Designing and developing RNN with LSTM for given task
9. Designing and developing RNN with GRU for given task
10. Designing and developing model for Text generation using LSTM
11. Designing and developing model for Neural style transfer
12. Designing and developing model for generating images

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Deep Learning with Python	Francois Chollet	

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Deep Learning	by Ian Good fellow, Yoshua Bengio, Aaron Courville	MIT Press Book

3. PROJECT MANAGEMENT (PCE- CS803) Elective-II

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 Concept, Operations Management

Course Objectives

1. Provide students with a basic understanding of project management principles and practices.
2. Demonstrate competency in the creation and management of a project plan
3. Understanding impact of Scope, Time and Cost management.
4. Understanding the software quality metrics and quality assurance.
5. Develop strategies to calculate risk factors involved in IT projects
6. Understand the Agile development practices and driving forces for taking an Agile approach to software development.

Course Outcomes

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

1. Understand project characteristics and various stages of a project.
2. Understand the conceptual clarity about project organization and feasibility analyses
3. Analyze the learning and understand techniques for Project planning, project risk, scheduling and Execution
4. Resolve IT related crises using project management
5. Manage the phases and infrastructure of IT projects
6. Describe fundamental concepts of agile methodology and agile development practices

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction to Project Management:** Project and Project Management (PM), Role of project Manager, System view of PM, Organization, Stakeholders, Project phases and lifecycle, Context of IT projects, process groups, mapping groups to Knowledge areas	5
2.	**Project Integration Management:** Strategic planning and project selection, Developing a Project Management Plan, Directing and Managing Project Work, Monitoring and Controlling Project Work, Performing Integrated Change Control, Closing Projects or Phases	5
3.	**Project Scope, Time and Cost management:** Planning Scope Management, Collecting Requirements, Defining Scope, Creating the Work Breakdown Structure, Validating Scope, Controlling Scope Planning Schedule Management, Defining Activities, Sequencing and Estimating Activity, Resources & Duration, Developing & Controlling Schedule Basic Principles of Cost Management, Planning Cost Management, Estimating Costs, Determining the Budget, Controlling Costs	9
4.	**Quality and Human Resource Management:** Importance, Planning Quality Management, Performing Quality Assurance, Controlling Quality, Tools and Techniques for Quality Control, **Human Resource management:** Importance, keys to managing people, human resource planning, acquiring, developing and managing project team.	6
5.	**Risk management:** Importance, risk management planning, sources of risk, risk identification, qualitative and quantitative risk analysis, risk response planning, risk monitoring and control.	5
6.	**Agile Project Management:** The Genesis of Agile, Introduction and background, Agile Manifesto and Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software Development, Agile project management, Design and development practices in Agile projects	4

Term Work

- It should consist of minimum 8 – 10 assignments based on the above topics.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Information Technology Project Management	Kathy Schwalbe	Cengage Learning 7E	(Unit I to V)
2	Software Project Management	Bob Huges, Mike Cotterell, Rajib Mall	McGraw Hill Edu	Unit -VI

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Effective Project Management	Robert K.Wysocki	Wiley India 7 Edition
2	Project Management Core Textbook	Mantel Jr., Meredith, Shafer, Sutton, Gopalan	Wiley India Edition
3	IT Project Management	Joseph Phillips 3E	McGraw Hill Edu.

4. Natural Language Processing (PCE- CS803) Elective-II

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

Course Objectives

1. To introduces the fundamental concepts and techniques of natural language processing (NLP).
2. To gain an in-depth understanding of the computational properties of natural languages and the commonly used algorithms for processing linguistic information.
3. To examines NLP models and algorithms using both the traditional symbolic and the more recent statistical approaches.

Course Outcomes

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

1. Acquire the knowledge of fundamental mathematical models and algorithms in the fields of NLP
2. Apply these mathematical models and algorithms in application in software design and implementation for NLP.
3. Apply deep learning models to solve machine translation and conversation problems.
4. Apply deep structured semantic models on information retrieval and natural language applications.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction** Introduction to various levels of natural language processing, Ambiguities and computational challenges in processing various natural languages. Introduction to Real life applications of NLP such as spell and grammar checkers, information extraction, question answering, and machine translation.	6

2.	**Language Models** : The role of language models. Simple N-gram models. Estimating parameters and smoothing. Evaluating language models	6
3.	**Part Of Speech Tagging and Sequence Labeling**: Stochastic POS tagging, HMM, Transformation based tagging (TBL), Handling of unknown words, named entities, multi word expressions.	6
4.	**Syntactic parsing**: Constituency, Context-Free Grammars, Some Grammar Rules for English, Treebanks, Grammar Equivalence and Normal Form, Lexicalized Grammars.	6
5.	**Semantic Analysis**: Lexical semantics and word-sense disambiguation. Compositional semantics. Semantic Role Labeling and Semantic Parsing.	6
6.	**APPLICATIONSOFNLP:** NLInterfaces, Text Summarization, Sentiment Analysis, Machine Translati on, Questionans wering, Recent Trends in NLP	6

Term Work

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

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Speech and Language Processing	Daniel Jurafsky and James H Martin	2E, Pearson Education, 2009

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	**Natural language Understanding**	James A..	**2e, Pearson Education,1994**
2	Natural language processing: a Paninian perspective,	Bharati A., Sangat R., Chaitanya V..	**PHI, 2000**

5. Ad-Hoc Wireless Sensor Networks (PCE- CS803) Elective-II

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 : NA**

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

Course Objectives

1) To introduce cellular and Ad Hoc wireless networks

2) To introduce routing protocols in Ad Hoc wireless networks

3) To introduce Transport layer and security protocols for ad hoc wireless networks

4) To introduce sensor networks and its routing algorithms

5) To introduce sensor networks infrastructure and sensor tasking

Course Outcomes

On completion of the course, student will be able to-

1) Describe issues and design goals in Ad Hoc wireless networks

2) Explain and classify various routing protocols in Ad Hoc wireless networks

3) Describe design issues and classify transport layer protocols and security protocols in Ad Hoc wireless Networks

4) Describe challenges and routing protocols in sensor networks

5) Explain sensor networks infrastructure management and sensor tasking and control techniques

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction** Cellular and Ad Hoc wireless networks, Applications, Issues in Ad Hoc wireless networks, MAC Protocols for ad hoc wireless networks – Introduction, Issues in designing MAC protocol, Design goals of MAC protocol, Classification of	**6**

	MAC protocols, Contention based protocols.	
2.	**Routing protocols for ad hoc wireless networks** Introduction, Issues in designing a routing protocol for ad hoc wireless networks, Classification of routing protocols, Table driven, on-demand Hybrid routing protocols, Issues in designing a multicast routing protocol, Operation of multicast routing protocols, An architecture reference model for multicast routing protocols, Classification of multicast routing protocols.	**7**
3.	**Transport layer and security protocols for ad hoc wireless networks** Introduction, Design issues and goals, Classification of transport layer solutions, TCP over ad hoc wireless Networks, Security in ad hoc wireless networks, Network security requirements, Issues and challenges in security provisioning, Network security attacks, Key management, Secure routing.	**6**
4.	**Introduction to Sensor Networks** Unique Constraints and Challenges, Advantages of Sensor Networks, Sensor Network Applications, Medium Access Control, The S-MAC Protocol, IEEE 802.15.Standard and ZigBee: General Issues.	**6**
5.	**Routing Protocol for Sensor Network** Geographic, Energy-Aware Routing , Unicast Geographic Routing , Routing on a Curve , Energy-Minimizing Broadcast , Energy-Aware Routing to a Region , Attribute-Based Routing , Directed Diffusion , Rumor Routing , Geographic Hash Tables	**6**
6.	**Sensor Network Infrastructure Establishment** Topology Control , Clustering , Time Synchronization , Clocks and Communication Delays, Interval Methods, Reference Broadcasts, Localization and Localization Services, Ranging Techniques , Range-Based Localization Algorithms, Other Localization Algorithms, Location Services.	**7**

Term Work

Term work includes combination of written assignments, getting acquainted with wireless simulationtools and performing experiments from Virtual Lab portal of IIT, Bombay.

1) One assignment from each unit (Total 6 written assignments)

2) Faculty should demonstrate any open source wireless network simulator tool (ns-2, ns-3, GNS3, etc.) with installation, configuration and demonstration of some scenarios of WSNs.

3) Virtual Lab :- Performing 4 Assignments from Wireless Sensor Network Remote Triggered Lab (Wireless Remote Sensing, Experimentation, Monitoring and Administration Lab) from IIT Bombay

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Ad Hoc wireless Networks– Architecture and Protocols	C.S.R.Murthy& B.S. Manoj	Pearson Education	(Unit I to III)
2	Wireless sensor networks	Feng Zhao and LeonidesGuibas	Elsevier publication - 2004	(Unit –IV to VI)

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Ad Hoc Wireless Networks- A communication Theoretic perspective	O.K.Tonguz & G.Ferrari,	Wiley India
2	Ad Hoc Networking	Charles E. Perkins	Pearson Education
3	Ad Hoc Mobile Wireless Networks – Protocols and Systems	C. K. Toh	Pearson Education
4	Wireless Communications and Networks	William Stallings	Pearson Education – 2004
5	Introduction to Wireless and Mobile Systems, 2nd Edition,	Dharma Prakash Agrawal & Qing-An Zeng	CENGAGE Learning

6. High Performance Computing (PCE- CS804) Elective-III

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

Pre-requisites: 1. Computer Organization 2. Computer Algorithms

Course Objectives

1. To introduce the current trends in computer architecture and programming model.
2. To understand Parallel Hardware and Parallel Software.
3. To learn Distributed-Memory Programming with MPI.
4. To learn Shared-Memory Programming with Pthreads.
5. To learn Shared-Memory Programming with OpenMP.
6. To solve basic parallel problems.

Course Outcomes

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

1. To introduce the current trends in computer architecture and programming model.
2. To explain Parallel Hardware and Parallel Software.
3. To apply and use Distributed-Memory Programming with MPI.
4. To apply and use Shared-Memory Programming with Pthreads.
5. To apply and use Shared-Memory Programming with OpenMP.
6. Program parallel architectures.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction** Need of Ever-Increasing Performance, Building Parallel Systems, Need to Write Parallel Programs, Concurrent, Parallel, Distributed, Typographical Conventions, Cluster Computing - architecture, Classifications, Grid Computing - Architecture, Applications	**6**
2.	**Parallel Hardware and Parallel Software** Modifications to the von Neumann Model, Parallel Software, Input and Output, Performance, Parallel Program Design, Writing and Running Parallel Programs	**5**
3.	**Distributed-Memory Programming with MPI** Compilation and execution, MPI programs, SPMD programs, The Trapezoidal Rule in MPI, Dealing with I/O, Tree-structured communication, MPI Reduce, Collective vs. point-to-point communications, MPI Allreduce, Broadcast, Data distributions, MPI Derived Datatypes, Performance Evaluation of MPI Programs	**6**
4.	**Shared-Memory Programming with Pthreads** Processes, Threads, and Pthreads, Hello World, Matrix-Vector Multiplication, Critical Sections, Busy-Waiting, Mutexes, Producer-Consumer Synchronization and Semaphores, Barriers and Condition Variables	**6**
5.	**Shared-Memory Programming with OpenMP** Compiling and running OpenMP programs, The program, The Trapezoidal Rule, Scope of Variables, The Reduction Clause, The parallel forDirective, More About Loops in OpenMP: Sorting, Scheduling Loops	**6**
6.	**Parallel Program Development** Two *n*-Body Solvers, Recursive depth-first search, Nonrecursive depth-first search, Data structures for the serial implementations, Performance of the serial implementations, Parallelizing tree search, A static parallelization of tree search using Pthreads, A dynamic parallelization of tree search using Pthreads, Evaluating the pthreads tree-search programs	**7**

Term Work

- Term Work should consist of 10 assignments based on the following list. At least one assignment must be from each unit.

1. Write a short note on significance of parallel programming to enrich the computational performance.
2. Enumerate the fundamental prerequisites of parallel programming.
3. Explain the modified architecture of von Neumann model.
4. Describe parallel program design with running process.
5. Explain the Trapezoidal rule in MPI.
6. How the evaluation for performance of MPI is done?
7. What is Pthread? Write a note on Pthread creation, finish. Explain Pthread API.
8. Explain: a) Mutexes b) barriers c) busy waiting
9. Explain the following terms with respect to OpenMp
    a. The trapezoidal rule
    b. Scope of the variable
10. Explain various loops in OpenMp with example.
11. Write short note on two n-body solvers.
12. Write dawn Difference between Recursive depth - first search and Non Recursive depth - first search

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	An Introduction to Parallel Programming	Peter S. Pacheco	Elsevier, 2011	1 to 6
2	Introduction to Grid Computing	Bart Jacob, Michael Brown, Kentaro Fukui, NiharTrivedi	International Business Machines Corporation 2005.	Grid Computing Unit 1
3	High Performance Cluster Computing: Architectures and Systems, Volume 1	R. Buyya	Pearson Education, 2008	Cluster Computing Unit 1

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Parallel computing theory and practice	Michel J. Quinn	TMH
2	Computer Architecture & Parallel Processing	Kai Hwang & Briggs	McGraw Hill
3	Parallel and Distributed Systems	Arun Kulkarni, Napur Prasad Giri	Wiley Publications, 2nd Edition

7. Block chain Technology (PCE- CS804) Elective-III

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

Pre-requisites: Expertise In Programming, Basic Knowledge Of Computer Security, Cryptography,Networking, Concurrent Or Parallel Programming

Course Objectives

1) Understand how blockchain systems (mainly Bitcoin and Ethereum) work
2) To securely interact with bitcoin and ethereum
3) Design, build, and deploy smart contracts and distributed applications
4) Integrate ideas from blockchain technology into their own projects

Course Outcomes

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

1. Explain design principles of Bitcoin and Ethereum.
2. Explain Nakamoto consensus.
3. Explain the Simplified Payment Verification protocol.
4. List and describe differences between proof-of-work and proof-of-stake consensus.
5. Interact with a blockchain system by sending and reading transactions.
6. Design, build, and deploy a distributed application.

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Introduction** Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete. Cryptography: Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof.	6
2.	**Blockchain** Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain	7
3.	**Distributed Consensus**: Nakamoto consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, SybilAttack, Energy utilization and alternate.	6
4.	**Cryptocurrency**: History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum -Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin	8
5.	**Cryptocurrency Regulation**: Stakeholders, Roots of Bit coin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy.	8
6.	**Cryptocurrency Applications:** Internet of Things, Medical Record Management System, Domain Name Service and future of Blockchain	5

Term Work

Tutorials: Naive Blockchain construction, Memory Hard algorithm – Hashcash implementation, Direct Acyclic Graph, Play with Go-ethereum, Smart Contract Construction,Toy application using Blockchain, Mining puzzles

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
1	Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction	Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder,	Princeton University Press (July 19, 2016).	

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	'Blockchain Technology: Cryptocurrency and Applications	S. Shukla, M. Dhawan, S. Sharma, S. Venkatesan	Oxford University Press, 2019.
2	Blockchain: The Blockchain for Beginnings, Guild to Blockchain Technology and Blockchain Programming	Josh Thompson	Create Space Independent Publishing Platform, 201

8. Human Computer Interaction (PCE- CS804) Elective-III

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: Web Technologies, Software Engineering, Basic knowledge of designing tools and languages like HTML, Java etc.

Course Objectives

1. To learn Human Computer Interaction study.
2. To learn human computer interface design
3. To learn Screen designing techniques
4. To learn Windows based UI interfaces
5. To learn Design and Development of Mobile Applications.

Course Outcomes

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

1. Explain principles of User Interface
2. Demonstrates HCI design process
3. Demonstrate screen designing techniques
4. Apply windows based UI interfaces
6. Design and Develop Mobile Applications

Unit No.	Unit Name and Details	No. of Lectures
1	**Importance of user Interface** Definition, Importance of good design - Benefits of good design. A brief history of Screen design, The graphical user interface popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user - Interface popularity, characteristics- Principles of user interface.	6

2	**Understanding Clients and Business Functions** Human interaction with computers Importance of human characteristics Human consideration Human Interaction speeds Understanding business Functions.	6
3	***I*nterface and Screen Design** Screen and Web Page Meaning and Purpose Organizing Elements Clearly and Meaningfully Ordering of Data and Content, Navigation and Flow Visually Pleasing Composition, Focus and Emphasis Presenting Information Simply and Meaningfully Technological Considerations in Interface Design – Graphical Systems and Web Systems	8
4	**Windows** Windows Characteristics Components of Windows Window Presentation Styles Types of Windows Organizing Windows Functions The Web and the Browser	6
5	**Mobile Applications and Information Architecture** Mobile application medium types – SMS, Mobile Websites, Mobile Web Widgets, Mobile Web Applications, Native Applications, Games, Mobile Application Media Matrix, Application Context, Utility Context,Locale Context, Informative Applications, Productivity Application Context, Immersive Full-Screen Applications, Application Context Matrix Information Architecture Introduction, Mobile Information Architecture.	6
6	**Mobile Design and Communication** Elements of Mobile Design, Mobile Design Tools, Designing for the Right Device, Designing for Different Screen Sizes. Mobile Web Development – Web Standards, Designing for Multiple Mobile Browsers, Device Plans, Mark-up, CSS, JavaScript	4

Term Work

Term Work should consist of 8-10 assignments based on topics of syllabus.
Students should Design two Interactive UI, one for Desktop Application and One for Mobile Application, using any of the software tool like HTML, CSS, java etc.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition	Units Covered
01	The essential guide to user interface design	Wilbert O Galitz	2nd Edition; Wiley Dream Tech, 2002.	1,2,3,4
02	Mobile Design and Development	Brian Fling	O'Reilly,	5,6

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
01	Human - Computer Interaction	Alan Dix	3rd Edition; Pearson Education, 2003
02	Designing the user interface	Ben Shneidermann	3rd Edition; Pearson Education, 2009.
03	Interaction Design	Prece, Rogers and Sharps	3rd Edition; Wiley DreamTech, 2011.
04	User Interface Design	SorenLauesen	Pearson Education, 2005
05	Human -Computer Interaction	D. R. Olsen	1st Edition; Cengage Learning, 2009

9. Mobile application development (PCC- CS805)

TEACHING SCHEME	EXAMINATION SCHEME
Theory :3 Hrs./Week	**Theory :**
Tutorial :	**Term work: 50 Marks**
Practical : 4 Hrs./Week	**POE : 50 Marks**

Pre-requisites: Java and XML.

Course Objectives

1. To describe android architecture and the tools for developing android applications.
2. To create an android application.
3. To design the user interfaces used in android applications
4. To deploy android application on app market.

Course Outcomes

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

1. To Install and configure Android application development tools.
2. To Design and develop user Interfaces for the Android platform.
3. To Design and develop database based android application.
4. To Apply Java programming concepts to Android app development

UNIT NO.	UNIT NAME & DETAILS	NO. OF LECTURES
1.	**Android Overview:** Overview of Android, History, Android Versions, Android OS stack: Linux kernel, Native Libraries/DVM, Application Framework, Applications, Activity, Activity lifecycle, Fragments, Activity Back Stack, Process and Threads. **Android Development Environment** Introduction to Android SDK, Android Emulator, Creating a Project, Project Directory Structure, DDMS, Logging in Android (Logcat), Android Manifest File, Permissions.	8
2.	**Intents and Layouts:** XML, Android View Hierarchies, Linear Layouts, Relative Layout, Table Layout, Frame Layout Sliding, Using Padding and Margins with Layouts. What Is Intent? Android Intent Messaging via Intent Objects, Types of Intents, Using Intents with Activities, Sending Intents (Telephony, SMS), Broadcast Receivers	4
3.	**Input Controls, Input Events, Dialogs:** Buttons, Text Fields, Checkboxes, Radio Buttons, Toggle Buttons, Spinners, Event Listeners, Event Handlers, Touch Mode, Handling Focus, Dialogs: Alerts, Popups, Toasts	4
4.	**Menus, Notification and Action Bar:** Menus, Options menu, Context menu, Popup menu, Handling menu click events, creating a Notification, Notification actions, Notification priority, Managing Notifications, Removing notifications.	4
5.	**Android Database and App Market:** Installing SQLite plugin, Db Helper, The Database Schema and Its Creation, Four Major Operations, Cursors, Example, publish app to the Android Market.	4
6.	**Using Common Android APIs**: Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs.	4

Term Work

- Minimum of 15 Experiments to be performed from the list given below.
- 25 marks for performance in practical and experiments as part of continuous evaluation
- 25 marks for Practical Test and oral to be conducted.

Experiment List

01. Installation of Android SDK, emulator.
02. Creating simple project and study of android project structure and installing apk on mobile device/tablet, configuring mobile device/tablet in Android Studio with developer option and running app directly on mobile device/tablet.
03. Write a program to use of different layouts.
04. Write a program to study Intents for switching between activities.
05. Write a program to use of Intents for SMS and Telephony.
06. Write a program to study and demonstrate Broadcast Receiver.
07. Program to demonstrate Buttons, Text Fields, Checkboxes, Radio Buttons, and Toggle Buttons with their events handler.
08. Program to demonstrate Spinners, Touch Mode, Alerts, Popups, and Toasts with their events handler.
09. Program to demonstrate Touch Mode, Menus with their events handler.
10. Program to demonstrate notification with their action.
11. Develop a native calculator application.
12. Implement an application that writes data to the SD card.
13. Write a mobile application that creates alarm clock.
14. Implement an application that implements Multi-threading
15. Write a program to study and use of SQLite database.
16. Study of publishing app to the Android Market.

Text Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Beginning Android application development by	Wei-Mag Lee	

2	Learning Android by Marko Gargenta Publisher	W. Jason Gilmore	O'Reilly Media
3	Android Apps for Absolute Beginners	Wallace Jackson	SECOND EDITION
4	T1., "Android Wireless Application Development"	Lauren Darcey and Shane Conder	Pearson Education,2nd ed.

Reference Books

Sr. No.	Title	Author(s) Name	Publication & Edition
1	Application Development	Reto Meier	Wiley India
2	Android in Action	W.FrankAbleson, RobiSen, Chris King, C. Enrique Ortiz	Third Edition
3	The Android Developer's Cook book "Building Applications with the Android SDK"	James Steele	
4	Beginning Android	Mark L Murphy	Wiley India Pvt Ltd
5	Android Application Development All in one for Dummies	Barry Burd	Edition: I

10. Project-II (PW- CS806)

TEACHING SCHEME	EXAMINATION SCHEME
Theory : NA	**Theory :** NA
Tutorial : NA	**Term work: 50 Marks**
Practical : 4 Hrs./Week	**Demo & OE : 50 Marks**

Pre-requisites: Project - I.

Course Objectives

1. Students should learn to design and develop usable User Interface
2. Students should learn to analyze and apply emerging technologies in development of a project
3. Students should learn to test the modules in Project
4. Students should learn to demonstrate working of project

Course Outcomes

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

1. Design and develop usable User Interface
2. Analyze and apply emerging technologies in development of a project
3. Test the modules in Project
4. Demonstrate working of project

Contents

The group will continue to work on the project selected during the semester VII and submit the completed

Project work to the department at the end of semester VIII as mentioned below.

1. The workable project.
2. The project report in the bound journal complete in all respect with the following : -
    i. Problem specifications
    ii. System definition – requirement analysis.
    iii. System design – dataflow diagrams, database design
    iv. System implementation – algorithm, code documentation
    v. Test results and test report.
    vi. In case of object oriented approach – appropriate process be followed.

CIE will be jointly assessed by a panel of teachers appointed by head of the Institution. SEE examination will

be conducted by internal and external examiners

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**

11. Professional Skills (HM-CS807)

TEACHING SCHEME	EXAMINATION SCHEME
Theory :NA	**Theory :**NA
Tutorial :1 Hr. /Week (1 Credit)	**Term work: 50 Marks**
Practical :NA	**Mode of Evaluation: Based on Term Work Activities.**

Pre-requisites: Effective English Communication, Report Writing Skills, Technical Skills.

Course Objectives

1. To increase one's knowledge and awareness of emotional competency and emotional intelligence at place of study/work.
2. To develop interpersonal skills and adopt good leadership behavior for empowerment of self and others.
3. To set appropriate goals, manage stress and time effectively.

Course Outcomes

At the end of the program learners will be able to:

1. Recognize own strengths and opportunities.
2. Apply the life skills to different situations.
3. Speak fluently in academic and social contexts.
4. Develop Critical thinking and innovative skills.

Syllabus

I. E-Learning Course

Students are supposed to complete e-learning course from any online platforms like MOOCS/NPTEL/Swayam/Coursera/Udemy etc. related to Project work or advanced technologies.
Duration of the Course should be minimum 4 weeks.
At the end of course students are advised to attend the exam and get the certificate for the same.

II. Professional Skills: Career Skills

1. Resume Skills
2. Interview Skills / Online Interview

3. Group Discussion Skills
4. Exploring Career Opportunities

III. Professional Skills: Team Skills

1. Presentation Skills
2. Trust and Collaboration
3. Brainstorming
4. Social and Cultural Etiquettes
5. Internal Communication
6. Social Media Profile Building

IV. Leadership and Management Skills

1. Leadership Skills
2. Managerial Skills
3. Time Management
4. Entrepreneurial Skills
5. Innovative Leadership and Design Thinking
6. Ethics and Integrity

V. Introduction to Critical Life skills

Leadership, teamwork, dealing with ambiguity, managing stress, motivating people, creativity, result orientation; Understanding Life Skills: Movie based learning, Self-awareness- identity, body awareness, stress management; building self-confidence; Importance of listening skills, Difference between listening and hearing, Types of listening.

Term Work

1. Students are expected to learn new application areas, enhance technical skills, and build their profile by completing E-Learning Course.
2. Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax.
3. Participate in a simulated interview.
4. Actively participate in group discussions towards gainful employment.
5. Capture a self - interview simulation video regarding the job role concerned.
6. Enlist the common errors generally made by candidates in an interview.
7. Perform appropriately and effectively in group discussions.
8. Explore sources (online/offline) of career opportunities.
9. Identify career opportunities in consideration of their own potential and aspirations.
10. Use the necessary components required to prepare for a career in an identified occupation (As a case study).

Based on above activities respective guide should assess the performance of the students out of 50marks.

Learning Resources

Text Books

1. Lewis Lansford and Peter Astley. Oxford English for Careers: Engineering 1: Student's Book.2013. USA: Oxford University Press.
2. Jaimie Scanlon. Q: Skills for Success 1 Listening & Speaking. 2015. [Second Revised Edition]. Oxford: Oxford University Press.

Reference Books:

1. Sanjay Kumar and Puspalata. Communication Skills. 2015. [Second Edition] Print. NewDelhi: Oxford University Press.
2. John Seely. Oxford Guide to Effective Writing and Speaking. 2013. [Third Edition].NewDelhi: Oxford University Press.
3. Meenakshi Raman. Communication Skills. 2011. [Second Edition]. New Delhi: Oxford University Press.
4. Terry O‟Brien. Effective Speaking Skills. 2011. New Delhi: Rupa Publishers.
5. BarunMitra. Effective Technical Communication: AGuide for Scientists and Engineers. 2015.New Delhi: Oxford University Press.
6. English vocabulary in use – Alan Mc‘carthy and O‘dell
7. APAART: Speak Well 1 (English Language and Communication)
8. APAART: Speak Well 2 (Soft Skills)
9. Business Communication – Dr. Saroj Hiremath

Web References:

1 Train your mind to perform under pressure- Simon sinek
https://curiosity.com/videos/simon-sinek-on-training-your-mind-to-perform-underpressure-capture-your-flag/
2 Brilliant way one CEO rallied his team in the middle of layoffs https://www.inc.com/video/simon-sinek-explains-why-you-should-put-people-beforenumbers.html3 Will Smith's Top Ten rules for success https://www.youtube.com/watch?v=bBsT9omTeh0

Online Resources:

1 https://www.coursera.org/learn/learning-how-to-learn
2 https://www.coursera.org/specializations/effective-business-communication

TEACHINGPLAN

Class :Final Year B.Tech Sem. : II

Subject: **Mobile Application Development**

	Practical	Tut	Total

⮜Lecture Plan ➢

Lect. No.	Details of syllabus planned
	Android Overview
01	Overview of Android, History, Android Versions,
02	Android OS stack: Linux kernel,
03	tive Libraries/DVM, Application Framework,
04	plications, Activity, Activity lifecycle, Fragments,
05	tivity Back Stack, Process and Threads.
06	Introduction to Android SDK, Android Emulator, Creating a Project,
07	ɔject Directory Structure, DDMS, Logging in Android (Logcat),
08	Android Manifest File, Permissions
	Intents and Layouts
09	ML, Android View Hierarchies, Linear Layouts, Relative Layout, Table Layout,
10	ame Layout Sliding, Using Padding and Margins with Layouts.
11	hat Is Intent? Android Intent Messaging via Intent Objects, Types of Intents,
12	Using Intents with Activities, Sending Intents (Telephony, SMS), Broadcast Receivers
	Input Controls, Input Events, Dialogs
13	ttons, Text Fields, Checkboxes, Radio Buttons,
14	ggle Buttons, Spinners, Event Listeners,
15	ent Handlers, Touch Mode, Handling Focus,
16	Dialogs: Alerts, Popups, Toasts,
	Menus, Notification and ActionBar
17	enus, Options menu, Context menu, Popup menu,
18	Handling menu click events, creating a Notification,
19	tification actions, Notification priority, Managing Notifications,
20	Removing notifications
	Android Database and App Market

UNIT No.	Lect. No.	Details of syllabus planned
		Using Common Android APIs
	25	aring Data between Applications with Content Providers,

06	26	ing Android Networking APIs,
	27	ing Android Web APIs,
	28	ing Android Telephony APIs

Dept Of Computer Science and Engineering (TYB-TechSemII2022-23) Lecture Plan-Complier construction	
Lecture No	**Unit1:Introduction of Blockchain Technology**
01	Distributed Database, Two General Problem
02	Byzantine General problem and Fault Tolerance,
03	Hadoop Distributed File System
04	Distributed Hash Table, ASIC resistance, Turing Complete.
05	Cryptography: Hash function, Digital Signature – ECDSA
06	Memory Hard Algorithm, Zero Knowledge Proof.
	Unit2:Blockchain
	Introduction, Advantage over conventional distributed database
07	Blockchain Network, Mining Mechanism
08	Distributed Consensus, Merkle Patricia Tree, Gas Limit
09	Transactions and Fee, Anonymity, Reward
10	Chain Policy
11	Life of Blockchain application
12	Soft &HardFork, Privateand Public blockchain
13	Naive Blockchain construction
	Unit 3: Distributed Consensus
14	Nakamoto consensus
15	Proof of Work,
18	Proof of Stake
19	Proof of Burn
20	Difficulty Level, Sybil Attack,
21	Energy utilization and alternate.
	Unit 4Cryptocurrency:
22	History, Distributed Ledger
23	Bitcoin protocols
24	Mining strategy
25	Ethereum –Construction
26	DAO
27	Smart Contract ,GHOST, Vulnerability, Attacks,
28	Sidechain
	Unit5Cryptocurrency Regulation:
29	Stakeholders
30	Stakeholders
31	Roots of Bit coin
32	Roots of Bit coin
33	Legal Aspects-Crypto currency Exchange
34	Legal Aspects-Crypto currencyExchange
35	Black Market and Global Economy.

36	Black Market and Global Economy
	Unit6CryptocurrencyApplications
37	Internet of Things
38	Internet of Things
39	Medical Record Management System
40	Domain Name Service

41	future of Block chain
42	Toy application using Blockchain

Dept Of Computer Science and Engineering (TYB-TechSemII2022-23) Lecture Plan-Complier construction	
Lecture No	**Unit1:Introduction of complier construction**
01	Introduction of complier constructor.
02	The Analysis –Synthesis Model Of compilation
03	Introduction of phases of complier
04	Compiler construction Tools
05	cousins of the compiler
	Unit2:Lexical Analysis
06	Introduction of Lexical Analysis
07	Role of a Lexical analyzer
08	Introduction of input buffering
09	Specification and recognition of tokens
10	finite automata implications
11	designing a lexical analyser generator
	Unit 3: Syntax Analysis
12	Role of Parser
13	Writing grammars for context free environments
14	Top-down parsing
15	Recursive descent and predictive parsers (LL)
18	Bottom-Up parsing
19	Operator precedence parsing, LR, SLR and LALR parsers
20	YACC [Yet Another Compilers Compiler
	Unit 4: Syntax Directed Translation and Intermediate Code
21	Syntax directed definitions
22	construction of syntax tree
23	S-attributed definitions
24	L-attributed definitions
25	Intermediate languages
26	Assignment statements
27	Back patching
	Unit5: Code Optimization:
28	Principle sources of optimization
26	Principle sources of optimization
27	optimization of Basic Blocks
28	Loops in flow graphs

29	Peephole optimization Signals
30	Principle sources of optimization
	Unit6: Code Generation
31	Issues in design of a code generator and target machine
32	Run time storage management
33	Basic blocks and flow graphs
34	Next use information and
35	simple code generator
36	Issues of register allocation,
37	Code generation from Dags.

Class : S.Y. **Sem.** : II

Subject: Operating System-I

Name of Faculty: Mrs.A.V.Gundavade

Lecture	Practical	Tut	
03	2	----	
Theory	T/W	POE	T. Marks
ESE 70Marks	25	----	125
CIE 30Marks			

Lecture Plan

Chapter No.	Lect No.	Details of syllabus planned
Ch.1	**Overview of OS**	
	01	Abstract View of OS, Fundamental Principles.
	02	OS Interaction with Computer and user programs.
	03	Efficiency, system performance and user service, Batch OS.
	04	Multiprogramming, Time sharing, Distributed OS.
	05	Operation of OS, OS with Monolithic structure.
	06	Virtual Machine OS, Kernel Based OS, Microkernel based OS.
Ch.2	**Process, Threads and Synchronization**	
	07	Process and Programs.
	08	Implementing Process.
	09	Threads, Process synchronization.
	10	Race condition, Critical Section, Synchronization approaches
	11	Classic process synchronization problems.
	12	Semaphores, Monitors, Case studies of Process Synchronization
Ch.3	**Process Scheduling.**	
	13	Scheduling terminology and concepts
	14	Non preemptive scheduling policies
	15	Preemptive scheduling policies
	16	Examples of Non preemptive & Preemptive scheduling policies
	17	Long, Medium and short term scheduling
	18	Performance analysis of scheduling Policies

Ch. 4	**Deadlocks**	
	19	Introduction to Deadlock
	20	Deadlock in resource allocation
	21	Methods for handling Deadlocks
	22	Deadlock prevention.
	23	Deadlock avoidance.
	24	Deadlock detection Recovery from deadlock.
Ch. 5	**Memory Management**	
	25	Background, Logical Versus Physical Address space.
	26	Memory allocation process
	27	Heap management
	28	Contiguous Memory allocation and Non Contiguous, Segmentation and segmentation with paging.
	29	Virtual Memory basics, Demand Paging.
	30	Page replacement policies, Controlling Memory allocation to process.
Ch. 6	**File system and I/O System.**	
	35	Overview of file processing
	36	Files and file operations
	37	Fundamental file organizations and access methods
	38	Overview of I/O system
	39	I/O hardware, Application I/O interface
	40	Kernel I/O subsystem, Transforming I/O request to h/w operation

Class : SY.CSE Sem.: II

Subject: **Computer Network II**

Name of Faculty: Prof. P. S. Pathak

Lecture	Practical	Tut	Total
03	---	--	--
Theory	T/W	POE	T. Marks
100	25	50	175

Lecture Plan

UNIT No.	Lect. No.	Details of syllabus planned
01		**Client server model & socket interface**
	1	The Socket Interface,
	2	The Client Server model and Software design
	3	Concurrent processing in client-server software,
	4	Algorithms and issues in Client-Server design,
	5	Multiprotocol Servers, Multiservice Servers
	6	Concurrency in clients, Unix Internet, Super server
02		**Next Generation IPv6 and ICMPv6**
	1	IPV6 addresses
	2	packet format
	3	ICMPV6
	4	Transaction from IPV4 to IPV6
	5	Transaction from IPV4 to IPV6
03		**BOOTP, DHCP and Domain name system**
	1	Name Space, Domain Name Space
	2	Distribution of name space
	3	DNS in internet
	4	Resolution, DNS massages
	5	Types of records, Compression examples
	6	Encapsulation, BOOTP, DHCP
04		**Remote Login: TELNET and File TransferFTP,TFTP**
	1	Concept, NVT, Embedding,
	2	Options & options/sub-option negotiation,
	3	Controlling the server, Out-of-band signalling, Escape charter
	4	Mode of operation, user interface
	5	FTP: Connections, Communication, Command processing
	6	File transfer, User interface, Anonymous FTP, TFTP

UNIT No.	Lect. No.	Details of syllabus planned
05		**Web Applications Service Protocols**
	1	HTTP: Architecture, Web Documents,
	2	HTTP Transaction, Request and Response,
	3	HTTP Headers and Examples
	4	Persistent Vs Non- Persistent HTTP, Proxy servers
	5	Electronic Mail: Architecture, User agent, addresses, Delayed delivery
	6	SMTP, commands and responses
	7	Mail transfer phases, MIME, POP3
06		**Multimedia In Internet**
	25	Streaming stored audio/video, Streaming live audio/video
	26	Real time interactive audio/video
	27	Real Time Transport Protocol (RTP)
	28	Real Time Transport Control Protocol (RTCP)
	29	Voice Over IP (VoIP)
	30	Session Initiation Protocol (SIP)

Class : Final Year B. Tech Sem.: II

Subject: **Natural Language Processing**

Name of Faculty: Prof. P. S. Pathak

Lecture	Practical	Tut	Total
03	---	01	04
Theory	T/W	POE	T. Marks
100	25	---	125

Lecture Plan

UNIT No.	Lect. No.	Details of syllabus planned
01		**Introduction**
	01	Introduction to various levels of natural language processing,
	02	Ambiguities and computational challenges in processing various natural languages,
	03	Introduction to Real life applications of NLP such as spell and grammar checkers,
	04	Information extraction,
	05	Question answering and.
	06	Machine translation.
02		**Language Models**
	07	The role of language models,
	08	Simple N-gram models,
	09	Estimating parameters and smoothing,
	10	Evaluating language models.
	11	Evaluating language models,
	12	Evaluating language models.
03		**Part Of Speech Tagging and Sequence Labelling**
	13	Stochastic POS tagging,
	14	HMM,
	15	Transformation based tagging (TBL),
	16	Handling of unknown words,
	17	Named entities,
	18	Multi word expressions.
04		**Syntactic parsing**
	19	Constituency,
	20	Context-Free Grammars,
	21	Some Grammar Rules for English,
	22	Treebanks,
	23	Grammar Equivalence and Normal Form,
	24	Lexicalized Grammars.

UNIT No.	Lect. No.	Details of syllabus planned
05		**Semantic Analysis**
	25	Lexical semantics and word-sense disambiguation,
	26	Lexical semantics and word-sense disambiguation,
	27	Compositional semantics,
	28	Compositional semantics,
	29	Semantic Role Labelling and Semantic Parsing,
	30	Semantic Role Labelling and Semantic Parsing.
06		**APPLICATIONSOFNLP**
	25	NLInterfaces,
	26	TextSummarization,
	27	SentimentAnalysis,MachineTranslati on,
	28	Questionanswering,
	29	Recent Trends in NLP,
	30	Recent Trends in NLP.

Academic Year: 2022 - 2023

Class : S.Y. CSE Sem. : II

Subject: **Computer Organization & Architecture**

Name of Faculty: Prof. P. S. Ambupe

Lecture	Practical	Tut	Total
03	---	--	--
Theory	T/W	POE	T. Marks
100	-	-	100

Lecture Plan

UNIT No.	Lect. No.	Details of syllabus planned
01		**Computer Evolution and Performance**
	1	Evolution of computer – Mechanical Era: Babbage's Difference Engine
	2	First generation, IAS Computers, Instruction Set and Instruction Execution
	3	Second generation, Input-Output Operation, Programming Language
	4	Third generation and VLSI Era – IC Circuits, Performance Consideration and Measures
	5	Speed up Techniques, Difference between RICS and CISC
02		**Input and Output Organization**
	1	Accessing I/O devices.
	2	Direct Memory Access (DMA).
	3	Buses: Synchronous Bus
	4	Asynchronous Bus
	5	Interface Circuits
	6	Standard IO Interface
03		**Arithmetic**
	1	Addition and Subtraction of Signed Numbers
	2	Design of fast Adders
	3	Multiplication of Positive numbers
	4	Signed Operand Multiplication
	5	Fast Multiplication
	6	Integer Division
	7	Floating Point Number Operations: IEEE 754 Floating Point Format
	8	Arithmetic Operations
04		**The Processing Unit**
	1	Some fundamental Concepts
	2	Execution of complete Instruction
	3	Multiplebus organization
	4	Hardwired control
	5	Hardwired control
	6	Micro programmed Control

UNIT No.	Lect. No.	Details of syllabus planned
05		**Pipelining**
	1	Basic Concepts: Role of Cache Memory, Pipeline Performance
	2	Data Hazards :Operand Forwarding
	3	Handling Data Hazards in Software and Side Effects
	4	Instruction Hazards: Unconditional Branches
	5	Conditional Branches and Branch Prediction
06		**Computer Memory System**
	1	Some Basic Concepts
	2	Types of Memories :ROM and RAM,
	3	Semiconductor RAM memory
	4	Cache Memories: Mapping functions
	5	Replacement Algorithms
	6	Example of Mapping Techniques

Class : B Tech. CSE Sem.: II

Subject: **Deep Learning**

Name of Faculty: Prof. P. S. Ambupe

Lecture	Practical	Tut	Total
03	---	01	--
Theory	T/W	POE	T. Marks
100	25	-	125

Lecture Plan

UNIT No.	Lect. No.	Details of syllabus planned
01		**Neural Network and Deep Learning**
	1	Introduction to AI, ML and Deep Learning.
	2	A brief history
	3	Need of Deep Learning
	4	Basics of neural network
	5	Data representation for neural network
	6	Gradient based optimization
	7	Anatomy of neural network.
02		**Introduction to Tensorflow, Keras and hyperparameters**
	1	Introduction, Downloading and installation of Tensor flow, The computation graph
	2	Modelling cyclic dependencies, Building and running visualization
	3	Computing graph and distribution, Simple math operation and distribution
	4	Tensors, Rank of tensors, Tensormath, Numpy and tensors, Tensorflow example
	5	Introduction, Models, Layers, Pre-processing, Deep Learning case studies,
	6	Learning rate, No of iterations, Hidden layers, hidden units, Choice of P activation function,
	7	Momentum, mini batch size, Overfitting and underfitting, Regularization
03		**Convolutional Neural Networks**
	1	The convolutional operation.
	2	The max pooling operation.
	3	Training a convnet from scratch on a small dataset.
	4	Using pre-trained convnet.
	5	Visualizing what convnet learn
	6	Visualizing what convnet learn
	4	Hardwired control
	5	Hardwired control
	6	Micro programmed Control

UNIT No.	Lect. No.	Details of syllabus planned
04		**Sequence Models**
	1	One hot encoding,
	2	Using word embeddings,
	3	A recurrent layer in Keras,
	4	Understanding the LSTM and GRU layers,
	5	Example of LSTM in Keras,
	6	Advanced use of Recurrent Neural Network
05		**Advanced Deep Learning Best Practices**
	1	.Going beyond the sequential model:
	2	The Keras functional API,
	3	Inspecting and monitoring deep learning
	4	models using Keras callbacks and Tensor Board,
	5	Getting the most out of your models
06		**Generative Deep Learning**
	1	Text generation with LSTM,
	2	Deep Dream,
	3	Neural Style Transfer,
	4	Generating images with variational auto encoders,
	5	Introduction to generative adversarial network.

Date: 02/02/2023.

Project/Seminar Review Form

U.G .Students Project Schedule

Sr. No.	Activity	Tentative date of year
	Semester-I	
01	Submission of project topic with names of group member	19/08/2023
02	Finalization of topic and allotment of guide by department through DRC	2/09/2023
03	Submission of synopsis duly signed by students and guide	
04	Presentation of synopsis before DRC	16/09/2023
05	Introduction and literature review presentation	7/10/2023
06	Methodology and future work presentation	25/10/2023 26/10/2023
	Semester–II	
07	**Progress Presentation-I**	20/1/2024
08	**Progress Presentation-II**	17/2/2024
09	**Final Presentation and Submission of final report**	16/3/2024
10	**Guide marks and Term work Finalization**	6/4/2024
11	**Progress Presentation-I**	20/1/2024

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 × TM1
02	Submission of synopsis duly signed by students and guide	A2 = 0.08 × TM1
03	Introduction and literature review presentation	A3 = 0.24 × TM1
04	Methodology and future work presentation	A4 = 0.30 × TM1
05	Guides mark	A5 = 0.30 × TM1
Semester – II		
06	Progress presentation 1	A6 = 0.20 × TM2
07	Progress presentation 2	A7 = 0.20 × TM2
08	Final presentation before DRC along with submission of spiral bound copy	A8 = 0.30 × TM2
09	Guides mark	A9 = 0.30 × 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 multiplyingfactor.

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

Level ⇨ / Activity ⇩	Unsatisfactory	Developing	Satisfactory	Excellent
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 ⇨ Activity ⇩	**Unsatisfactory**	**Developing**	**Satisfactory**	**Excellent**
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 ⇨ / Activity ⇩	Unsatisfactory	Developing	Satisfactory	Excellent
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 ⇨ / Activity ⇩	Unsatisfactory	Developing	Satisfactory	Excellent
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

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

EXPERIMENT LIST AND ASSIGNMENT LIST

Dr.J.J.Magdum Trust's

DR J.J.MAGDUM COLLEGE OF ENGINEERING, JAYSINGPUR.

Dept of Computer Science & Engg.

Year: 2022-2023

Class: TY CSE SEM- II

Subject: Compiler Construction

Name of Faculty: Asst. Prof. S.A.Narde

Laboratory Name: Project Lab

Lecture	Practical	Tutorial		Total Hrs/Wk
3	2*4	---		11
Theory + Online	Term work	OE	POE	Total Marks
100	25	---	---	125

Experiment List

Expt No.	Name of the Experiment	Nature of Experiment
1.	Design of Pre-processor for C Program	Performing
2.	Design a complete lexical analyzer for C language.	Performing
3.	Program to create a symbol table generator	Performing
4.	Program for token separation with expression and Token separation with file	Performing
5.	Write a program to find first and follow in context free grammer	Performing
6.	Design a syntax for simple expression in c language using top down parsing.	Performing
7.	Implementation of recursive descent parsing.	Performing
8.	Write a program for shift reduce Paring.	Performing
9.	Implement bottom up parsing (SLR, LALR)	Performing
10.	Implement intermediate code Generation of three address code in C programming	Performing

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

EXPERIMENT LIST

Mobile Application Development
Academic Year 2023-24 SEM-II

Exp. No.	Name of Experiment
01	Installation of Android SDK, emulator.
02	creating simple project and study of android project structure and installing apk on mobile device/tablet, configuring mobile device/tablet in Android Studio with developer option and running app directly on mobile device/tablet.
03	write a program to use of different layouts.
04	Write a program to study Intents for switching between activities.
05	Write a program to use of Intents for SMS and Telephony.
06	Write a program to study and demonstrate Broadcast Receiver.
07	Program to demonstrate Buttons, Text Fields, Checkboxes, Radio Buttons, and Toggle Buttons with their events handler.
08	Program to demonstrate Spinners, Touch Mode, Alerts, Popups, and Toasts with their events handler.
09	Program to demonstrate Touch Mode, Menus with their events handler.
10	Program to demonstrate notification with their action.
11	Develop a native calculator application.
12	Implement an application that writes data to the SD card.
13	Write a mobile application that creates alarm clock.
14	Implement an application that implements Multi-threading
15	Write a program to study and use of SQLite database.
16	Study of publishing app to the Android Market.

Prof. R.D. Mane — **Subject In charge**
Prof. A. V. Gundvade — **Academic Coordenator**
Dr. D. A. Nikam — **Head of Department**

1. Creating simple project and study of android project structure and installing apk on mobile device/tablet Creating simple project and Configuring mobile device/tablet in Android Studio with developer option and running app directly on mobile device/tablet.
2. Write a program to use of different layouts.
3. Write a program to study Intents for switching between activities.
4. Write a program to use of Intents for SMS and Telephony.
5. Write a program to study and demonstrate Broadcast Receiver.
6. Program to demonstrate Buttons, Text Fields, Checkboxes, Radio Buttons, and Toggle Buttons with their events handler.
7. Creating simple project and study of android project structure and installing apk on mobile device/tablet
8. Creating simple project and Configuring mobile device/tablet in Android Studio with developer option and running app directly on mobile device/tablet.
9. Write a program to use of different layouts.
10. Write a program to study Intents for switching between activities.
11. Write a program to use of Intents for SMS and Telephony.
12. Write a program to study and demonstrate Broadcast Receiver.
13. Program to demonstrate Buttons, Text Fields, Checkboxes, Radio Buttons, and Toggle Buttons with their events handler.
14. Write a program to use of different layouts.
15. Write a program to study Intents for switching between activities.

16. Write a program to study and demonstrate Broadcast Receiver.

Dr.J.J.MagdumTrusts's

DR J.J.MAGDUM COLLEGE OF ENGINEERING, JAYSINGPUR.

Dept of Computer Science & Engg.

Year: 2023-2024

Class: TY CSE SEM- II

Subject: Database Engineering

Name of Faculty: Prof. A.V.Gundavade

Laboratory Name: Database Lab.

Lecture	Practical	Tutorial		Total Hrs/Wk
04	02	---		6
Theory + Online	Term work	OE	POE	Total Marks
100	25	---	50	175

Experiment List

Sr.no	Experiment Name	Performing /Non Performing
1	Draw an E-R Diagram of any organization	Non-Performing
2	Reduce above mentioned E-R Diagram into tables	Performing
3	Write a program of Database connectivity with any object oriented language.	Performing
4	Use DDL Queries to create, alter (add, modify, rename, drop) & drop Tables	Performing
5	Use DML Queries to insert, delete, update & display records of the tables.	Performing
6	Create table with integrity constraints like primary key, check, not null and unique	Performing
7	Create table with referential integrity constraints with foreign key, on delete cascade and on delete set null.	Performing
8	Display the results of set operations like union, intersections & set difference.	Performing
9	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.	Performing
10	Display the records using Aggregate functions like min, max, avg, sum & count. Also use group by, having clauses	Performing
11	Create & Update views for any created table.	Performing
12	Study of NoSql.	Non-Performing

Subject: Computer Network-II Class: SY CSE SEM-II 22-23

List of Experiments

1. Client program using UDP to connect to well known services (echo, time of the day service etc.)
2. Implementing concurrent TCP multiserviceclient/server.
3. Implementing Iterative UDP client/server.
4. Study of following DNS Tools with all its options like nslookup, dig, host,whois.
5. Implement trivial file transfer protocol (TFTP).
6. Configuration of basic services for FTP, HTTP, Telnet etc. on LinuxPlatform
7. Write program to send a mail using SMTP commands and receive a mail using POP3commands.
8. Capturing & Analyzing operation of various application layer protocols using network protocolanalyzer. (Wireshark andtcpdump)
9. Study of various streaming multimedia protocols in Internet (Using various audio/video streaming services on theInternet)

Faculty Academic Co-ordinator HOD

Class: TY CSE SEM- II

Subject: C#-Net

Name of Faculty: Prof. P. V. Kothawale

Laboratory Name: Database lab

Lecture	Practical	Tutorial		Total Hrs/Wk
2	2*4	---		10
Theory	Term work	OE	POE	Total Marks
--	25	50	--	75

Experiment List

Expt. No.	Name of Experiment	Nature of Experiment
1	Introduction to .Net Architecture	Non- Performing
2	Develop DLL file and use it in application program	Performing
3	OOPS concepts in C#- - 1. Class, Implementation Inheritance, 2. Extension methods (Use any application). 3. Interface Inheritance	Performing
4	Implementation of Multidimensional & Jagged array	Performing
5	Implementation of properties in any application	Performing
6	Implementation of Operator overloading (Any applicatior	Performing
7	String manipulation using String & String builder	Performing
8	Develop program to use Regex. Matches method and Regu Expression pattern matching.	Performing
9	Design a Windows Form based application for differe controls with validations.	Performing

10	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.	Performing
11	Implement console-based networking application to obt information of network & detect changes in network.	Performing
12	Design a Windows form application to download file process it using stream.	Performing
13	Simple ASP.NET web application deployment in IIS server	Performing
14	Design simple login and registration page using client-side validation controls in ASP.NET	Performing

Subject: Computer Network-II Class: SY CSE SEM-II 22-23

List of Experiments

1. Client program using UDP to connect to well known services (echo, time of the day service etc.)

2. Implementing concurrent TCP multiservice client/server.

3. Implementing Iterative UDP client/server.

4. Study of following DNS Tools with all its options like nslookup, dig, host, whois.

5. Implement trivial file transfer protocol (TFTP).

6. Configuration of basic services for FTP, HTTP, Telnet etc. on Linux Platform

7. Write program to send a mail using SMTP commands and receive a mail using POP3 commands.

8. Capturing & Analyzing operation of various application layer protocols using network protocol analyzer. (Wireshark and tcpdump)

9. Study of various streaming multimedia protocols in Internet (Using various audio/video streaming services on the Internet)

Academic Year: 2022 - 2023

Class : SY CSE Sem.: II

Subject: **Operating System-I**

Name of Faculty: Prof. P. S. Ambupe

Lecture	Practical	Tut	Total
	2	--	--
Theory	T/W	POE	T. Marks
	25	-	25

Experiment List

1	Study of different types of Operating System
2	Study of basic Commands in Linux Operating System
3	Implementation of the non-preemptive CPU scheduling algorithms to find turnaround time and waiting time for the above problem. a) FCFS b) SJF
4	Implementation of the non-preemptive CPU scheduling algorithms to find turnaround time and waiting time for the above problem. a) Round Robin b) Priority
5	Implementation of producer-consumer problem using semaphores
6	Implementation of Dining-Philosophers problem using semaphore
7	Implementation of bankers algorithm for deadlock avoidance
8	Implementation of contiguous memory allocation techniques
9	Implementation of Paging technique of memory management.
10	page replacement algorithms a) FIFO b) LRU c)Optimal

FACULTYLIST

DEPARTMENTFACULTYLIST

AcademicYear-2021-2022 SEM-I

Sr.No.	Faculty Name
01	Dr. Prof. Nikam D. A.
02	Prof.P.V. Kothawale
03	Prof.A.V. Gundavade
04	Prof. R.D. Mane
05	Prof. S. S. Chougule
06	Prof. P. S. Ambupe
07	Prof. S. A. Narde
08	Prof. K.A. Doiphode
09	Prof. N.H. Sayyad

STAFF LIST

DEPARTMENTSTAFFLIST

AcademicYear-2021-2022 SEM-I

Sr.No.	FacultyName
01	Mr.S.M. Swami(Tech.Assistant)
02	Mr.C.A. Mane(Tech.Assistant)
03	Mr. D. B. Mane (peon)

ACTIVITY RECORD

Sr no	Cell & Name ofCoordinator	Name & NatureOfactivity	Number ofActivity	Targeted Audience	Date &Place
1	**IndustrialVisit**	IndustrialVisit	01	S.Y Students	Feb 2nd week
2			01	T.Y Students	Feb Last week
3			01	B. Tech S tudents	15th March onwards
4	**Guest Lecture** Prof. Mrs. A. V. Gundavade	Distributedfile system	01	S.Y Students	Guest lecture SY- 27th feb
5		Microprocessorand microcontroller applications.	01		Guest lecture TY- 29th march,
6		Mobile Device security	01	T.Y Students	Guest lecture TY-8th feb
7		Internet of things	01		
8		Cloud security	01	B.Tech S tudents	Guest lecture B.Tech-12th Jan
9		NOSQL	01		
10	**Expert Lecture** Prof. Mrs. A. V. Gundavade	As per discussion with all Subject Teachers	01 01	S.Y Students	Expert lecture- 9th Jan Expert lecture- 28th march,
		As per discussion with all Subject Teachers	02	T.Y Students	EDC-Expert lecture 15 Jan
		As per discussion with all Subject Teachers & Guides	02	B.TechS tudents	Alumni expert lecture- 22nd feb Expert lecture- 15th march
11	**Augmentation course** Prof. N. H. Sayyad	Technical- Cloud Computing	01	S.Y Students	Augmentation tech 16th jan
12		Non-technical(Stress management or yoga)	01		Augmentation non tech 13th Feb
13		Technical-Big Data	01	T.Y Students	Augmentation Technical - 6th feb
14		Non-technical (Stress management or yoga)	01		Augmentation non tech 13th Feb
15		Technical- Cloud Computin g	01	B.Tech Students	Augmentation non tech-4th march
16		Non-technical (Stress management or yoga)	01		Augmentation non tech 13th Feb
17	**AlumniCell** Prof.R. D.Mane	Will be finalized as per discussion with Teachers	--	--	Alumni Interaction-5th Jan

18	**Faculty Development cell-** Prof.P. V. Kothawale	Workshop- Big data, data science	01	Faculty Members	FDC activity- 23rd Feb
19	**CSI. & COMESA Prof. P. S. Ambupe**	Technical Event	01	All students	Technical event under COMPESA-19th Jan

20	**Training** Prof. P.V. Kothawale	Technical MockTest	--	T.Y &B.Tech hStudents	
21	**Lab Development cell**	Will Conduct a meeting with all faculty for considering Opensource software's In all laboratories for Curriculum	--	Department	Dec Last Week 23
22	**Entrepreneurship Development Cell** Prof. R. D. Mane	Opportunities inEntrepreneurship	--	T.Y &B.Tech	EDC-Expert lecture
23	**Community activity Plan**	Awareness Programs for society by SY, TY & B.Tech students.	01	S.Y Students	
24			01	T.Y Students	NSS Camp 2nd week of Jan
25			01	B. TechStudents	Community activity by B.Tech -12th feb
26	**MoU** Prof. S. A. Narade	Renew MoU and arrange guest lecture	--	Department &Students	MOU Activity- 15th Jan
27	**Parent Meet** Prof. S.S. Chougule	Parent Meet	01	S.Y,T.Y, B.Tech students & their Parents.	**Parents Meet (SY) – 15th to 20th April** **Parents Meet (TY Btech) 11th to 16th March**
28	**Departmental Advisory Board** Prof. S. A. Narade	Departmental Advisory Board meeting	01	Department & All Board Members.	DAB meeting-30th March
29	**Project Presentation** Prof. S. S. Chougule	Progress presentation I	--	B. Tech students	20th Jan 24
30		Progress presentation II	--		17th Feb 24
31		Final presentation II	--		16th March 24
32	**Student Feedback** Prof. P. V. Kothawale	Student Feedback	--	S.Y, T.Y & B.Tech students	**Formative Feedback (TY & B.Tech) – 5th to 9th Feb** **Formative Feedback (SY) – 18th to 22nd March** **Summative Feedback 6th to 10th may 24**