Program and Course Structure B.Tech CSE

1. Standard Structure of the Program at University Level

1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

1. **Transformative educational experience**
2. **Enrichment by educational initiatives that encourage global outlook**
3. **Develop research, support disruptive innovations and accelerate entrepreneurship**
4. **Seeking beyond boundaries**

Creative Campaign Can be TEDs: This is guiding principle for promotion and wide circulation among various stakeholder.
Guidelines: Similar Mnemonics can be designed by schools.

Core Values

- **Integrity**
- **Leadership**
- **Diversity**
- **Community**

Note: Detailed Mission Statements of University can be used for developing Mission Statements of Schools/ Departments.

Vision of the School

To become a globally acclaimed institution of higher learning in engineering and technology promoting excellence in research, innovation and entrepreneurship

Mission of the School

1. **To impart quality education with strong industry & academic connectivity in the expanding fields of Engineering and Technology in a conductive and enriching learning environment.**
2. **To product technocrats equipped with technical & soft skills and experiential learning required to stay current with the modern tools in emerging technologies to fulfill professional responsibilities and uphold ethical values.**
3. **To inculcate a culture of interdisciplinary research, innovation and entrepreneurship to provide sustainable solutions to meet the growing challenges and societal needs.**
4. **To foster collaborative learning and to play adaptive leadership role in professional career and pursuit of higher education through effective mentoring and counselling.**

1.2.1Vision and Mission of the Department

Vision of the Department

To be known and recognized as the fountainhead of excellence in technical knowledge and research in computer science and engineering, and draw to it the students and scholars across nations.

Mission of the Department

1. To facilitate and foster the academia industry collaboration to enhance entrepreneurship skills and acquaintance with corporate culture.
2. To strengthen core competences of students to be successful, ethical , effective problem solver in Computer Science & Engineering through analytical learning
3. To promote research based activities in emerging areas of technology convergence.
4. To induce moral values and spirit of social commitment.

1.3 Programme Educational Objectives (PEO)

1.3.1 Writing Programme Educational Objectives (PEO)

The Educational Objectives of UG Program in Computer Science Engineering are:

PEO1 : The Graduate will ensconce himself/herself as effective professionals by solving real life problems using exploratory and analytical skills along with the knowledge acquired in the field of Computer Science and Engineering.

PEO2 : The Graduate will demonstrate his/her ability to accustom to rapidly changing environment in advanced areas of Computer Science and scale new height in their profession through lifelong learning.

PEO3 : The Graduate will have the ability to work and communicate effectively as a team member or leader to complete the task with minimal resources, meeting deadlines.

PEO4 : The Graduate will embrace professional code of ethics in the profession while deliberately being part of projects which contributes to the society at large without disturbing the ecological balance.

Methods of Forming PEO's

STEP 1: The needs of the Nation and society are identified through scientific publications, industry interaction and media.

STEP 2. Taking the above into consideration, the PEOs are established by the coordination Committee of the department.

STEP 3. The PEOs are communicated to the alumni and their suggestions are obtained.

STEP 4. The PEOs are communicated to all the faculty members of the department and their feedback is obtained.

STEP 5. The PEOs are then put to the Board of Studies of the department for final approval.

[Note: Prepare a file for the same, how you arrive for PEO's]

1.3.2 Map PEOs with School Mission Statements:

PEO Statements	School Mission 1	School Mission 2	School Mission 3	School Mission 4
PEO1:	**3**	**3**	**2**	**2**
PEO2:	**2**	**3**	**2**	**1**
PEO3:	**2**	**2**	**2**	**3**
PEO4:	**2**	**1**	**3**	**1**

Enter correlation levels 1, 2, or 3 as defined below:

1. **Slight (Low)** **2. Moderate (Medium)** **3. Substantial (High)**

If there is no correlation, put "-"

1.3.2.1 Map PEOs with Department Mission Statements:

PEO Statements	Department Mission 1	Department Mission 2	Department Mission 3	Department Mission 4
PEO1:	**2**	**3**	**2**	**1**
PEO2:	**1**	**3**	**3**	**1**
PEO3:	**3**	**2**	**1**	**1**
PEO4:	**1**	**2**	**2**	**3**
PEO5:	**2**	**3**	**2**	**1**

Enter correlation levels 1, 2, or 3 as defined below:

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)

If there is no correlation, put "-"

1.3.3 Program Outcomes (PO's)

PO1: **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: **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 instructions.

PO11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PSO1: Familiarity and practical proficiency with a broad area of programming concepts and provide new ideas and innovations towards research and societal issues.

PSO2: Understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics and networking for efficient design of computer-based systems of varying complexity.

PSO3: Apply standard Software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality product for business success.

PSO4: Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing environmental and societal problems.

PSO5: To prepare graduates to apply their skills in creating innovative computing solutions by employing effective communication, teamwork, leadership, ethical practices and professionalism.

1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

Mapping	PEO1	PEO2	PEO3	PEO4
PO1	3	3	2	1
PO2	3	3	3	1
PO3	2	2	3	3
PO4	2	2	3	2
PO5	2	3	2	2
PO6	1	2	2	3
PO7	1	1	2	3
PO8	1	1	2	3
PO9	1	2	3	1
PO10	1	1	3	2
PO11	3	2	3	1
PO12	2	3	1	1
PSO1	2	3	1	3
PSO2	3	3	2	2
PSO3	3	3	2	2
PSO4	2	2	1	3
PSO5	3	2	3	1

1. Slight (Low) ***2. Moderate (Medium)*** ***3. Substantial (High)***

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: I	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	CSE113	Programming for Problem Solving	3	0	0	3	
2.	MTH 142	Calculus and Abstract Algebra	3	1	0	4	
3.	PHY117	Semiconductor Physics	2	1	0	3	
4.	EEE112	Principles of Electrical and Electronics Engineering	2	1	0	3	
5.	EVS103	Environmental Science	2	0	0	2	
Practical/Viva-Voce/Jury							
6.	CSP113	Programming for Problem Solving Lab	0	0	2	1	
7.	CSP101	Introduction to Computer Science and Engineering	0	0	2	1	
8.	MEP106	Computer Aided Design & Drafting	0	0	3	1.5	
9.	EEP112	Principles of Electrical and Electronics Engineering	0	0	2	1	
10.	PHY161/162	Physics Lab –I / Physics Lab-II	0	0	2	1	
11.	FEN101	Functional English Beginners-I	0	0	2	1	
12.	FEN103	Functional English Intermediate-I					

13.	ENP102	Functional English-I	0	0	2	1	
TOTAL CREDITS						**22.5**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: II	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	CSE114	Application based Programming in Python	3	0	0	3	
2.	MTH 145	Probability and Statistics	3	1	0	4	
3.	PHY116	Engineering Physics	2	1	0	3	
4.	CHY111	Engineering Chemistry	3	0	2	4	
5.	HMM111	Human Value & Ethics	2	0	0	2	
Practical/Viva-Voce/Jury							
6.	CSP114	Application based Programming in Python	0	0	2	1	
7.	MEP105	Mechanical Workshop	0	0	3	1.5	
8.	CSP103	Multimedia Application Lab	0	0	2	1	
9.	PHY161/162	Physics Lab –I / Physics Lab-II	0	0	2	1	
10.	FEN102	Functional English Beginners-II	0	0	2	1	
11.	FEN104	Functional English Intermediate-II					
12.	ENP103	Functional English-II	0	0	2	1	
TOTAL CREDITS						**22.5**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: III	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	BTY223	Introduction to Biology for Engineers	2	0	0	2	
2.	MTH201	Discrete Structures	3	1	0	4	
3.	CSE247	Computer Organization and Architecture	3	0	0	3	
4.	CSE242	Data Structures	3	0	0	3	
5.	CSE243	Object Oriented Programming Using Java	3	0	0	3	
Practical/Viva-Voce/Jury							
6	CSP242	Data Structures Lab	0	0	2	1	
7.	CSP243	Object Oriented Programming Using Java	0	0	2	1	
8.	ARP203	Aptitude Reasoning and Business Communication Skills-Basic	0	0	4	2	
9.	CSP297	Project Based Learning (PBL) -1	0	0	2	1	
10.	CSP299	Industrial Internship-I	-	-	-	1	
TOTAL CREDITS						**21**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: IV	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	CSE244	Principles of Operating System	3	0	0	3	
2.	CSE245	Computer Networks	3	0	0	3	
3.	CSE246	Data Base Management System	3	0	0	3	Discrete Structures
4.	CSE248	Theory of Computation	3	1	0	4	
5		Program Elective-1	3	0	0	3	
6.	OE1	Open Elective – 1	2	0	0	2	
Practical/Viva-Voce/Jury							
7.	ARP204	Aptitude Reasoning and Business Communication Skills-Intermediate	0	0	4	2	ARP201
8.	CSP244	Principles of Operating System Lab	0	0	2	1	
9.	CSP245	Computer Networks Lab	0	0	2	1	
10.	CSP246	Data Base Management System Lab	0	0	2	1	
11.	CSP298	Project Based Learning (PBL) -2	0	0	2	1	PBL-I
TOTAL CREDITS						**24**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: V	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	CSE341	Design and Analysis of Algorithm	3	1	0	4	Data Structure
2	CSE343	Software Engineering and Testing Methodologies	3	0	0	3	
3		Program Elective-2	3	0	0	3	
4.		Program Elective-3	3	0	0	3	
5.	OE-2	Open Elective – 2	3	0	0	3	
Practical/Viva-Voce/Jury							
6.		Community Connect	-	-	-	2	
7.	ARP301	Quantitative Aptitude Behavioral and Interpersonal Skills	0	0	4	2	ARP204
8.	CSP341	Design and Analysis of Algorithm Lab	0	0	2	1	Data Structure Lab
9	CSP302	Technical Skill Enhancement Course-1 Simulation Lab	0	0	2	1	Operating system, Database Management system
10.	CSP397	Project Based Learning (PBL) -3	0	0	2	1	PBL-2
11.	CSP399	Industrial Internship-II	-	-	-	1	Industrial Internship-I
TOTAL CREDITS						**24**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: VI	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	HMM305	Management for Engineers	3	0	0	3	
2.	CSE458	Web Technologies	3	0	0	3	Java
3	CSE344	Compiler Design	3	0	0	3	Theory of Computation
4	PE4	Program Elective-4	3	0	0	3	
5.	OE-3	Open Elective – 3	3	0	0	3	
Practical/Viva-Voce/Jury							
6.	ARP302	Higher Order Mathematics and Advanced People Skills	0	0	4	2	ARP301
7.	CSP458	Web Technologies Lab	0	0	2	1	Java
8.	CSP344	Compiler Design Lab	0	0	2	1	Principles of Operating system Lab
9.	CSP301	Technical Skill Enhancement Course-2(Application Development Lab)	0	0	2	1	
10	CSP398	Project Based Learning (PBL) -4	0	0	2	1	PBL-3
TOTAL CREDITS						**21**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: VII	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
1.	CSE346	Artificial Intelligence	3	0	0	3	
2.	PE5	Program Elective-5	3	0	0	3	
3.	PE6	Program Elective-6	3	0	0	3	
4.		Comprehensive Examination	0	0	0	0	Audit
5	OE4	Open Elective - 4	3	0	0	3	
Practical/Viva-Voce/Jury							
6	CSP346	Artificial Intelligence Lab	0	0	2	1	
7.	CSP497	Major Project- 1	-	-	-	3	PBL-4
8.	CSP499	Industrial Internship-III	-	-	-	1	Industrial Internship-II
TOTAL CREDITS						**17**	

School of Engineering and Technology							
B.Tech-Computer Science Engineering							
Batch: 2018 Onwards						TERM: VIII	
S. No.	**Course Code**	**Course**	**Teaching Load**			**Credits**	**Pre-Requisite/Co Requisite**
			L	**T**	**P**		
THEORY SUBJECTS							
Practical/Viva-Voce/Jury							
1.	CSP498	Major Project - 2	-	-	-	8	Major Project - 1
TOTAL CREDITS						**8**	

Program Elective					
Introduction to Mathematical & Statistical Techniques in Computer Science CSE348	Android Application Development CSE350	Web Designing CSE352	Mobile Computing CSE460	Wireless Networks CSE454	Distributed System Concepts & Design CSE456
Introduction to Graph Theory and its Applications CSE349	Introduction to Cloud Computing CSE351	Software Project Management CSE353	Software Testing CSE459	Digital Image Processing CSA403	Introduction to Internet of Things CSI201

Minor in Program

S. No	Course Code	Course Name	L	T	P	C	Category	Prerequisite
1	CSE243/CSP243	Object Oriented Programming Using Java	3	0	2	4	Engineering	
2	CSE246/CSP246	Data Base Management System	3	0	2	4	Engineering	
3	CSE343	Software Engineering and Testing Methodologies	3	0	0	3	Engineering	
4	CSE346	Artificial Intelligence	3	0	0	3	Engineering	
5	CSE458	Web Technologies	3	0	0	3	Engineering	
6	CSA301	Introduction to Machine Learning	3	0	0	3	Engineering	
		Total Credits to be taken				20		

Honours in Computer Science and Engineering

Honours in Program Cyber Security

S. No	Course Code	Course Name	L	T	P	C	Category	Prerequisite
1	CSC201	Introduction to Cyber Laws	3	0	0	3	Engineering	
2	CSC202	Web and Mobile Application security	3	0	0	3	Engineering	
3	CSC301/CCL301	Digital Forencics	3	0	2	4	Engineering	
4	CSC302/CCL302	Ethical Hacking	3	0	2	4	Engineering	
5	CSC401	Security Architecture	3	0	0	3	Engineering	
6	CSC402	Risk Management	3	0	0	3	Engineering	
		Total Credits to be taken				20		

Honors in Program Data Sciences

S. No	Course Code	Course Name	L	T	P	C	Category	Prerequisite
1	CSD201	Applied Stsistical Analysis	3	0	0	3	Engineering	
2	CSD202	Data Aquasition	3	0	0	3	Engineering	
3	CSD301	Data Warehouse	3	0	0	3	Engineering	
4	CSD302	Data Mining	3	0	2	4	Engineering	
5	CSD401	Business Intelligence	3	0	0	3	Engineering	
6	CSD402	Big Data Analytics	3	0	2	4	Engineering	
		Total Credits to be taken				20		

Honors in Program Artificial Intelligence and Machine Learning

S. No	Course Code	Course Name	L	T	P	C	Category	Prerequisite
1	CSA201	Soft computing	3	0	0	3	Engineering	
2	CSA202	Pattern Recognition	3	0	2	4	Engineering	
3	CSA301/CAL301	Introduction to Machine Learning	3	0	2	4	Engineering	
4	CSA302	Neural Networks	3	0	0	3	Engineering	
5	CSA401	Introduction to Deep Leaning	3	0	0	3	Engineering	
6	CSA402	Robotics and Intelligent Systems	3	0	0	3	Engineering	

		Total Credits to be taken			20		

Syllabus: CSP 101:Introduction to Computer Science and Engineering

School: SET		**Batch : 2018**	
Program:B.Tech		**Current Academic Year:**	
Branch: CSE		**Semester:I**	
1	Course Code	CSP101 Course Name	
2	Course Title	Introduction to Computer Science and Engineering	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	UG	
5	Course Objective	1. To familiarize the students about the importance of Undergraduate course on Computer Science & Engineering. 2. To discuss recent developments in hardware and software environments. 3. To focus future application areas of Computer Science and Engineering. 4. To discuss various research and development options in Computer Science and Engineering.	
6	Course Outcomes	**The student should be able to:** CO1: Understand the technical aspects of Computer Science & Engineering Course. CO2: Perceive some knowledge about programming in various applications. CO3: Acquire basic understanding about computer networking and related technology. CO4: Enhance some fundamental knowledge of DBMS including application areas. CO5: Understand the current trends in computing in discovering wisdom/knowledge and future prediction.	
7	Course Description	This course focuses application areas of Computer Science and Engineering for students admitted in undergraduate program. The purpose of B. Tech. in Computer Science & Engineering is to be given through this course to students.	
8	Outline syllabus		CO Mapping
	Unit 1	**Hardware aspect of Computer Science & Engineering**	
	A	History of Computing Systems, Computer Basics and Computer Organization.	CO1
	B	Computer Architecture, Introduction to various connecting devices.	
	C	Recent additions – IoT, Robotics and new alternate architectures.	

	Unit 2	**Programming Aspects**			
	A	Basics of Programming, Programming Paradigms, System Software versus Application Software.			CO2
	B	Hard Computing versus Soft Computing, Data Structures and Algorithms.			
	C	Computer Graphics, Multimedia, Computer Vision.			
	Unit 3	**Computer Networking**			
	A	Introduction to Networking, Various terminologies, Client Server Technology, Web Technology.			CO3
	B	Introduction to data/network security and current trends.			
	C	Concept of Cloud Computing and Virtualization, Real life applications.			
	Unit 4	**Database Management Systems**			
	A	Introduction to DBMS, DBMS versus File System, Relational DBMS.			CO4
	B	Information Processing and Retrieval			
	C	Big Data Analytics & Scientific Computing			
	Unit 5	**Artificial Intelligence**			
	A	Basics of Artificial Intelligence			CO5
	B	Basics of Pattern Recognition			
	C	Basics of Machine Learning			
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	NIL	40%	
	Text book/s*	1. Introduction to Computer, Peter Norton, 7/e, 2017, Tata McGraw Hill Publishing.			
	Other References	2. Foundations of Computer Science, B A Forouzan& F Mosharraf, 2/e, 2008, Delmar Learning.			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: Understand the technical aspects of Computer Science &Engineering Course.	PO1, PO2, PO12, PSO4
2.	**CO2:**Perceive some knowledge about programming in various applications.	PO1, PO12, PSO1, PSO4

3.	**CO3:** Acquire basic understanding about computer networking and related technology.	PO1, PO2, PO12, PSO2, PSO4
4.	**CO4:**Enhance some fundamental knowledge of DBMS including application areas.	PO1, PO12, PSO2, PSO4
5.	**CO5:** Understand the current trends in computing in discovering wisdom/knowledge and future prediction.	PO1, PO6, PO8, PO12, PSO2, PSO4

PO and PSO mapping with level of strength for Introduction to Computer Science &Engineering(Course Code :CSP 101)

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO 12	PS O1	PS O2	PS O3	PSO 4	PS O5
CO1	3	2	-	-	-	-	-	-	-	-	-	3	3	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	3	-	2	-	3	-
CO4	3	-	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO5	3	-	-	-	-	2	-	2	-	-	-	3	-	3	-	3	-

Syllabus: CSE 113:Programming for problem solving

School: SET		**Batch :2018-22**	
Program: B.Tech		**Current Academic Year:**	
Branch: ALL		**Semester:1**	
1	Course Code	**CSE113**	Course Name: Programming for problem solving
2	Course Title	Programming for problem solving	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Core	
5	Course Objective	1. Learn basic programming constructs –data types, decision structures, control structures in C 2. learning logic aptitude programming in c language 3. Developing software in c programming	
6	Course Outcomes	Students will be able to: CO1: Create flowchart , algorithm and Pseudo-code CO2: Understanding basic C concept CO3: Implement Array and Functions CO4: Understand and implement Pointers CO5: Apply user-defined data types	
7	Course Description	Programming for problem solving gives the Understanding of C programming and implement code from flowchart or algorithm	

8	Outline syllabus		CO Mapping
	Unit 1	**Logic Building**	
	A	Flowchart: Elements, Identifying and understanding input/ output, Branching and iteration in flowchart	CO1,
	B	Algorithm design: Problem solving approach(top down/bottom up approach)	CO1
	C	Pseudo Code : Representation of different construct, writing pseudo-code from algorithm and flowchart	CO1
	Unit 2	**Introduction to C Programming**	
	A	Introduction to C programming language, Data types, Variables, Constants, Identifiers and keywords, Storage classes	CO2
	B	Operators and expressions, Types of Statements: Assignment, Control, jumping.	CO2
	C	Control statements: Decisions, Loops, break, continue	CO2
	Unit 3	**Arrays and Functions**	
	A	Arrays: One dimensional and multi dimensional arrays: Declaration, Initialization and array manipulation (sorting, searching).	CO3
	B	Functions: Definition, Declaration/Prototyping and Calling, Types of functions, Parameter passing: Call by value, Call by reference.	CO3
	C	Passing and Returning Arrays from Functions, Recursive Functions.	CO3
	Unit 4	**Pre-processors and Pointers**	
	A	Pre-processors: Types, Directives, Pre-processors Operators (#,##,\) , Macros: Types, Use, predefined Macros	CO4
	B	Pointer: Introduction, declaration of pointer variables, Operations on pointers: Pointer arithmetic, Arrays and pointers, Dynamic memory allocation.	CO4
	C	String: Introduction, predefined string functions, Manipulation of text data, Command Line Arguments.	CO4
	Unit 5	**User Defined Data Types and File Handling**	
	A	Structure and Unions: Introduction, Declaration, Difference, Application, Nested structure, self-referential structure, Array of structures, Passing structure in function.	CO5

	B	Files: Introduction, concept of record, I/O Streaming and Buffering, Types of Files: Indexed file, sequential file and random file,			CO5
	C	Creating a data file, Opening and closing a data file, Various I/O operations on data files: Storing data or records in file, adding records, Retrieving, and updating Sequential file/random file.			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Kernighan, Brian, and Dennis Ritchie. *The C Programming Language*			
	Other References	1. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 2. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill- 1999			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: Create flowchart , algorithm and Pseudo-code	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
2.	CO2: Understanding basic C concept	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
3.	CO3: Implement Array and Functions	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
4.	CO4: Understand and implement Pointers	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
5.	CO5: Apply user-defined data types	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5

PO and PSO mapping with level of strength for Course Name Programming for problem solving(Course Code CSE 113)

	Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4	PSO5
CSE113	CO1	3	2	3	-	-	-	-	-	-	-	2	1	3	2	2	1	2
	CO2	3	2	3	-	-	-	-	-	-	-	2	1	3	2	2	1	2
	CO3	3	2	3	-	-	-	-	-	-	-	1	1	2	3	2	1	2

	CO4	3	2	3	-	-	-	-	-	-	-	3	2	3	2	1	1	1
	CO5	3	2	3	-	-	-	-	-	-	-	3	1	2	2	2	1	3

Syllabus: CSP 113: Programming for problem solving Lab

School: SET		**Batch: 2018**	
Program: B.Tech.		**Current Academic Year: 2018-19**	
Branch: CSE		**Semester: I**	
1	Course Code	CSP113	
2	Course Title	Programming for problem solving Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	1. Learn basic programming constructs –data types, decision structures, control structures in C 2. learning logic aptitude programming in c language 3. Developing software in c programming	
6	Course Outcomes	Students will be able to: CO1: Understand core concept of c Programming CO2: Implement Array and String CO3: Implement Functions CO4: Use Union and Structure CO5: Understand and implement Pointers	
7	Course Description	Programming for problem solving gives the Understanding of C programming and implement code from flowchart or algorithm	
8	Outline syllabus		CO Mapping
	Unit 1	**Logic Building**	**CO1**
		Draw flowchart for finding leap year	
		Write a c Program to Add Two Integers	
		Write a program to create a calculator	
	Unit 2	**Introduction to C Programming**	**CO2**
		Write a c program to convert length meter to cm	
		Write a c program to convert temp	
		Write a c program to swap two numbers	
	Unit 3	**Arrays and Functions**	**CO3**
		Write a c program to calculate the average using arrays	
		Write a c program to find the largest element of the array	
	Unit 4	**Pre-processors and Pointers**	**CO4**
		Write a c program to swap two values using pointers	
		Write a c program to find largest number from array using pointers	
	Unit 5	**User Defined Data Types and File Handling**	**CO5**

		Write a c program to store information of a student using structure			
		Write a c program to store information of a student using union			
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	Kernighan, Brian, and Dennis Ritchie. *The C Programming Language*			
	Other References	4. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 5. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill- 1999			

Course outline

This course implements array and pointer and Recursive applications. The course talks primarily about Array, string, functions, structure & union and Pointers etc.

Course Evaluation	
Attendance	None
Any other	CA judged on the practicals conducted in the lab , weightage may be specified
References	
Text book	Kernighan, Brian, and Dennis Ritchie. *The C Programming Language*
Other References	1. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 2. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill-1999
Softwares	Turbo C

Syllabus: MTH 142:Calculus And abstract Algebra

School: SET		**Batch :2018- 2022**	
Program: B.Tech.		**Current Academic Year: 2018-19**	
Branch: CSE		**Semester: 1**	
1	Course Code	**MTH 142**	
2	Course Title	**Calculus and Abstract Algebra**	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Status	Compulsory	
5	Course Objective	The objective of this course is to familiarize the prospective engineers with techniques in basic calculus and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.	
6	Course Outcomes	CO1: Explain the concept of differential calculus, illustrate thecurvature and Maxima, minima and saddle point. (K2, K3, K4) CO2: Explain the basic concepts matrices and determinate, evaluate system of linear equation by using rank and inverse method. (K2, K3, K5) CO3: Explain the basic concept of sets, relation, functions, groups Rings and Field. (K2, K4) CO4: Discuss the basic of Vector spaces. (K1, K3) CO5: Describe and use the linear transformation and evaluate nullity and kernel. (K1, K2, K3, K5) CO6:Explain the concept of Eigen values and Eigen vectors; evaluate the diagonalization of matrices, explain the basic introduction of Inner product spaces.(K2, K3, K4, K5)	
7	Course Description	This course is an introduction to the fundamental of Mathematics. The primary objective of the course is to develop the basic understanding of differential and integral calculus, linear Algebra and Abstract Algebra.	
8	**Outline syllabus: Calculus and Abstract Algebra**		**CO Mapping**
	Unit 1	**Calculus**	

	A	Differentiation, Taylor's and Maclaurin theorems with remainders; indeterminate forms, L' Hospital's rule.			CO1
	B	Maxima and minima, Partial derivatives, Euler's theorem.			CO1
	C	Total derivative. Evaluation of double integration. Applications of double integral (to calculate area).			CO1
	Unit 2	**Matrices**			
	A	Matrices, vectors: addition and scalar multiplication, matrix multiplication.			CO2
	B	Linear systems of equations, linear Independence, rank of a matrix, determinants, Cramer's Rule			CO2
	C	Inverse of a matrix, Gauss elimination and Gauss-Jordan elimination.			CO2
	Unit 3	**Basic Algebra**			
	A	Sets, relations and functions.			CO3
	B	Basics of groups, cyclic groups.			CO3
	C	Subgroups, basics of Rings and Field.			CO3
	Unit 4	**Vector spaces**			
	A	Vector Space, linear dependence of vectors, basis, dimension.			CO4, CO5
	B	Linear transformations (maps), range and kernel of a linear map, rank and nullity.			CO4, CO5
	C	Inverse of a linear transformation, Matrix associated with a linear map.			CO4, CO5
	Unit 5	**Vector spaces (Prerequisite Module 2 –Matrices & Module-4 Vector spaces)**			
	A	Eigenvalues, Eigenvectors			CO6
	B	Symmetric, skew-symmetric, and orthogonal Matrices, Diagonalization			CO6
	C	Basic introduction of Inner product spaces, Gram-Schmidt orthogonalization.			CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002. 2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.			
	Other References	1. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005. 2. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.			

		3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010. 4. V. Krishnamurthy, V.P. Mainra and J.L. Arora, An introduction to Linear Algebra, Affiliated East–West press, Reprint 2005.	

COURSE OUTCOMES – PROGRAMME OUTCOMES MAPPING TABLE

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C142.1	3	3	2	2	3	1	-	-	-	1	1	1
C142.2	3	3	3	2	2	2	-	-	-	1	1	2
C142.3	3	3	2	2	2	1	-	-	-	1	1	1
C142.4	3	3	2	2	2	1	-	-	-	1	1	1
C142.5	3	3	2	2	2	1	-	-	-	1	1	2
C142.6	3	3	2	3	2	2	-	-	-	1	1	2

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: PHY 117, Semiconductor Physics

School: School of Basic Sciences and Research		**Batch:2018-2022**
Program: B.TECH .		**Current Academic Year: 2018-2019**
Branch: CSE/EC/EEE		**Semester: II**
1	Course Code	PHY 117
2	Course Title	Semiconductor Physics
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Status	Compulsory
5	Course Objective	To make students proverbial with the fundamental concepts of Semiconductors materials and their real life applications for configuring various electronics devices.

6	Course Outcomes	After the completion of this course, CO1: Students will learn the various fundamental theory of materials and concept of solid classification. CO2: Students will learn the fundamental concepts of mobility, conductivity, electrons and holes in an intrinsic semiconductors, Donor and Acceptor impurities (n-type and p-type semiconductor), Fermi levels etc. CO3: Students will gain knowledge about the formation of depletion region, barrier potential, Zener diode, Characteristics of Zener diode etc. CO4: Students will have a clear understanding of Coherent sources, interaction of radiation with matter (spontaneous and stimulated emission), Einstein's relation, population inversion and pumping, etc. CO5: Students will learn the concept of optical sources: Light emitting diode (construction, basic working principle), semiconductor laser (construction, basic working principle), and optical detectors. CO6: Student will be familiar with the essential concepts of Semiconductors materials technology and their applications in industries.
7	Course Description	This course provides the basic foundation for understanding electronic semiconductor devices and their applications and limitations. It has introductory elements of various concept of material science. This course is essential for students who desire to specialize their engineering in Computer Sciences, Electronics, and Electronics and Electrical engineering.

8	Outline Syllabus		CO Mapping
	Unit 1	**Physics ofSemiconductor**	
	A	Introduction, classical free electron theory (Lorentz-Drude theory and limitations), Quantum theory of free electron	CO1, CO6
	B	(Fermi energy, effect of temperature on Fermi-Dirac distribution) (qualitative analysis)	CO1
	C	Energy bands, Classification of Solids on the basis of energy band.	CO1
	Unit 2	**Transport phenomena in semiconductors**	
	A	Mobility, conductivity, electrons and holes in an intrinsic semiconductors, Donor and Acceptor impurities (n-type and p-type semiconductor)	CO2, CO6
	B	Fermi levels , carrier densities in semiconductor	CO2
	C	Concentration of electrons in conduction band and holes in valence band, Drift and diffusion current, Hall effect.	CO2

	Unit 3	**p-n Junction**	
	A	p-n junction, types of p-n junction (step-graded and Linearly-graded junction)	CO3
	B	formation of depletion region, barrier potential, Zener diode, Characteristics of Zener diode	CO3
	C	Avalanche and Zener breakdown, comparison of Zener diode and pn junction diode, concept of tunneling, I-V characteristics of tunnel diode.	CO3, CO6
	Unit 4	**Laser Physics**	
	A	Coherent sources, interaction of radiation with matter (spontaneous and stimulated emission), Einstein's relation	CO4
	B	population inversion and pumping, active components of laser, optical amplification or gain	CO4
	C	threshold condition for laser action, three and four level lasers, Ruby and He-Ne lasers.	CO4
	Unit 5	**Optoelectronic Devices**	
	A	optical sources: Light emitting diode (construction, basic working principle), semiconductor laser (construction, basic working principle)	CO5
	B	optical detectors: photodiode (working principle), p-i-n photodiode (working principle),	CO5, CO6
	C	Photovoltaic effect, p-n junction solar cell (basic working idea).	CO5, CO6
	Mode of Examination	Theory	
	Weightage Distribution	CA: 30% / MTE: 20% / ETE: 50%	
	Text books	Integrated Electronics- Millman - Halkias, Tata Mc Graw Hill	
	Other References	1. Semiconductor Devices Physics and Technology- S M Sze, John Wiley & Sons 2. Semiconductor Device Fundamentals- Robert F. Pierret Addison Wesley Longman. 3. Semiconductor Devices- Kanaan Kano, Pearson Education. 4. Basic Electronics by B.L Thareja 5. Principles of Electronics by V.K Mehta	

Syllabus: CSE 114:Application based programming in Python

School: SET		**Batch :2018-2022**	
Program: B.Tech		**Current Academic Year: 2018-19**	
Branch: CSE		**Semester: II**	
1	Course Code	CSE114	Course Name
2	Course Title	Application Based Programming in Python	

3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Compulsory	
5	Course Objective	Emphasis is placed on procedural programming, algorithm design, and language constructs common to most high-level languages through Python Programming.	
6	Course Outcomes	Upon successful completion of this course, the student will be able to: CO1. Select decision-making and looping structures in programming. CO2. Apply Modular programming approach using methods and functions. CO3. Show the use of Python lists, tuples and dictionary. CO4. Incorporate object-oriented programming concept in programming. CO5: Use of python packages in different applications.	
7	Course Description	Python is a language with a simple syntax, and a powerful set of libraries. It is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	History, Python Environment, Variables, Data Types, Operators.	CO5
	B	**Conditional Statements:** If, If- else, Nested if-else. **Looping:** For, While, Nested loops.	CO1,CO5
	C	**Control Statements:** Break, Continue, And Pass. Comments	CO1,CO5
	Unit 2	**List, Tuple and Dictionaries**	
	A	**Lists and Nested List:** Introduction, Accessing list, Operations, Working with lists, Library Functionand Methods with Lists.	CO3
	B	**Tuple:** Introduction, Accessing tuples, Operations, Working, Library Functions and Methods with Tuples.	CO3
	C	**Dictionaries :**Introduction, Accessing values in dictionaries, Working with dictionaries, Library Functions	CO3
	Unit 3	**Functions and Exception Handling**	
	A	**Functions:** Defining a function, Calling a function, Types of functions, Function Arguments	C02,CO5
	B	Anonymous functions, Global and local variables	C02,CO5
	C	**Exception Handling**: Definition Exception, Exception handling Except clause, Try? finally clause	CO2,CO5
	Unit 4	**OOP and File Handling**	

	A	**OOPs concept** : Class and object, Attributes, Abstraction, Encapsulation, Polymorphism and Inheritance			C04
	B	Static and Final Keyword, Access Modifiers and specifiers, scope of a class			CO4
	C	User Defined Exceptions			CO4
	Unit 5	**Module and Applications**			
	A	**Modules:** Importing module, Math module, Random module			C02,CO5
	B	Matplotlib, Packages			C02,CO5
	C	**Applications: Searching Linear Search, Binary Search. Sorting: Bubble Sort**			C02,CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	3. The Complete Reference Python, Martin C. Brown, McGraw Hill			
	Other References	1. Introduction to computing in problem solving using Python, E Balahurusamy, McGraw Hill 2. Introduction to programming using Python, Y. Daniel Liang, Pearson 3. Mastering Python, Rick Van Hatten, Packet Publishing House 4. Starting out with Python, Tony Gaddis, Pearson			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. Apply decision and repetition structures in program design.	PO1,PO5,PO9,PO11,PSO3
2.	CO2. Implement methods and functions to improve readability of programs.	PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1, PSO2,PSO3,PSO4,PSO5
3.	CO3. Demonstrate the use of Python lists, tuples and dictionaries	PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1, PSO2,PSO3,PSO4,PSO5
4.	CO4. Describe and apply object-oriented programming methodology.	PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1, PSO2,PSO3,PSO4,PSO5
5.	CO5. Apply top-down concepts in algorithm design.	PO1PO3,PO4,PO5,PO9,PO11,PSO1, PSO2,PSO3,PSO4,PSO5
6.	CO6. Write Python programs to illustrate concise and efficient algorithms	PO1,PO4,PO5,PO9,PO11,PSO1, PSO2,PSO3,PSO4,PSO5

PO and PSO mapping with level of strength for Course Name Application Based Programming in Python **(Course Code CSE 114)**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	1	-	-	-	1	-	1	-	2	2	1	2	3
CO2	3	3	3	3	3	-	-	-	3	-	3	-	3	3	3	3	3
CO3	3	3	3	3	2	-	-	-	3	-	2	-	3	3	2	2	2
CO4	2	2	2	1	2	-	--	-	2	-	1	-	2	1	1	2	1
CO5	2	3	2	1	2				1		2		1	2	2	1	1
CO6	1	2	1	2	1				1		1		3	2	2	1	2

1-Slight (Low) **2-Moderate (Medium)** **3-Substantial (High)**

Syllabus: CSP 114:Application based programming in Python Lab

School: SET		**Batch: 2018-2022**	
Program: B.Tech		**Current Academic Year: 2018**	
Branch:All		**Semester: II**	
1	Course Code	CSP114	
2	Course Title	Application Based Programming in Python Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	Emphasis is placed on procedural programming, algorithm design, and language constructs common to most high level languages through Python Programming.	
6	Course Outcomes	Upon successful completion of this course, the student will be able to: CO1. Apply decision and repetition structures in program design. CO2. Implement methods and functions to improve readability of programs. CO3. Demonstrate the use of Python lists, tuples and dictionaries CO4. Describe and apply object-oriented programming methodology. CO5. Apply top-down concepts in algorithm design. CO6. Write Python programs to illustrate concise and efficient algorithms	
7	Course Description	Python is a language with a simple syntax, and a powerful set of libraries. It is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming.	
8	Outline syllabus		CO Mapping
	Unit 1	**Practical based on conditional statements and control structures**	

		1. Program to implement all conditional statements 2. Program to implement different control structures	CO1,C06
	Unit 2	**Practical related to List, Tuples and dictionaries**	
		1. Program to implement operations on lists 2. Program to implement operations on Dictionary **3.** Program to implement operations on Tuple	CO3,CO6
	Unit 3	**Practical related to Functions and Exception Handling**	
		1. Program to implement Exception Handling **2.** Program to use different functions	CO2,CO6
	Unit 4	**Practical related to Object Oriented Programming**	
		Program to use object oriented concepts like inheritance, overloading polymorphism etc. Program for file handling	CO4,CO6
	Unit 5	**Practical related to Modules and Applications**	
		Program to use modules and package Program to implement searching and sorting	CO2,CO5,CO6
	Mode of examination	Practical/Viva	
	Weightage Distribution	CA: 60% / MTE: 0% / ETE: 40%	
	Text book/s*	4. The Complete Reference Python, Martin C. Brown, McGraw Hill	
	Other References	5. Introduction to computing in problem solving using Python, E Balagurusamy, McGraw Hill 6. Introduction to programming using Python, Y. Daniel Liang, Pearson 7. Mastering Python, Rick Van Hatten, Packet Publishing House 8. Starting out with Python, Tony Gaddis, Pearson	

Syllabus: MTH 145:Probability and Statistics

School: SET		**Batch :2018- 2021**
Program: B.Tech.		**Current Academic Year: 2018-19**
Branch: CSE		**Semester: II**
1	Course Code	**MTH 145**
2	Course Title	**Probability and Statistics**
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0

	Course Status	Compulsory
5	Course Objective	The objective of this course is to familiarize the students with statistical techniques. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline.
6	Course Outcomes	CO1: Explain the concept of probability and Random Variable. (K2,K3, K4) CO2: Explain the concept of distribution functions, densities andprobability distributions; illustrate discrete and continuous probability distributions. (K1, K2, K3, K4) CO3: Describe the concept of moments, skewness and Kurtosis; evaluatecorrelation and regression – Rank correlation; discuss bivariate distributions and their properties . (K1, K2, K5) CO4: Discuss the basic of Curve fitting by the method of least squares; evaluate straight lines, second degree parabolas and more general curves. (K1, K2, K5) CO5: Describe and use the concepts test of significance: Large sample test for single proportion, difference of proportions; calculate single mean, difference of means, and difference of standard deviations. (K1,K2,K3) CO6: Explain the basic concepts of tests of small samples- Student's T test, Chi-square test for goodness of fit, and evaluate the result. (K2, K4, K5)
7	Course Description	This course is an introduction to the fundamental of Mathematics. The primary objective of the course is to develop the basic understanding of statistics including measures of central tendency, correlation and regression, statistical methods of data sampling, probability and random variables and various discrete andcontinuous probability distributions and their properties.

8	**Outline syllabus :Probability and Statistics**		**CO Mapping**
	Unit 1	**Basic Probability**	
	A	Probability spaces, conditional probability, Bayes' rule.	CO1
	B	Discrete random variables, Independent random variables	CO1
	C	Expectation of Discrete Random Variables, Chebyshev's Inequality	CO1
	Unit 2	**Discrete and Continuous Probability Distributions**	
	A	Discrete Probability distributions: Binomial, Poisson.	CO2
	B	Continuous random variables and their properties, distribution functions and densities.	CO2

	C	Normal, exponential and gamma distribution.			CO2
	Unit 3	**Statistics**			
	A	Moments, skewness and Kurtosis.			CO3
	B	Correlation and regression – Rank correlation.			CO3
	C	Bivariate distributions and their properties.			CO3
	Unit 4	**Applied Statistics**			
	A	Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves.			CO4, CO5
	B	Test of significance: Large sample test for single proportion,			CO4, CO5
	C	Difference of proportions, single mean, difference of means, and difference of standard deviations.			CO4, CO5
	Unit 5	**Testing Hypothesis**			
	A	Test for single mean, difference of means			CO6
	B	test for ratio of variances			CO6
	C	Chi-square test for goodness of fit and independence of attributes			CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006. 2. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint). 3. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.			
	Other References	1. W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed., Wiley, 1968. 2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000. Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.			

COURSE OUTCOMES – PROGRAMME OUTCOMES MAPPING TABLE

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C145.1	3	3	2	2	3	1	-	-	-	1	1	1
C145.2	3	2	3	2	2	2	-	-	-	1	1	2
C145.3	3	3	2	2	2	1	-	-	-	1	1	1
C145.4	3	2	2	2	2	1	-	-	-	1	1	1
C145.5	3	3	2	2	2	1	-	-	-	1	1	2
C145.6	3	3	2	3	2	2	-	-	-	1	1	2

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP103:Multimedia Application Lab

School: SET		**Batch: 2018-2022**	
CSE/IT		**Current Academic Year: 2018**	
		Semester: II	
1	Course Code	**CSP103**	
2	Course Title	Multimedia application Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Core	
5	Course Objective	Provide the knowledge to design and develop web application .Students will gain the skills and project-based experience needed for entry into web application and development careers	
6	Course Outcomes	On successful completion of this module students will be able to: 1. Use critical thinking skills to create web pages 2. Design interactive web pages 3. Design web pages/site having validation on user data access. 4. Develop web site for small business and organization or for individual	
7	Course Description	This course is an overview of the modern technologies used for the Web development.	
8	Outline syllabus		CO Mapping
	Unit 1		
		1. Write HTML code to display your bio-data 2. Write HTML code to show the working of hyperlinks.Create a Home page having three links: About Us, Our Services and Contact Us. Create separate web pages for the three links. 3. Write HTML code to create unordered list. Create disc bullets, circle bullets, square bullets lists of the subjects you are studying in CURRENT semester	CO1,CO2
	Unit 2		

		1. Write HTML code to create ordered list. Create numbered, uppercase list, lowercase list, roman numbered list, lower roman numbered list of the subjects you are studying in CURRENT semester. 2. Write HTML code to perform Image mapping using image tags.Set image height/width, border, alignment properties. 3. Write a HTML code to create Table to store information regarding employee using Table tags. Employee name, Id, DOJ, Experience. Create table for 5 employees.	CO2
	Unit 3		
		1. Write a HTML code for student registration using form tags. 2. Write a HTML code to show the working of Canvas tag. 3. Write HTML code to embed multimedia: audio and video into web page	CO2,CO3
	Unit 4		
		1. Write an HTML code to demonstrate the usage of inline CSS. 2. Write an HTML code to demonstrate the usage of internal CSS. 3. Write an HTML code to demonstrate the usage of external CSS.	CO3
	Unit 5		
		1. Write an HTML code to design an image gallery. 2. Design horizontal navigation bar for XYZ companyhome; services; investors; past record &achievements;careers; contact us. Careers have dropdown menu >Departmentwise>Countrywise>Profile Wise 3. Write Javascript code to design calculator to perform subtraction, multiplication, division, addition operation. 5.	CO3,CO4
	Mode of examination	Jury/Practical/Viva	
	Weightage Distribution	CA / MTE / ETE 60% / 0% / 40%	
	Text book/s*	Ivan Bayross,"HTML,DHTML, JavaScript, Perl & CGI", BPB Publication	
	Other References	1. Rick Delorme," Programming in HTML5 with JavaScript and CSS3", Microsoft	

Syllabus: CSE 247, Computer organization and architecture

School: SET		**Batch: 2018**	
Program: B.Tech		**Current Academic Year: 2018-2019**	
Branch: CSE/IT		**Semester: III**	
1	Course Code	CSE247 Course Name	
2	Course Title	Computer Organization and Architecture	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	Compulsory	
5	Course Objective	To impart an understanding of the internal organization and operations of a computer and to introduce the concepts of processor logic design and control logic design.	
6	Course Outcomes	Upon successful completion of this course, the student will be able to: **CO1:**Identify the basic structure and functional units of a digital computer. **CO2:**Study the design of arithmetic and logic unit and implementation of fixedpoint and floating-point arithmetic operations **CO3:**Understand basic processing unit and organization of simple processor including instruction sets, instruction formats and various addressing modes **CO4:**Study the two types of control unit techniques **CO5:**Describe hierarchical memory systems including cache memories and select appropriate interfacing standards for I/O devices.	
7	Course Description	This course discusses the basic structure of a digital computer and used for understanding the organization of various units such as control unit, Arithmetic and Logical unit and Memory unit and I/O unit in a digital computer.	
8	Outline syllabus		CO Mapping
	Unit 1	**Computer Organization and Design**	
	A	Functional units of digital system and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register bus and memory transfer	CO1
	B	Register transfer Language, Registertransfer, Bus & memory transfer, Logic micro operations, Shift micro operation.	CO1
	C	Adder-Subtractor- Incrementor, Arithmetic unit, Logic unit.	CO1
	Unit 2	**Computer Arithmetic**	
	A	Representation of numbers in 1's and 2's complement, Addition and subtractionofsigned numbers.	CO1, CO2
	B	Binary Multiplier, Multiplication: Signed operand multiplication, Booth algorithm	CO1, CO2

	C	Floating point arithmetic representation: addition and subtraction.	CO1, CO2
	Unit 3	**Processor Organization**	
	A	General register organization, stack organization	CO3
	B	Instruction set architecture of a CPU - registers, Instruction types, formats, instruction execution cycle	CO3
	C	Addressing modes, RISC/CISC	CO3
	Unit 4	**Control Unit**	
	A	Introduction to CPU design, Instruction interpretation and execution, Micro-operation and their register transfer language (RTL) specification	CO3, CO4
	B	Hardwired control CPU design	CO3, CO4
	C	Microprogrammed control CPU design	CO3, CO4
	Unit 5	**Memory and I/O**	
	A	RAM/ROM/Flash memory, Designing Memory System using RAM and ROM chips	CO1, CO5
	B	Cache memory: Memory hierarchy, performance Considerations, mapping techniques	CO1, CO5
	C	Input Output: Isolated vs. Memory mapped I/O, Programmed I/O, Interrupt driven I/O, Direct Memory Access	CO1, CO5
	Mode of examination	Theory	
	Weightage Distribution	CA: 30% / MTE: 20% / ETE: 50%	
	Text book/s*	1. M. Morris Mano, Computer System Architecture, Pearson	
	Other References	1. C. Hamacher, Z. Vranesic and S. Zaky, "Computer Organization", McGrawHill, 2002. 2. W. Stallings, "Computer Organization and Architecture - Designing for Performance", Prentice Hall of India, 2002. 3. D. A. Patterson and J. L. Hennessy, "Computer Organization and Design - The Hardware/Software Interface", Morgan Kaufmann,1998. 4. J.P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998.	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. Identify the basic structure and functional units of a digital computer.	PO1, PO2, PO3, PO6, PO12, PSO5

2.	CO2. Study the design of arithmetic and logic unit and implementation of fixedpoint and floating-point arithmetic operations	PO1, PO2, PO3, PO6, PO12, PSO5
3.	CO3. Understand basic processing unit and organization of simple processor including instruction sets, instruction formats and various addressing modes	PO1, PO2, PO3, PO6, PO12, PSO5
4.	CO4. Study the two types of control unit techniques	PO1, PO2, PO3, PO4, PO6, PO12, PSO4, PSO5
5.	CO5. Describe hierarchical memory systems including cache memories and select appropriate interfacing standards for I/O devices	PO1, PO2, PO3, PO6, PO12, PSO4, PSO5

PO and PSO mapping with level of strength for Course Name Computer Organization and Architecture **(Course Code CSE 247)**

	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CSE247	CO1	3	1	1	-	-	2	-	-	-	-	-	2	-	-	-	-	2
	CO2	3	3	3	-	-	3	-	-	-	-	-	3	-	-	-	-	3
	CO3	3	2	3	-	-	2	-	-	-	-	-	3	-	-	-	-	3
	CO4	3	2	2	-	-	1	-	-	-	-	-	3	-	-	-	3	2
	CO5	3	3	3	-	-	2	-	-	-	-	-	3	-	-	-	3	2

1-Slight (Low) **2-Moderate (Medium)** **3-Substantial (High)**

Syllabus: CSE 242, Data Structures

School: SET		**Batch :**2018-2022
Program: B.Tech.		**Current Academic Year:** 2018-19
Branch:CSE/IT		**Semester:**III
1	Course Code	CSE242
2	Course Title	Data Structures
3	Credits	3
4	Contact Hours (L-T-P)	3-0-0
	Course Status	Core
5	Course Objective	1. Learn the basicconcepts of Data Structures and algorithms. 2. Design and Implementation of Various Basic and Advanced Data Structures. 3. Learn the concepts of various searching, Sorting and Hashing Techniques. 4. Choose the appropriate data structures and algorithm design method for a specified application.

6	Course Outcomes	CO1: Implement operation like traversing, insertion, deletion, searching etc. on various data structures. CO2: Evaluate algorithms and data structures in terms of time and memory complexity. CO3 Understand the application of linear data structure(s) to solve various problems CO4: Understand the application of non linear data structure(s) to solve various problems. CO5: Implement and know when to apply standard algorithms for searching and sorting. CO6: Choose the most appropriate data structure(s) for a given problem	
7	Course Description	This course starts with an introduction to data structures with its classification, efficiency of different algorithms, array and pointer based implementations and Recursive applications. As the course progresses the study of Linear and Non-Linear data structures are studied in details. The course talks primarily about Linked list, stacks, queue, Tree structure, Graphs etc. This Course also deals with the concept of searching, sorting and hashing methods.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Data Structure – Definition, Operations and Applications, Abstract Data Types, Algorithm – Definition, Complexity and Asymptotic notations, Time and Space tradeoffs.	CO1
	B	Programming Principles – The art of writing programs, Recursion – Definition, Examples- Tower of Hanoi problem, Fibonacci Series.	CO1
	C	Arrays: Implementation of One Dimensional Arrays, Multidimensional Arrays, Pointer Arrays. Applications of Arrays, Address Calculation, Matrix Operations, Dense and Sparse Data in Arrays.	CO1
	Unit 2	**Linked List**	
	A	Concept of Linked List, Garbage Collection, Overflow and Underflow, Array Implementation and Dynamic Implementation of Singly Linked Lists	CO2
	B	Array Implementation and Dynamic Implementation of Doubly Linked List, Circularly Linked List	CO3
	C	Operations on a Linked List- Insertion, Deletion, Traversal, Polynomial Representation and Addition	CO2
	Unit 3	**Stack and Queue**	
	A	Stacks: Definitions, Primitive operations, Application of stacks – Conversion of Infix Expression to Postfix form, Evaluation of Postfix Expressions	CO3
	B	Queues: Definition, Primitive Operations, Implementation of Circular Queues, Priority Queues	CO3
	C	Deques, Application of Queues. Implementation - Linked Stacks, Linked Queues.	CO3

	Unit 4	**Tree and Graphs**			
	A	Trees: Terminologies, Binary tree, Representation,Applications – Operations on Binary Search Trees, Binary Search Algorithm, B Trees - Operations on a B Tree, Applications of B-trees.AVL Tree			CO4, CO6
	B	Graph: Terminology, Representation, Traversals- Depth First Search, Breadth First Search.			CO4, CO6
	C	Graph Applications – Minimum Spanning Trees – Prim's and Kruskal's Algorithms, Shortest Path – Dijkstra's andFlyodWarshall's Algorithm			CO4, CO6
	Unit 5	**Searching, Sorting and Hashing**			
	A	Implementation and Analysis - Linear search, Binary Search			CO5
	B	Implementation and Analysis- Bubble Sort, Merge Sort, Insertion Sort. Implementation and Analysis - Quick Sort, Selection Sort, Heap Sort,			CO5
	C	Hashing: Concepts and Applications, Hash Functions, Methods of Resolving Clashes			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Lipschutz, "Data Structures" Schaum's Outline Series, TMH			
	Other References	1. Aaron M. Tenenbaum, Yedidyah Langsam and Moshe J. Augenstein "Data Structures Using C and C++" , PHI 2. Horowitz and Sahani, "Fundamentals of Data Structures", Galgotia Publication 3. Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with applications", McGraw Hill 4. R. Kruse etal, "Data Structures and Program Design in C", Pearson Education 5. G A V Pai, "Data Structures and Algorithms", TMH			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	Handle operation like traversing, insertion, deletion, searching etc. on various data structures.	PO1, PO3, PSO3
2.	Evaluate algorithms and data structures in terms of time and memory complexity.	PO1, PO2, PO3, PSO1, PSO2
3.	Understand the application of linear data structure(s) to solve various problems	PO2, PO3, PO4, PO9, PSO1, PSO2

Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CSE 242	Data Structures Using C																	
	CO1	2		1										2		1		
	CO2		2		1					2				3	1			
	CO3	3	3	2						3					3			
	CO4	3	3	2	3					3					3			
	CO5		1	2												2		
	CO6			3	3	2										3		

4.	Understand the application of non linear data structure(s) to solve various problems.	PO3, PO9, PSO1, PSO2
5.	Implement and know when to apply standard algorithms for searching and sorting.	PO1, PO2, PO9, PSO1,PSO3
6.	Choose the most appropriate data structure(s) for a given problem	PO1, PO2, PO4, PO9, PSO1

1-Slight (Low) **2-Moderate (Medium)** **3-Substantial (High)**

Syllabus: CSP 242, Data Structure Lab

School: SET		**Batch: 2018-2022**
Program: B.Tech.		**Current Academic Year: 2018-19**
Branch: CSE/IT		**Semester: III**
1	Course Code	CSP242
2	Course Title	Data Structure Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	1. Learn the basicconcepts of Data Structures and algorithms. 2. Design and Implementation of Various Basic and Advanced Data Structures. 3. Learn the concepts of various searching, Sorting and Hashing Techniques. 4. Choose the appropriate data structures and algorithm design method for a specified application.

6	Course Outcomes	CO1: Handle operation like traversing, insertion, deletion, searching etc. on various data structures. CO2 Implement the application of linear data structure(s) to solve various problems CO3: Implement the application of non linear data structure(s) to solve various problems. CO4: Implement and know when to apply standard algorithms for searching and sorting. CO5: Choose the most appropriate data structure(s) for a given problem			
7	Course Description	This course starts with an introduction to data structures with its classification, efficiency of different algorithms, array and pointer based implementations and Recursive applications. As the course progresses the study of Linear and Non-Linear data structures are studied in details. The course talks primarily about Linked list, stacks, queue, Tree structure, Graphs etc. This Course also deals with the concept of searching, sorting and hashing methods.			
8	Outline syllabus				CO Mapping
	Unit 1	**Introduction**			**CO1**
		Program to implement Operation on Array such as Traversing, Insertion & Deletion operation			**CO1**
		Program based on Recursion such as Towers of Hanoi, Fibonacci series etc.			CO1
	Unit 2	**Linked List**			**CO2**
		Program to implement different operation on the following linked list: Singly, Doubly and circular linked list.			CO2
	Unit 3	**Stack & Queue**			**CO3**
		Program to Implement Stack operation using Array and Linked list			**CO3**
		Program to convert infix expression to post fix expression			**CO3**
		Program on Evaluation of Post fix expression			**CO3**
		Program to implement queue operation using array and linked list			**CO3**
		Program to implement circular queue and deque.			**CO3**
	Unit 4	**Tree & Graph**			**CO4, CO6**
		Program to implement binary tree and BST.			**CO4, CO6**
		Program to implement MST and shortest path algorithm.			CO4, CO6
	Unit 5	**Searching, Sorting & Hashing**			**CO5**
		Program on Searching and Hashing			**CO5**
		Program on Sorting.			CO5
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

	Text book/s*	1. Lipschutz, "Data Structures" Schaum's Outline Series, TMH	
	Other References	1. Aaron M. Tenenbaum, Yedidyah Langsam and Moshe J. Augenstein "Data Structures Using C and C++" , PHI 2. Horowitz and Sahani, "Fundamentals of Data Structures", Galgotia Publication 3. Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with applications", McGraw Hill 4. R. Kruse etal, "Data Structures and Program Design in C", Pearson Education 5. G A V Pai, "Data Structures and Algorithms", TMH	

Syllabus: CSE 243, Object Oriented Programming Using JAVA

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year: 2018-2019**	
Branch:CSE		**Semester:III**	
1	Course Code	CSE243	Course Name
2	Course Title	Object Oriented Programming Using JAVA	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	UG	
5	Course Objective	**1.**GainknowledgeaboutbasicJavalanguagesyntaxandsemanticstowriteJavaprogramsanduse concepts such as variables, conditional and iterative execution methods etc. **2.** Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. **3.** Understand the principles of inheritance, packages and interfaces.	
6	Course Outcomes	Students will be able to: CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem. CO2. Write Java programs using OOP principles and demonstrate the concepts of polymorphism and inheritance	

		CO3.Create Java programs to implement error-handling techniques using exception handling. CO4. Construct a professional looking package for business project using java doc.	
7	Course Description	Basic *Object Oriented Programming* (*OOP*) concepts, including objects, *classes*, methods, parameter passing, information hiding, inheritance and polymorphism are introduced and their implementations *using Java* are discussed.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Object Oriented Paradigm**	
	A	History, The meaning of Object Orientation, Features of Java, OOPs concepts object identity,	CO1, CO2
	B	Encapsulation, information hiding, polymorphism inheritance Java virtual machine,	CO1, CO2
	C	Byte Code, Architecture of JVM, Class Loader Execution Engine, Garbage collection.	CO1, CO2,CO3
	Unit 2	**Introduction to Java**	
	A	Java development Kit(JDK),Introduction to IDE for java development, Setting java environment(steps for path and CLASSPATH setting).	CO1, CO2,CO4
	B	Constants, Variables, Data Types, Operators, Expressions.	CO1, CO2,CO4
	C	Decision Making Branching, Loops, command line argument.	CO1, CO2,CO4
	Unit 3	**Class & Object**	
	A	Arrays, Type conversion & casting, Input from keyboard, Classes Objects.	CO1,CO2,CO3
	B	Methods Method overloading, Constructors, Constructors overloading.	CO1,CO2,CO3
	C	static keyword, Introducing Access Control, String handling.	CO4,CO2
	Unit 4	**Inheritance, package and Interface Inheritance Implementation**	
	A	Multilevel Hierarchy, Overriding methods, Polymorphism, use of this and super, Constructor call in inheritance Abstract class and method,	CO1,CO2,CO3
	B	Final class, method and variable, Implementing Interface, Concept of multiple inheritance in Java, Wrapper class	CO1,CO2,CO3
	C	Packages: User defined packages, built-in packages (java.lang package), Access modifiers.	CO1,CO2,CO3
	Unit 5	**Exception and Multithreading**	
	A	Input/output: Exploring java.io, File,StreamClassesByte Stream Classes and Character stream Classes,.	CO1,CO2,CO3
	B	reading and writing in file, Introduction to Exception Handling, Introduction to try, catch, Finally , throw and throws, Checked and Unchecked exceptions, User define exception	CO1,CO2,CO3

	C	Java's Built-in Exception Chained Exception, Introduction to Multithreading: Creating thread using Runnable interface and Thread class, Thread life cycle, Thread priorities, sleep method.			CO1,CO2,CO3
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1.Schildt H, "The Complete Reference JAVA2", TMH			
	Other References	1. Balagurusamy E, "Programming in JAVA", TMH 2. Professional Java Programming:BrettSpell,WROX Publication			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem.	PO1,PO2,PO3,PO4,PSO1
2.	CO2:WriteJavaapplicationprogramsusingOOPprinciplesandproperDemonstrate the concepts of polymorphism and inheritance	PO1, PO3, PO4, PSO2
3.	CO3. How to test, document and prepare a professional looking package for each business project using java doc.	PO1,PO2,PO3,PO4
4.	CO3. Write Java programs to implement error handling techniques using exception handling.	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Object Oriented Programming using JAVA (Course code CSE 243)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 243, Object Oriented Programming Using JAVA Lab

School: SET		**Batch: 2018**
Program: B.Tech		**Current Academic Year:**
Branch:CSE		**Semester:III**
1	Course Code	CSP243
2	Course Title	Object oriented programming using JAVA Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	1. Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc. 2. Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms. 3. Understand the principles of inheritance, packages and interfaces.
6	Course Outcomes	Students will be able to: CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem. CO2. Write Java application programs using OOP principles and proper Demonstrate the concepts of polymorphism and inheritance CO3. Write Java programs to implement error handling techniques using exception handling. CO4. How to test, document and prepare a professional looking package for each business project using javadoc.
7	Course Description	Basic Object Oriented Programming (OOP) concepts, including objects, classes, methods, parameter passing, information hiding, inheritance and polymorphism are introduced and their implementations using Java are discussed.

8	Outline syllabus				CO Mapping
	Unit 1	**Practical based on classes and objects**			CO1,CO2
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 2	**Practical based on constructors**			CO1,CO2
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 3	**Practical based on inheritance and package**			CO2, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 4	**Practical based on Polymorphism**			CO1, CO2
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 5	**Practical based on Exception handling**			CO1, CO3
		Sub unit - a, b and c detailed in Instructional Plan			
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	1.Schildt H, "The Complete Reference JAVA2", TMH			
	Other References	1. Balagurusamy E, "Programming in JAVA", TMH 2. ProfessionalJavaProgramming:BrettSpell,WROX Publication			

Syllabus: CSP 297, Project Based Learning -1

School: SET		**Batch : 2018 - 2022**	
Program: B.Tech		**Current Academic Year: 2018-2019**	
Branch: CSE / IT		**Semester: 3rd**	
1	Course Code	**CSP297**	Course Name: Project Based Learning -1
2	Course Title	Project Based Learning -1	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	1.To align student's skill and interests with a realistic problem or project 2.To understand the significance of problem and its scope 3.Students will make decisions within a framework	
6	Course Outcomes	Students will be able to: CO1: Acquire practical knowledge within the chosen area of technology for project development CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach	

		CO3: Discuss and accumulate the background information CO4: Develop effective communication skills for presentation of project related activities CO5: Contribute as an individual or in a team in development of technical projects CO6: Prepare a technical report based on the project.			
7	Course Description	In PBL-1, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set of specifications and all subjects of that Semester.			
8	Outline syllabus				CO Mapping
	Unit 1	Problem Definition, Team/Group formation and Project Assignment.			CO1, CO2
	Unit 2	Finalizing the problem statement, resource requirement, if any and design of the proposed project. Develop a block diagram and flowchart of proposed system algorithm.			CO1, CO2
	Unit 3	Implementation work under the guidance of a faculty member and obtain the appropriate results.			CO1, CO2, CO3
	Unit 4	Demonstrate and execute Project with the team.			CO3, CO4
	Unit 5	The presentation, report, work done during the term supported by the documentation, forms the basis of assessment.			CO4, CO5, CO6
		Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References. Presentation – PBL-1			
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: Acquire practical knowledge within the chosen area of technology for project development	PO1, PO2, PO4, PO9, PO10, PO11, PO12

2.	CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: Discuss and accumulate the background information	PO1, PO2, PO5, PO9, PO10, PO11, PO12
4.	CO4: Develop effective communication skills for presentation of project related activities	PO1, PO2, PO6, PO9, PO10, PO11, PO12
5.	CO5: Contribute as an individual or in a team in development of technical projects	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12
6.	CO6: Prepare a technical report based on the project.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Project Based Learning -1 (Course Code CSP297)

	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CSE297	CO1	3	3	-	3	-	-	-	-	3	3	2	3
	CO2	3	2	-	3	-	-	2	-	3	3	2	3
	CO3	3	2	-	-	2	-	-	-	3	3	2	3
	CO4	3	3	-	-	-	2	-	-	3	3	2	3
	CO4	3	3	2	2	2	2	3	3	3	3	2	3
	CO4	3	3	2	2	2	2	3	3	3	3	2	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 299, Industrial Internship-1

School: SET		**Batch : 2018**	
Program:B.Tech		**Current Academic Year:**	
Branch: CSE		**Semester:III**	
1	Course Code	CSP299	Course Name
2	Course Title	Industrial Internship-1	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	UG	

5	Course Objective	1. Acquire knowledge of the industry in which the internship is done. 2. Apply knowledge and skills learned in the classroom in a work setting. 3. To decide the future application areas of Computer Science and Engineering.	
6	Course Outcomes	CO1. An ability to apply knowledge of mathematics, science, and engineering CO2. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability CO3. An ability to function on multidisciplinary teams CO4. An ability to identify, formulate, and solve engineering problems CO5. An understanding of professional and ethical responsibility CO6. Understanding the impact of engineering solutions in a global, economic, environmental, and societal context	
7	Course Description	An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting.	
8	Outline syllabus		CO Mapping
	Unit 1	Submission of Internship Proposal to be approved by academic advisor. For that students will select the company and field, ideally at the end of the first year.	CO1
	Unit 2	The Student will submit the work plan approved by the supervising faculty at the university and the internship supervisor for the organisation offering the internship.	CO2
	Unit 3	The student will do project implementation during Internship under the guidance of the Program Director of the Host Organization. it will be further supervised by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project.	CO3,CO4
	Unit 4	Submission of evaluation form and final report completed by the intern.	CO4,CO6
	Unit 5	Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee.	CO5

	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	NIL	40%	
	Text book/s*	NA			
	Other References	NA			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. An ability to apply knowledge of mathematics, science, and engineering	PO1, PO2, PO12, PSO4
2.	CO2. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	PO1, PO12, PSO1, PSO4
3.	CO3. An ability to function on multidisciplinary teams	PO1, PO2, PO12, PSO2, PSO4
4.	CO4. An ability to identify, formulate, and solve engineering problem.	PO1, PO12, PSO2, PSO4
5.	CO5. An understanding of professional and ethical responsibility.	PO1, PO6, PO8, PO12, PSO2, PSO4

PO and PSO mapping with level of strength for Industrial Internship(Course Code CSP 299)

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO 3	PSO 4	PSO 5
CO1	3	2	-	-	-	-	-	-	-	-	-	3	3	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	3	-	2	-	3	-
CO4	3	-	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO5	3	-	-	-	-	2	-	2	-	-	-	3	-	3	-	3	-

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 244, Principles of Operating System

School: SET	**Batch : 2018-2022**

Program: B.Tech		**Current Academic Year: 2018-19**	
Branch: CSE		**Semester: IV**	
1	Course Code	**CSE 244** | Course Name: Principles of Operating System	
2	Course Title	Principles of Operating System	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Core	
5	Course Objective	1. This course introduces the challenges for designing the operating systems. 2. Includes different design principles and algorithms. 3. Evaluation of algorithms proposed. 4. Implementation of algorithms and utilities.	
6	Course Outcomes	Students will be able : **CO1:**To Understand the basic concept of Operating system. **CO2:**Explore process management concepts including scheduling, synchronization, deadlocks **CO3:** To understand and implement algorithms in resource allocation and utilization. **CO4:** To integrate and interpret effectiveness, efficiency of algorithms used for resource management of operating systems.	
7	Course Description	This course introduces the design principles of operating systems, resource management, identifying challenges and applying respective algorithms.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Operating System Concepts and functions, Comparison of different Operating system	CO1
	B	Types of Operating Systems (Batch, Multiprogramming ,Multi Tasking , Multiprocessing, Distributed and Real Time Operating System)	CO1
	C	Operating System Structure(Monolithic, Layered and Microkernel), Operating System Services	CO1
	Unit 2	**Process Synchronization**	
	A	Process Concepts (PCB, Process States , Process Operations, Inter process communication)	CO1, CO2
	B	Critical Section problem & their solutions, Introduction to Semaphores	CO1, CO2
	C	Classical Problems of Synchronization(Producer Consumer Problem, Readers Writer Problem, Dining philosophers problem)	CO1, CO2
	Unit 3	**CPU Scheduling**	
	A	Concept , Types of schedulers(Short term, Long term, Middle term), Dispatcher, Performance Criteria	CO1,CO2

	B	CPU Scheduling Algorithms(FCFS, SJF, Priority, Round Robin, Multilevel Queue, Multilevel feedback Queue)			CO1,CO2,CO3,CO4
	C	Deadlock concepts & Handling Techniques(Avoidance, Prevention and Detection & Recovery)			CO1,CO2,CO3,CO4
	Unit 4	**Memory Management**			
	A	Memory Hierarchy, Memory Management Unit			CO1,CO2,CO3
	B	Paging, Segmentation			CO1,CO2,CO3
	C	Virtual memory concept, demand paging, Page replacement algorithms(FCFS, Optimal, LRU)			CO1,CO2,CO3
	Unit 5	**INPUT-OUTPUT Management**			
	A	Input –Output interface, Modes of data transfer(Programmed, interrupt and DMA)			CO1,CO2,CO3
	B	Disk structure , Disk scheduling(FCFS,SSTF, SCAN, LOOK,C-SCAN, C-LOOK)			CO1,CO2,CO3,CO4
	C	File Concept ,File operations, File Directories, Case study of Windows Operating System			CO1,CO2,CO3
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	2. Silberschatz G, *Operating System Concepts*, Wiley			
	Other References	1. W. Stalling, "Operating System", Maxwell Macmillan 2. Tannenbaum A S, *Operating System Design and Implementation*, Prentice Hall India 3. Milenkovic M, *Operating System Concepts*, McGraw Hill			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** To identify the challenges and apply suitable algorithms for them.	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:** To assess the strengths and weaknesses of the algorithms.	PO1, PO3, PO4, PSO2
3.	**CO3:** To understand and implement algorithms in resource allocation and utilization.	PO1,PO2,PO3,PO4
4.	**CO4:** To integrate and interpret effectiveness, efficiency of algorithms used for resource management of operating systems.	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Principles of Operating System (Course Code CSE 244)

	Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4	PSO5
CSE244	CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
	CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
	CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
	CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 244, Principles of Operating System Lab

School: SET		**Batch: 2018**	
Program: B.Tech		**Current Academic Year: 2018-19**	
Branch: CSE		**Semester: IV**	
1	Course Code	**CSP 244**	
2	Course Title	Principles of operating System Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status		
5	Course Objective	Introduces different type operating systems, functions of operating systems, working in a Unix/Linux and Windows system, writing programs on Process management and file management.	
6	Course Outcomes	CO1: Working with single user multi task and multi-user multi-tasking environment. CO2: Identify and use utilities of Windows & Unix operating systems CO3: Use the resources of operating system i.e. process management and file management CO4: Writing programs on Process creation, multiple process creation, process synchronization, file operations and file buffering.	
7	Course Description	The course is designed to make the students research/industry ready as operating systems are indispensable for the systems used in industries/research organizations. New operating systems for different gadgets are launched in last few years. So the students will get the design principles operating system in this course.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
		Illustration of Different types of operating system: Single user Multi task, Multi user Multi task	CO1
		Basic Windows features & Unix commands.	CO2

	Unit 2	**Processes**			
		Process basics: Creating processes using fork( ), the parent-child processes PID, PPID, process states: creating orphan, zombie processes.			CO2, CO3, CO4
	Unit 3	**Process Synchronization**			
		Creating multiple processes, Process table, use the command ps with –el, Synchronization of processes by using sleep( ) & wait( ), background process,			CO3, CO4
	Unit 4	**Files**			
		Basic file operations, Programs for File operations, sharing data between processes using files.			CO3, CO4
	Unit 5	**File Buffering**			
		File descriptor table, system file table, file pointer, buffer accessing block wise, use the functions: fopen( ), fread( ), ftell( ), lseek( ), fflush( ) etc.			CO3, CO4
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	1. Sumitabha Das, “Unix Concepts and Applications”, Tata McGraw Hill.			
	Other References	1. Unix: The complete Reference, Kenneth Rosen et.al., TMH 2. Unix ‘C’ Odessey, Meeta Gandhi et.al. BPB			

Course outline
This course introduces the features of GUI i.e. Windows operating system as well as the CUI i.e. the commands used in Unix, so that the students will be familiar with both GUI & CUI environment of operating systems. As the course progresses the students will learn to write programs for process management and file operations. Further the students can implement the algorithms studied in theory by writing programs using the above principles and skills.

Course Evaluation	
Attendance	None
Any other	CA judged on the practical conducted in the lab , weightage may be specified
References	
Text book	1. Sumitabha Das, “Unix Concepts and Applications”, Tata McGraw Hill.
Other References	1. Unix: The complete Reference, Kenneth Rosen et.al., TMH 2. Unix ‘C’ Odessey, Meeta Gandhi et.al. BPB
Software	Windows, Unix / Any Unix family OS i.e. Linux

Syllabus: CSE 245, Computer Networks

School: SET		**Batch :2018-2022**	
Program: B.tech		**Current Academic Year: 2018-2019**	
Branch:CSE		**Semester: 4**	
1	Course Code	CSE245 | Course Name: B. Tech	
2	Course Title	**Computer Networks**	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Compulsory	
5	Course Objective	1. Provide students with an overview of networking 2. Gain insight into the issues, challenges and work at all level of reference models 3. Provide the students with practice on applying network design 4. Enhance students communication and problem solving skills	
6	Course Outcomes	Students will be able to: **CO1:**Demonstrate and differentiate working of all layers of the OSI Reference Model and TCP/IP model **CO2:**Investigate and explore fundamental issues driving network design including error control, IP addressing, access control, flow and congestion control **CO3:**Have a basic knowledge of the use ofcryptography and network security; **CO4:**Understand and analyze working of various routing algorithms	
7	Course Description	To familiarize with the basic taxonomy and terminology of computer networking area.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Introduction to computer networks, applications and uses, classification of Networks based on topologies, geographical distribution and communication techniques	CO1, CO2

	B	**Reference models:** OSI model, TCP/IP model , Overview of Connecting devices (Hub, Repeaters, Switches, Bridges, Routers, Gateways)	CO1, CO2
	C	**Transmission Media:**wired , wireless, Multiplexing techniques- FDM, TDM	CO1, CO2
	Unit 2	**Data Link Layer**	
	A	Functions, Framing, Error Control-Error correction codes(Hamming code),Error Detection codes(Parity Bit, CRC)	CO1, CO2
	B	Flow Control- Stop and Wait Protocol, Sliding window –Goback N and Selective repeat(ARQ)	CO1, CO2
	C	MAC- Sub-layer Protocols: ALOHA, CSMA, CSMA/CD protocols, IEEE Standards 802.3, 802.4,802.5	CO1, CO2
	Unit 3	**Network Layer**	
	A	Design issues , IPV4addressing basics and Header format, CIDR, sub-netting and sub-masking	CO1,CO2
	B	Routing, optimality Principle Routing protocols-, Shortest path, flooding, distance vector routing , link state routing	CO1,CO2,CO4
	C	Congestion control-Leaky bucket , Token Bucket, jitter control	CO1,CO2
	Unit 4	**Transport Layer**	
	A	Need of transport layer with its services, Quality of service, connection oriented and connection less	CO1,CO2
	B	Transmission Control Protocol: Segment structure and header format, TCP Connection Management, Flow Control	CO1,CO2
	C	TCP congestion control, Internet Congestion Control Algorithm, Overview of User Datagram Protocol (UDP)	CO1,CO2
	Unit 5	**Application Layer**	
	A	Domain Name System (DNS), HTTP, FTP, SMTP	CO1,CO2
	B	Network Security services, cryptography, Symmetric versus Asymmetric cryptographic algorithms- DES, and RSA	CO1,CO2,CO3
	C	Application of Security in Networks: Digital signature	CO1,CO2,CO3
	Mode of examination	Theory	
	Weightage Distribution	CA / MTE / ETE 30% / 20% / 50%	
	Text book/s*	9. Tanenbaum, A.S." Computer Networks", 4th Edition, PHI	
	Other References	1. Forouzan, B.., "Communication Networks", TMH, Latest Edition 2. W. Stallings, "Data and Computer Communication" Macmillan Press	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)

1.	**CO1:** Demonstrate and differentiate working of all layers of the OSI Reference Model and TCP/IP model	PO11,PO12,PSO2,PSO3,PSO4
2.	**CO2:**Investigate and explore fundamental issues driving network design	PO1,PO3,PO4,PO5,PO7,PO10,PO11PO12,PSO4
3.	**CO3:**Have a basic knowledge of the use of cryptography and network security;	PO1,PO2,PO4,PO6,PO7,PO8,PO10,PSO1,PSO3
4.	**CO4:**Understand and analyze working of various routing algorithms	PO2,PO7,PSO2,PSO3

C S E 2 4 5	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
	CO1	-	-	-	-	-	-	-	-	-	-	1	3	-	2	3	1	-
	CO2	3	-	3	3	2	-	3	-	-	3	1	2	-	-	-	1	-
	CO3	2	3	-	2	-	2	3	2	-	2	-	-	1	-	3	-	-
	CO4	-	2	-	-	-	-	1	-	-	-	-	-	-	1	3	-	-

Syllabus: CSP 245, Computer Networks Lab

School: SET		**Batch: 2018-2022**
Program: B.Tech		**Current Academic Year: 2018**
Branch:CSE		**Semester: 4**
1	Course Code	CSP 245
2	Course Title	Computer Networks Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	• To interpret the working principle of various communication protocols • To identify the working difference between different topologies • To describe the concept of data transfer between nodes
6	Course Outcomes	By the end of this course you will be able to: CO1: To interpret the working principle of various network topologies CO2: To analyze ALOHA, CSMA,CSMA/CD for packet communication between nodes connected to common topology

		CO3: Investigate and explore fundamental issues in IP addressing and application layer. CO4: To distinguish different flow control mechanism over an unreliable network			
7	Course Description	Familiarize the student with the basic taxonomy and terminology of the computer networking area. Encapsulate basic understanding of networking in a way to use and apply.			
8	Outline syllabus				CO Mapping
	Unit 1	**Introduction**			
		Familiarization with Networking Components and devices: LAN Adapters, Hubs, Switches, Routers etc. To implement the token passing access in BUS-LAN, To implement the token passing access in RING-LAN.			CO1
	Unit 2	**Data link layer**			
		Implement the ALOHA protocol for packet communication between a number of nodes connected to a common bus , Implement the CSMA protocol for packet communication between a number of nodes connected to a common bus			CO2
	Unit 3	**Network Layer**			
		IP Addressing :sub netting, Super netting			CO3
	Unit 4	**Transport Layer**			
		Provide reliable data transfer between two nodes over an unreliable network using the stop and-wait protocol, Provide reliable data transfer between two nodes over an unreliable network using the slidingwindow go back N protocol.			CO4
	Unit 5	**Application Layer**			
		Implementation and study of Simple mail transfer protocol and file transfer protocol.			CO3
	Mode of examination	Jury/Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	10. Tanenbaum, A.S." Computer Networks", 4th Edition, PHI			
	Other References	3. Forouzan, B.., "Communication Networks", TMH, Latest Edition 4. W. Stallings, "Data and Computer Communication" Macmillan Press			

Syllabus: CSE 246, Database Management System

School:		**Batch : 2018-2022**	
Program: B.Tech		**Current Academic Year: 2018**	
Branch: CSE		**Semester: IV**	
1	Course Code	CSE246 Course Name	
2	Course Title	**Database Management System**	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status		
5	Course Objective	1.Develop the ability to design, 2. Implement and manipulate databases. 3. Introduce students to build data base management systems. 4. Apply DBMS concepts to various examples and real life applications.	
6	Course Outcomes	Students will be able to: 1. Apply the knowledge of databases to E-R modelling. 2. Apply the concept of Relational Database model to databasedesign. 3. Learn and apply Structured Query Language (SQL) for data definition and data manipulation. 4.Design a normalized databaseand able to perform transaction management and concurrency control.	
7	Course Description	This course introduces database design and creation using a DBMS product. Emphasis is on, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Databases:**	
	A	Introduction ofof DBMS, Characteristic of DBMS, Data Models, Database languages, Database Administrator, Database Users.	CO1
	B	Three Schema architecture of DBMS, Data Models,Hierarchical, Network ,Data independence and database language, DDL, DML, Data Modeling using Entity Relationship Model	CO1,CO2
	C	Strong Entity, Weak entity, Specialization and generalization, converting ER Model to relational tables.	CO1,CO2
	Unit 2	**Relational Database Language and Interfaces:**	
	A	Relational data model concepts ,Concept of keys, Mapping Constraints	CO3,CO2
	B	Null Values, Domain Constraints, Referential Integrity Constraints	CO3,CO2
	C	Unary Relational Operations: SELECT and PROJECT Relational Algebra Operations from Set Theory ,Binary Relational Operations: JOIN and DIVISION ,SQL.	CO3,CO2
	Unit 3	**Normalization in Design of Databases:**	
	A	Functional Dependency, Different anomalies in designing a Database, Normalization first	CO4,CO2

	B	second and third normal forms, BoyceCodd normal form, multi-valued dependencies			CO4,CO2
	C	fourth normal forms, Inclusion dependencies, loss less join decompositions			CO4,CO2
	Unit 4	**Transaction Management:**			
	A	Transaction processing system, schedule and recoverability, Testing of serializability,			CO4,CO2
	B	Serializability of schedules, conflict & view serializable schedule			CO4,CO2
	C	Recovery from transaction failures, deadlock handling.			CO4,CO2
	Unit 5	**Concurrency Control**			
	A	Two-Phase Locking Techniques for Concurrency Control , Concurrency Control Based on Timestamp Ordering			CO4,CO2
	B	Multiversion Concurrency Control Techniques ,Validation (Optimistic) Concurrency Control Techniques			CO4,CO2
	C	Granularity of Data Items and Multiple Granularity Locking			CO4,CO2
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Korth , Silberschatz&Sudarshan, Data base Concepts, Tata McGraw-Hill, Latest Edition			
	Other References	1.Elmasri, Navathe, Fundamentals of Database Systems, Pearson Education Inc. 2.Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to design, Implementation and Management, Pearson Education, Third Edition. 3.Jeffrey D. Ullman, Jennifer Windon, A first course in Database Systems, Pearson Education. 4.Date C.J., An Introduction to Database Systems, Addison Wesley.			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:**Apply the knowledge of databases to E-R modelling.	PO1,PO2,PO3,PO10,PSO12,PSO3
2.	**CO2:**Apply the concept of Relational Database model to databasedesign.	PO1, PO2, PO3, PS5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3,PSO5
3.	**CO3:** Learn and apply Structured Query Language (SQL) for data definition and data manipulation.	PO1,PO2,PO3,PO5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3PSO5
4.	**CO4:**Design a normalized databaseand able to perform	PO1, PO2,PO3, PO4,PO5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3, PSO4,PSO5

	transaction management and concurrency control.	

PO and PSO mapping with level of strength for Course Name Database Management System(Course Code CSE 246)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	-	-	-	-	-	-	3	-	2	-	-	1	-	-
CO2	3	3	3		3	-	-	-	2	3	2	1	3	3	3	-	3
CO3	3	3	3	-	3	-	-	-	3	1	3	3	2	2	3	--	3
CO4	3	3	3	2	3	-	-	-	3	1	3	3	3	3	3	2	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 246, Database management System Lab

School: SET		**Batch: 2018-2022**
Program: B.Tech		**Current Academic Year:**
Branch:CSE		**Semester: IV**
1	Course Code	CSP246
2	Course Title	Database Management System Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	• To Develop efficient SQL programs to access Oracle databases • Build database using Data Definition Language Statements • Perform operations using Data Manipulation Language statements like Insert, Update and Delete
6	Course Outcomes	By the end of this course you will be able to: CO1: Understandthe concept of SQL commands in DBMS CO2: Create SQL SELECT statements that retrieve any required data CO3: Perform operations using Data Manipulation Language statements like Insert, Update and Delete CO4: Manipulate your data to modify and summaries your results for reporting
7	Course Description	An introduction to the design and creation of relational databases. Create database-level applications and tuning robust business applications. Lab sessions reinforce the learning objectives and provide participants the opportunity to gain practical hands-on experience.
8	Outline syllabus	CO Mapping

	Unit 1	**Practical based Data types**			
		Classification SQL, Data types of SQL/Oracle			CO1,CO2
	Unit 2	**Practical based on DDL commands**			
		Create table , Alter table and drop table			CO1,CO2
	Unit 3	**DML commands and Aggregate functions**			
		Introduction about the INSERT, SELECT , UPDATE & DELETE command.,sum,avg,count,max,min			CO2,CO4
	Unit 4	**Practical based on Grouping Clauses GROUP BY ORDER BY & GROUP BY HAVING**			CO1,CO4
		Briefly explain Group by, order by ,having clauses with examples.			
	Unit 5	**Practical based on Sub- queries, JOINS**			CO1,CO4
		Related example of Sub- queries, Joins and related examples			
	Mode of examination	Jury/Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	1. Korth , Silberschatz& Sudarshan, Data base Concepts, Tata McGraw-Hill			
	Other References	11. Elmasri, Navathe, Fundamentals of Database Systems, Pearson Education Inc. 12. Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to design, Implementation and Management, Pearson Education, Latest Edition. 13. Jeffrey D. Ullman, Jennifer Windon, A first course in Database Systems, Pearson Education.			

Syllabus: CSE 248, Theory Of Computation

School: SET		**Batch : 2018-2022**	
Program: B.Tech		**Current Academic Year:2018-2019**	
Branch:CSE		**Semester:IV**	
1	Course Code	CSE-248	Course Name: Theory of Computation
2	Course Title	Theory of Computation	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Status		
5	Course Objective	The goal of this course is to provide students with an understanding of basic concepts in the theory of computation.	
6	Course Outcomes	Students will be able to: **CO1:** Formulate the concept of Automata and related terminology. **CO2:** Design DFA and NDFA and conversion from NDFA to DFA. **CO3:** Construct finite automata without output and with output. **CO4:**Implement regular expression and grammar corresponding to DFA and vice-versa	

		CO5: Design Push down Automata from Context Free Language or Grammar and vice-versa. **CO6:** Design Turing Machine for computational problems, Develop a clear understanding of un-decidability.	
7	Course Description	The course introduces some fundamental concepts in automata theory and formal languages including grammar, finite automaton, regular expression, formal language, pushdown automaton, and Turing machine. Not only do they form basic models of computation, they are also the foundation of many branches of computer science, e.g. compilers, software engineering, concurrent systems, etc. The properties of these models will be studied and various rigorous techniques for analyzing and comparing them will be discussed, by using both formalism and examples.	
8	Outline syllabus		CO Mapping
	Unit 1	**Finite Automata**	
	A	Introduction to languages, Kleene closures, Finite Automata (FA), Transition graph, Nondeterministic finite Automata (NFA), Deterministic finite Automata (DFA).	CO1, CO2
	B	Equivalence of NDFA and DFA, Construction of DFA from NFA and optimization of Finite Automata.	CO1, CO2
	C	Applications and Limitation of FA. (FAT tool).	CO1, CO2
	Unit 2	**Regular Expression and Finite Automata**	
	A	Regular Expression, Finite Automata with null move, Regular Expression to Finite Automata.	CO1, CO2,CO4
	B	Arden Theorem, Pumping Lemma for regular expressions.	CO1, CO2,CO4
	C	FA with output: Moore machine, Mealy machine and Equivalence.	CO1, CO2,CO3
	Unit 3	**REGULAR & CONTEXT FREE LANGUAGE**	
	A	Defining grammar, Chomsky hierarchy of Languages and Grammar. Ambiguous to Unambiguous CFG.	CO4
	B	Simplification of CFGs.	CO4
	C	Normal forms for CFGs, Pumping lemma for CFLs.	CO4
	Unit 4	**PUSH DOWN AUTOMATA**	
	A	Description and definition of PDA and Non-Deterministic PDA, Working of PDA.	CO5
	B	Acceptance of a string by PDA with final state and with Null store. Two stack PDA.	CO5
	C	Conversion of PDA into CFG, Conversion of CFG into PDA.	CO5
	Unit 5	**TURING MACHINE**	
	A	Turing machines (TM): Basic model, definition and representation, Language acceptance by TM.	CO6
	B	Turing machine as a computational machine, Halting problem of TM, Universal TM (Visual Turing machine).	CO6
	C	Modifications in TM, Undecidability of Post correspondence problem, Church's Thesis, Godel Numbering.	CO6
	Mode of examination	Theory	

	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. K.L.P. Mishra and N.Chandrasekaran, "Theory of Computer Science(Automata, Languages and Computation)", PHI			
	Other References	1.Peter Linz, "Formal Languages and Auomata", Narosa Publishing House 2.Hopcroft, Ullman, "Introduction to Automata Theory, Language and Computation", Narosa Publishing House			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** Formulate the concept of Automata and related terminology.	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:** Design DFA and NDFA and conversion from NDFA to DFA.	PO1, PO3, PO4, PSO2
3.	**CO3:** Construct finite automata without output and with output.	PO1,PO2,PO3,PO4
4.	**CO4:** Implement regular expression and grammar corresponding to DFA and vice-versa	PO9, PO10,PO11, PSO5
5	**CO5:** Design Push down Automata from Context Free Language or Grammar and vice-versa .	PO1,PO2,PO3,PO4,PSO1
6	**CO6:** Design Turing Machine for computational problems,Develop a clear understanding of un-decidability.	PO1,PO3,PO4,PSO2

PO and PSO mapping with level of strength for Course Name Theory of Automata **(Course Code CSE248)**

Cos	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3	PS O4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3
CO5	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO6	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 298, Project Based Learning(PBL) -2

School: SET		**Batch : 2018-2022**	
Program: B.Tech		**Current Academic Year: 2018-2019**	
Branch: CSE		**Semester: 4th**	
1	Course Code	**CSP298** Course Name: Project Based Learning - 2	
2	Course Title	Project Based Learning -2	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	4.To align student's skill and interests with a realistic problem or project 5.To understand the significance of problem and its scope 6.Students will make decisions within a framework	
6	Course Outcomes	Students will be able to: CO1: Acquire practical knowledge within the chosen area of technology for project development CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach CO3: Discuss and accumulate the background information CO4: Develop effective communication skills for presentation of project related activities CO5: Contribute as an individual or in a team in development of technical projects CO6: Prepare a technical report based on the project.	
7	Course Description	In PBL-2, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester.	
8	Outline syllabus		CO Mapping
	Unit 1	Problem Definition,Team/Group formation and Project Assignment.	CO1, CO2
	Unit 2	Description and design of the proposed project. Specifying resource requirement, if any.	CO1, CO2
	Unit 3	Implementation work under the guidance of a faculty member.	CO1, CO2, CO3
	Unit 4	Demonstrate and execute Project with the team.	CO3, CO4
	Unit 5	The presentation, report, work done during the term supported by the documentation, forms the basis of assessment.	CO4, CO5, CO6
		Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References. Presentation – PBL-2	

	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: Acquire practical knowledge within the chosen area of technology for project development	PO1, PO2, PO4, PO9, PO10, PO11, PO12
2.	CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: Discuss and accumulate the background information	PO1, PO2, PO5, PO9, PO10, PO11, PO12
4.	CO4: Develop effective communication skills for presentation of project related activities	PO1, PO2, PO6, PO9, PO10, PO11, PO12
5.	CO5: Contribute as an individual or in a team in development of technical projects	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12
6.	CO6: Prepare a technical report based on theproject.	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Project Based Learning -2 (Course Code CSP298)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	3	-	-	-	-	3	3	2	3
CO2	3	2	-	3	-	-	2	-	3	3	2	3
CO3	3	2	-	-	2	-	-	-	3	3	2	3
CO4	3	3	-	-	-	2	-	-	3	3	2	3
CO4	3	3	2	2	2	2	3	3	3	3	2	3
CO4	3	3	2	2	2	2	3	3	3	3	2	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 341, Design and Analysis of Algorithms

School: SET		**Batch :2018**	
Program:B.Tech		**Current Academic Year:**	
Branch:CSE		**Semester:V**	
1	Course Code	CSE 341 | Course Name: Design and Analysis of Algorithms	
2	Course Title	Design and Analysis of Algorithms	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	UG	
5	Course Objective	Objective of this course is to 1. Reinforce basic design concepts (e.g., pseudocode, specifications, top-down design) 2. Knowledge of algorithm design strategies 3. Familiarity with an assortment of important algorithms. 4. Enable students to analyze time and space complexity	
6	Course Outcomes	Students will be able to: **CO1:** Analyze the asymptotic performance of algorithms **CO2**: Write rigorous correctness proofs for algorithms. **CO3:** Demonstrate a familiarity with major algorithms and data structures **CO4:** Apply important algorithmic design paradigms and methods of analysis	
7	Course Description	This course introduces concepts related to the design and analysis of algorithms. Specifically, it discusses recurrence relations, and illustrates their role in asymptotic and probabilistic analysis of algorithms. It covers in detail greedy strategies divide and conquer techniques, dynamic programming and max flow - min cut theory for designing algorithms, and illustrates them using a number of well-known problems and applications.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving – Important Problem Types – Fundamentals of the Analysis of Algorithm Efficiency – Analysis Framework	CO2, CO3
	B	Asymptotic Notations and their properties – Mathematical analysis for Recursive and Non-recursive algorithms, Recurrences relations	CO1, CO2, CO3
	C	Divide-and-conquer: Analysis and Structure of divide-and-conquer algorithms, Divide-and-conquer examples- Binary search, Quick sort, Merge sort, Medians and Order Statics, Strassen's Matrix Multiplication.	CO1, CO2, CO4
	Unit 2	**Dynamic Programming**	

	A	Overview, Difference between dynamic programming and divide and conquer	CO1, CO2, CO3, CO4
	B	Applications and analysis: Matrix Chain Multiplication, 0/1 Knapsack Problem records	CO1, CO2, CO4
	C	Applications and analysis: Longest Common sub-sequence, Optimal Binary Search tree	CO1, CO2, CO3, CO4
	Unit 3	**Greedy Method**	
	A	Overview of the Greedy paradigm, Analysis and example of exact optimization solution, Minimum Spanning Tree – Prim's and Kruskal's Algorithm	CO1,CO2,CO3, CO4
	B	Fractional Knapsack problem, Single source shortest paths, task scheduling	CO1, CO2, CO3, CO4
	C	Overview and analysis of Backtracking & Branch and Bound: N-Queens problem and Sum of subsets	
	Unit 4	**Advanced Data Structures**	CO1,CO2,CO3
	A	Red-Black Trees - Definition, Applications, Insertion and deletion of elements in RB-Tree	CO1,CO2,CO3
	B	B-Trees - Definitions, Applications, Insertion and Deletion in B-Trees	CO1,CO2,CO3
	C	Data Structure for Disjoint Sets - Definition, Operations, Applications in Kruskal's algorithm.	
	Unit 5	**Selected Topics**	CO1,CO2,CO3,
	A	Introduction to NP Complete and NP Hard Problems, Examples, Amortized Analysis	CO1,CO2,CO3,
	B	Approximation Algorithms – Travelling Sales Person Problem and Vertex Cover Problem, Randomized Algorithms, Need, Evaluation of π, Randomized Quick Sort Algorithm	CO1,CO2,CO3
	C	String Matching Algorithms – Naive String Matching Algorithm, Rabin Karp Algorithm.	CO1,CO2,CO3, CO4
	Mode of examination	Theory	
	Weightage Distribution	CA / MTE / ETE 30% / 20% / 50%	
	Text book/s*	3. Cormen et al., "Introduction of Computer Algorithms", Prentice Hall India	
	Other References	3. Sahni et al., "Fundamentals of Computer Algorithms", Galgotia Publications. 4. Hopcroft A, The Design And Analysis Computer Algorithms, Addison Wesley	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:**Analyze the asymptotic performance of algorithms	PO1,PO2,PO3,PO4,PSO1
2.	**CO2**: Write rigorous correctness proofs for algorithms	PO1, PO3, PO4, PSO2
3.	**CO3:** Demonstrate a familiarity with major algorithms and data structures	PO1,PO2,PO3,PO4
4.	**CO4:**Apply important algorithmic design paradigms and methods of analysis	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Design and Analysis of Algorithms Course Code CSE 341)

Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO 8	PO9	PO10	PO 11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 341, Design and Analysis of Algorithms Lab

School: SET		**Batch: 2018-2022**
Program: B.Tech		**Current Academic Year:**
Branch: CSE		**Semester:V**
1	Course Code	CSP 341
2	Course Title	Design and Analysis of Algorithms Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	Objective of this course is to • Reinforce basic design concepts (e.g., pseudocode, specifications, top-down design) • Knowledge of algorithm design strategies • Familiarity with an assortment of important algorithms. • Enable students to analyze time and space complexity
6	Course Outcomes	Students will be able to: **CO1:** Analyze the asymptotic performance of algorithms **CO2**: Write rigorous correctness proofs for algorithms. **CO3:** Demonstrate a familiarity with major algorithms and data structures **CO4:** Apply important algorithmic design paradigms and methods of analysis
7	Course Description	This course introduces concepts related to the design and analysis of algorithms. Specifically, it discusses recurrence relations, and illustrates their

		role in asymptotic and probabilistic analysis of algorithms. It covers in detail greedy strategies divide and conquer techniques, dynamic programming and max flow - min cut theory for designing algorithms, and illustrates them using a number of well-known problems and applications.			
8	Outline syllabus				CO Mapping
	Unit 1	**Practical based on algorithm design by brute force and divide and conquer paradigm**			CO1, CO2, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 2	**Practical related to dynamic programming paradigm**			CO1, CO2. CO3, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 3	**Practical related to greedy method**			CO2, CO3, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 4	**Practical related to advanced data structures**			CO2, CO3, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Unit 5	**Practical related to string matching algorithms**			CO1, CO2, CO3, CO4
		Sub unit - a, b and c detailed in Instructional Plan			
	Mode of examination	Jury/Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	-			
	Other References				

Syllabus: CSE 344, Compiler Design

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year:2018-2019**	
Branch:CSE		**Semester: V**	
1	Course Code	**CSE 344**	Course Name
2	Course Title	**Compiler Design**	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Core	
5	Course Objective	1. To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant	

		theoretical developments and tools that are deep rooted into computer science. 2. To introduce the major phases of Compiler construction and also its theoretical aspects including regular expressions, context-free grammars, Finite Automata etc.	
6	Course Outcomes	After the successful completion of this course, students will be able to : **CO 1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages. **CO 2:** Apply regular patterns and grammars. **CO 3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation. **CO 4:** Implement parsing and translation techniques for automation of computing tasks. **CO 5:** Design and write a complex programming project on system software.	
7	Course Description	To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction	
	A	Introduction to Compiler, Phases and passes, Bootstrapping, Cross-Compiler	CO1, CO2
	B	Finite state machines and regular expressions and their applications to lexical analysis	CO1, CO2
	C	lexical-analyzer generator, Lexical Phase errors	CO1, CO2
	Unit 2	**Parsing Techniques**	
	A	The syntactic specification of programming languages: Context free grammars, derivation and parse trees.	CO1, CO2
	B	Basic Parsing Techniques: Parsers, Shift reduce parsing, operator precedence parsing, top down parsing, predictive parsers. Automatic Construction of efficient Parsers: LR parsers, the canonical Collection of LR(0) items, constructing SLR parsing tables	CO1, CO2
	C	Constructing Canonical LR parsing tables, Constructing LALR parsing tables, using ambiguous grammars. Syntactic phase errors and semantic errors.	CO1, CO2
	Unit 3	**Syntax Directed Translations And Intermediate Code Generation**	
	A	Syntax directed definition, Construction of syntax trees, syntax directed translation scheme	CO3,CO4
	B	Variants of Syntax Trees, Three Address Codes	CO3,CO4
	C	Translation of Expression, Type Checking and control flow.	CO3,CO4

	Unit 4	**Symbol table**			
	A	Data structure for symbols tables, representing scope information.			CO3,CO4
	B	Run-Time Administration: Implementation of simple stack allocation scheme			CO3,CO4
	C	Run Time Storage Management			CO3,CO4
	Unit 5	**Code Generation And Optimization**			
	A	Sources of Optimization of basic blocks and flow graphs			CO5,CO6
	B	Basic Blocks, Flow graphs, DAG			CO5,CO6
	C	Global Data Flow Analysis			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. 1.Aho, Sethi, Ulman, compilers Principles, Techniques, and Tools, Pearson Education, 2003			
	Other References	1. Lauden, Principles of Compiler Construction. 2. D. M. *Dhamdhere Compiler* Construction--Principles and Practice, Macmillan India,			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:CO1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages.	PO1,PO2,PO3,PO4,PSO1
2.	**CO2** Apply regular patterns and grammars.	PO1, PO3, PO4, PSO2
3.	**CO3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation.	PO1,PO2,PO3,PO4
4.	**CO4:** Implement parsing and translation techniques for automation of computing tasks.	PO9, PO10,PO11, PSO5
5.	**CO5**: Design and write a complex programming project on system software.	PO1,PO2,PO3,PO4,PSO1

PO and PSO mapping with level of strength for Course Name Compiler Design (Course Code CSE 344)

COs	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2

CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3
CO5	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 344, Compiler Design Lab

School: SET		**Batch: 2018-2022**	
Program: B.Tech		**Current Academic Year:**	
Branch:CSE		**Semester:5**	
1	Course Code	CSP 344	
2	Course Title	Compiler Design Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	1. To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science. 2. To introduce the major phases of Compiler construction and also its theoretical aspects including regular expressions, context-free grammars, Finite Automata etc.	
6	Course Outcomes	After the successful completion of this course, students will be able to : **CO 1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages. **CO 2:** Apply regular patterns and grammars. **CO 3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation. **CO 4:** Implement parsing and translation techniques for automation of computing tasks. **CO 5:** Design and write a complex programming project on system software.	
7	Course Description	To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	

		1. Write a C program to identify whether a given line is a comment or not. 2. Write a C program to recognize strings under 'a', 'a*b+', 'abb'. 3. Implement the lexical analyser using Lex.	CO1, CO2
	Unit 2	**Parsing Techniques**	
		1. Write a program for constructing of LL (1) parsing for any given language. 2. Write a C program for constructing recursive descent parsing for any given language.	CO1, CO2
	Unit 3	**Syntax Directed Translations And Intermediate Code Generation**	
		1. Implement Program semantic rules to calculate the expression that takes an expression with digits, + and * and computes the value. 2. Program to generate a Intermediate code(3 Address code).	CO3, CO4
	Unit 4	**Symbol table**	CO3, CO4
		Implement symbol table	CO1, CO2
	Unit 5	**Code Generation And Optimization**	
		Implement DAG	CO5,CO
	Mode of examination	Jury/Practical/Viva	
	Weightage Distribution	CA / CO3,CO4 / ETE	
		60% / 40%	
	Text book/s*	1. 1.Aho, Sethi, Ulman, compilers Principles, Techniques, and Tools, Pearson Education, 2003	
	Other References	1. Lauden, Principles of Compiler Construction. 2. D. M. *Dhamdhere Compiler* Construction--Principles and Practice, Macmillan India,	

Syllabus: CSP 302, Technical Skill Enhancement Course-1 (Simulation Lab)

School: SET	**Batch : 2018**
Program: B.TECH	**Current Academic Year:**
Branch:CSE	**Semester: V**

1	Course Code	CSP 302	Technical Skill Enhancement Course-1 (Simulation Lab)
2	Course Title	Simulation Lab	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Lab	
5	Course Objective	• Demonstrate basic programming skills – functions, arrays, loops, conditional statements, procedures • Demonstrate technical communication skills: Create a comprehensive report and an oral presentation with accurate visual representations of a model and its results.	
6	Course Outcomes	Students will be able to: **CO1:** Students will apply MATLAB Programming to solve real life problem. **CO2:** implement the mathematical representation of the model. **CO3:** create a simulation in a computational tool in Matlab **CO4:** Utilize Matlab as a computational tool	
7	Course Description	This course introduces the concepts of MATLAB programing, Modelling and simulation to identify the problems, and choose the relevant models and algorithms to apply.Matlab is used for scientific applications involving images, sound, and other signals.	
8	Outline syllabus		CO Mapping
	UNIT-I	**Introduction**	
	A	Introduction to MATLAB, Basic Commands, Variables and Operators, Logical Operators and their Control flow, Algorithm	CO1, CO2
	B	MATLAB conditional statements	CO1, CO2
	C	MATLAB loops, Solve a problem for one case, then iterate (Take care of middle, then first and last)	
	UNIT-2	**Structures and Cell arrays**	
	A	Structures, Properties, Declaration of Structure, Definition, Accessing Elements from structure, Use of Structure	CO2,CO3
	B	Array, Cell Array, Array operation, Cell Array Operations, Introduction Complexity, Divide and conquer.	CO2
	C	Scripts and Functions	CO3
	UNIT-3	**Review of Mathematical Operations**	

	A	Mathematical operations on sequences: Convolution, graphical and analytical techniques	CO2
	B	Overlap and add methods, matrix method, some examples and solutions of LTI systems,	CO2
	C	MATLAB examples	CO1,CO3
	UNIT-4	**Modeling**	
	A	Stochastic models, Curve fitting, Graphing data in MATLAB	CO4
	B	Accuracy and precision in modeling	CO1, CO2
	C	Verification and validationProject on Simulation based	CO1, CO2
	UNIT-V	**Matlab Applications**	
	A	Working with Sound, Working with Images	CO2, CO4
	B	File, Types of File, file Input/Output Operations, Reading and Writing files, Building GUI's	CO1, CO2
	C	Recursion, Compression	CO1, CO3
	UNIT-5	**Visualization**	
	A	Stochastic models, Curve fitting,	CO4
	B	Graphing data in MATLAB	CO4
	C	Accuracy and precision in modeling	CO4
	Mode of examination	Verification and validationProject on Simulation based	
	Weightage Distribution	Project on Simulation based / ETE	
		60 % / 40%	
	Text book/s*		
	Other References	1.	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** Students will apply MATLAB Programing to solve real life problem.	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:** implement the mathematical representation of the model.	PO1, PO3, PO4, PSO2
3.	**CO3:** create a simulation in a computational tool in Matlab	PO1,PO2,PO3,PO4
4.	**CO4:** Utilize Matlab as a computational tool -	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course NameSimulation Lab (Course Code CSP 302)

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

COs	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	PO 10	PO1 1	PO 12	PSO 1	PSO2	PSO3	PS O4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

Syllabus: CSP 397, Project Based Learning(PBL)-3

School: SET		**Batch : 2018-2022**	
Program: B.Tech		**Current Academic Year: 2018**	
Branch: CSE		**Semester: 5th**	
1	Course Code	**CSP397** Course Name: Project Based Learning -3	
2	Course Title	Project Based Learning – 3	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	7.To align student's skill and interests with a realistic problem or project 8.To understand the significance of problem and its scope 9.Students will make decisions within a framework	
6	Course Outcomes	Students will be able to: CO1: Acquire practical knowledge within the chosen area of technology for project development CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach CO3: To prepare the designs requirements, functional and concept design. CO4: Develop effective communication skills for presentation of project related activities CO5: Contribute as an individual or in a team in development of technical projects CO6: Prepare a technical report based on the project.	
7	Course Description	In PBL-3, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester.	
8	Outline syllabus		CO Mapping
	Unit 1	Problem Definition,Team/Group formation and Project Assignment.	CO1, CO2
	Unit 2	Description and design of the proposed project using ER Diagrams.Specifying resource requirement, if any.	CO1, CO2
	Unit 3	Implementation work under the guidance of a faculty member.	CO1, CO2, CO3
	Unit 4	Demonstrate and execute Project with the team.	CO3, CO4
	Unit 5	The presentation, report, work done during the term supported by the documentation, forms the basis of assessment.	CO4, CO5, CO6

		Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References. Presentation – PBL-3			
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: Acquire practical knowledge within the chosen area of technology for project development	PO1, PO2, PO4, PO9, PO10, PO11, PO12
2.	CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: Discuss and accumulate the background information	PO1, PO2, PO5, PO9, PO10, PO11, PO12
4.	CO4: Develop effective communication skills for presentation of project related activities	PO1, PO2, PO6, PO9, PO10, PO11, PO12
5.	CO5: Contribute as an individual or in a team in development of technical projects	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12
6.	CO6: Prepare a technical report based on theproject.	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Project Based Learning -3 (Course Code CSP397)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	3	-	-	-	-	3	3	2	3
CO2	3	2	-	3	-	-	2	-	3	3	2	3
CO3	3	2	-	-	2	-	-	-	3	3	2	3
CO4	3	3	-	-	-	2	-	-	3	3	2	3
CO5	3	3	2	2	2	2	3	3	3	3	2	3
CO6	3	3	2	2	2	2	3	3	3	3	2	3

Syllabus: CSP 399, Industrial Internship-II

School: SET		**Batch : 2018-2022**	
Program:B.Tech		**Current Academic Year:**	
Branch: CSE		**Semester:V**	
1	Course Code	CSP399 Course Name	
2	Course Title	Industrial Internship-II	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	UG	
5	Course Objective	1. Experience the activities and functions of business professionals. 2. Develop and refine oral and written communication skills. 3. Identify areas for future knowledge and skill development.	
6	Course Outcomes	CO1. Experience of applying existing engineering knowledge in similar or new situations CO2. Ability to identify when new engineering knowledge is required, and apply it CO3. Ability to integrate existing and new technical knowledge for industrial application. CO4. Knowledge of contemporary/engineering practice. CO5. Use of acquired techniques, skills, and modern engineering tools necessary for engineering practice. CO6. Ability to work on multi-disciplinary teams.	
7	Course Description	An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. The experience also helps students gain a clearer sense of what they still need to learn and provides an opportunity to build professional networks.	
8	Outline syllabus		CO Mapping
	Unit 1	Define objectives and conditions for the internship, ensuring students that it is related to the study path carried out at the University. Specify the names of the university supervisor, the Host Organization supervisor and the duration, the period in which the internship will be carried out and any changes in duration	**CO1**
	Unit 2	The internship work plan is drawn up in consultation with the student, the supervising faculty at the university and the internship supervisor for the organisation offering the internship.	**CO2**
	Unit 3	Project during Internship involves: a) project activated by the Program Director / Host Organization. b) Project activity to be monitored by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project.	**CO2,CO3**

	Unit 4	Submission of evaluation form and final report completed by the intern.			**CO4**
	Unit 5	Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee.			**CO5,CO6**
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	NIL	40%	
	Text book/s*	NA			
	Other References	NA			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. Experience of applying existing engineering knowledge in similar or new situations	PO1, PO2, PO12, PSO4
2.	CO2. Ability to identify when new engineering knowledge is required, and apply it	PO1, PO12, PSO1, PSO4
3.	CO3. Ability to integrate existing and new technical knowledge for industrial application	PO1, PO2, PO12, PSO2, PSO4
4.	CO4. Knowledge of contemporary/engineering practice.	PO1,PO12, PSO 2,PSO4
5.	CO5. Use of acquired techniques, skills, and modern engineering tools necessary for engineering practice.	PO1,PO6,PO8,PO12, PSO 2,PSO4
6.	CO6. Ability to work on multi-disciplinary teams.	PO1,PO7,PSO2

PO and PSO mapping with level of strength for Industrial Internship-II(Course Code CSP 399)

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PSO 2	PSO 3	PS O4	PS O5
CO1	3	2	-	-	-	-	-	-	-	-	-	3	3	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	3	-	2	-	3	-
CO4	3	-	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO5	3	-	-	-	-	2	-	2	-	-	-	3	-	3	-	3	-
CO6	3	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 348,Introduction to Mathematical & Statistical Techniques in Computer Science (Program Elective-1)

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year:**	
Branch:CSE		**Semester:V**	
1	Course Code	CSE 348	Course Name
2	Course Title	Introduction to Mathematical and Statistical Techniques in Computer Science	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	Program Elective-I	
5	Course Objective	The objective of the course is to teach students the mathematical & statistical techniques that provide sound basis for research and application development in Computer Science.	
6	Course Outcomes	By the end of the course, students will be able to: **CO1:** Understand important mathematical and statistical methods that are essential for Computer Science research and application development; **CO2:** Apply mathematical and statistical methods in their research and application development. **CO3:**Use a mathematical tool such as MATLAB efficiently.	
7	Course Description	In this subject, the fundamental concepts and principles of Mathematical & Statistical Techniques together with the challenging issues in Computer Science software development will be introduced. Discussion on various topics related to mathematics and Computer Science will also be conducted.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction,Computational Errors andtheirAnalysis**	
	A	Accuracyofnumbers,Errorsandageneralerrorformula,ErrorsinNumericalComputations.	CO1, CO2
	B	Errorsina Series Approximation.	CO1, CO2
	C	Precisions	CO1, CO3
	Unit 2	**Numerical Techniques**	
	A	LU decomposition for systems of linear equations;	CO1, CO2
	B	numerical solutions of non-linear algebraic equations by Secant, Bisection and Newton-Raphson Methods;	CO1, CO2,
	C	Numerical integration by trapezoidal and Simpson's rules.	CO1, CO2
	Unit 3	**Probability**	
	A	Probability: Conditional Probability;	CO1,CO2
	B	Mean, Median, Mode and Standard Deviation;.	CO1,CO2,CO3

	C	Random Variables; Distributions;			
	Unit 4	**Permutation**			
	A	uniform, normal, exponential			CO1,CO2
	B	Poisson, Binomial distribution			CO1,CO2
	C	Permutations; Combinations; Counting; Summation;			CO1,CO2,CO3
	Unit 5	**Hypothesis testing**			
	A	Generating functions; recurrence relations;			CO2,CO3
	B	Techniquesforstatisticalqualitycontrol,			CO2,CO3
	C	Testingofhypothesis.			CO1,CO2,CO3
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	M. Goyal, "Computer Based Numerical & Statistical Techniques", Infinity Science Press, LLC, MA, USA.			
	Other References	1. Matheus Grasselli and Dimitry Pelinovsky, "Numerical Mathematics", Jones and Bartlet Publishers, USA. 2. Lars Elden, "Mattrix Methods in Data Mining and Pattern Recognition", SIAM (Society for Industrial and Applied Mathematics), USA. 3. Internet as a resource for references.			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** Understand important mathematical and statistical methods that are essential for Computer Science research and application development;	PO1,PO2,PO3, PSO1
2.	**CO2:** Apply mathematical and statistical methods in their research and application development.	PO1, PO3, PSO2
3.	**CO3:**Use a mathematical tool such as MATLAB efficiently.	PO1,PO2,PO3

Syllabus: CSE 349,Introduction to Graph Theory and its Applications(Program Elective-1)

School: SET		**Batch :2018**	
Program: B.Tech		**Current Academic Year: 2018-19**	
Branch:CS/IT		**Semester:5**	
1	Course Code	CSE349	Course Name: Introduction to Graph Theory and its Application
2	Course Title	Introduction to Graph Theory and its Application	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	Program Elective-I	
5	Course Objective	The objective of the course is to teach students the basic graph theory concepts and their applications in computer science.	
6	Course Outcomes	After successful completion of the course students will be able to **1.** demonstrate some of the most important notions and types of graph theory and develop their skill in solving basic exercises **2.** interpret the fundamentals of graphs and trees and to relate them with the use in computer science applications **3.** explore a graph with the help of matrices and to find a minimal spanning tree for a given weighted graph **4.** apply graph-theoretic algorithms and methods used in computer science **5.** develop efficient graph-theoretic algorithms (mathematically)explore the applications of coloring problem of graph theory	
7	Course Description	This course is to teach students the basic graph theory concepts and their applications in computer science.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Basic terminologies and concepts of Graph Theory, Fundamental types of graphs, Applications in various areas	CO1
	B	Properties of graphs, theorems based on different types of graph and various operations on graphs	CO1,CO4
	C	Special types of graphs (Hamiltonian, Euler), Travelling salesman problem	CO1, CO5
	Unit 2	**TREES**	
	A	Fundamentals of trees and their types, Binary trees and their properties, importance of binary trees in data structure (searching algorithms)	CO2
	B	fundamental circuits, spanning trees, algorithms to find spanning trees in a weighted graph (Kruskal& Prim)	CO2, CO3
	C	Applications: Representation of the algebraic expressions as ordered binary trees, Huffman procedure for construction of an optimal tree for a given set of weights.	CO4
	Unit 3	**CUT SETS**	

	A	a cut-set of a connected graph, the fundamental circuit ,Properties of circuits & cut–sets, Concept of connectivity and separability			CO1
	B	Concept of Planar graphs with introduction to Kuratowski's non-planar graphs, Proof of Euler's formula			CO4
	C	Detection of planarity , geometric duals of graph, thickness & Crossings, network flow			CO5
	Unit 4	**Coloring and Covering**			
	A	Concept of proper coloring of vertices of a graph, chromatic number , Chromatic partitioning			CO4, CO5
	B	Chromatic polynomial, finding chromatic polynomial of a given graph			CO4, CO5
	C	Matching, Covering, Five color problem and its proof			CO4, CO5
	Unit 5	**Matrix Representation of Graphs& Applications**			
	A	Incidence matrix, sub matrices of A(G), circuit matrix, fundamental circuit matrix and Rank of B			CO3, CO4
	B	Cut set matrix , fundamental cut set matrix, path matrix, Adjacency matrix			CO4
	C	Finding Rank of different matrices, Relationship among A_f, B_f, andC_f			CO4, CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	**1.** Deo, N, *Graphtheory with applications to Engineering and Computer Science*, Prentice Hall India			
	Other References	**1.** Wilson R J, *Introduction to Graph Theory*, PearsonEducation **2.** Harary, F, *Graph Theory*, Narosa **3.** Bondy& Murthy, *Graph theory and application*. Addison Wesley			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: demonstrate some of the most important notions and types of graph theory and develop their skill in solving basic exercises	PO1, PO2, PSO1
2.	CO2: interpret the fundamentals of graphs and trees and to relate them with the use in computer science applications	PO1, PO2, PO3, PO4, PSO2
3.	CO3: explore a graph with the help of matrices and to find a minimal spanning tree for a given weighted graph	PO3, PO4, PO5, PSO2
4.	CO4: apply graph-theoretic algorithms and methods used in computer science	PO4, PO5, PO6, PSO2, PSO4
5.	CO5: develop efficient graph-theoretic algorithms (mathematically) explore the applications of colouring problem of graph theory	PO4, PO5, PO9, PSO2, PSO4

PO and PSO mapping with level of strength for Course Name: Introduction to Graph Theory and its Application (CSE 349)

Cos	PO1	PO 2	PO3	PO4	PO 5	PO 6	PO7	PO 8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PS O3	PSO4	PSO 5
CO1	3	3	2	2	1	1	1	1	1	1	2	2	3	2	1	2	1
CO2	3	3	3	3	2	1	1	1	2	2	1	2	2	3	1	2	1
CO3	2	2	3	3	3	2	1	1	1	2	2	2	2	3	2	2	2
CO4	2	2	2	3	3	3	1	2	2	1	1	2	2	3	2	3	1
CO5	2	2	2	3	3	2	2	2	3	1	1	2	1	3	1	3	1

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: ARP 302, Higher Order Mathematics and Advanced People Skills

School: SET		**Batch :** 2018-19	
Program:B.Tech		**Current Academic Year:** 2018-19	
Branch: CSE		**Semester:** VIth |HOM	
1	Course Code	**ARP 302**	Course Name : **Higher Order Mathematics and Advanced People Skills**
2	Course Title	**Higher Order Mathematics and Advanced People Skills**	
3	Credits	2	
4	Contact Hours (L-T-P)	0-0-4	
	Course Status		
5	Course Objective	To enhance holistic development of students and improve their employability skills. Provide a 360 degree exposure to learning elements of Business English readiness program, behavioural traits, achieve softer communication levels and a positive self-branding along with augmenting numerical and altitudinal abilities. To up skill and upgrade students' across varied industry needs to enhance employability skills. By the end of this semester, a will have entered the threshold of his/her 4thphase of employability enhancement and skill building activity exercise.	
6	Course Outcomes	CO1: *Understanding basics of Human Resources* CO2: *Role Clarity | KRA | KPI | Understanding JD* CO3: *Conflict Management* CO4: *The art of Negotiations* CO5: *Understanding Personal Branding* CO6: *Relationship Management | Verbal Abilities-4* CO7: *Level-4 Quant & aptitude, Reasoning abilities*	
7	Course Description	This penultimate stage introduces the student to the basics of Human Resources. Allows the student to understand and interpret KRA | KPI and understand Job descriptions. A student also understands how to manage conflicts, brand himself/herself,	

		understand relations and empathise others with level-4 of quant, aptitude and logical reasoning	
8	Outline syllabus – ARP 302		
	Unit 1	**Ace the Interview**	**CO MAPPING**
	A	HR Sensitization (Role Clarity | KRA | KPI | Understanding JD) | Conflict Management	CO1, CO2, CO3
	B	Negotiation Skills | Personal Branding	CO4, CO5
	C	Empathy VS Sympathy | Relationship Management | Verbal Abilities-4	CO6
	Unit 2	**Introduction to APTITUDE TRAINING- Reasoning- Logical/ Analytical**	
	A	Sitting Arrangement & Venn Diagrams | Puzzles | Distribution | Selection	CO7
	B	Direction Sense | Statement & Conclusion | Strong & Weak Arguments	CO7
	C	Analogies,Odd One out | Cause & Effect	CO7
	Unit 3	**Quantitative Aptitude**	
	A	Average , Ratio & Proportions,Mixtures & Allegation	CO7
	B	Geometry-Lines,Angles& Triangles	CO7
	C	Problem of Ages | Data Sufficiency - L2	CO7
	Weightage Distribution	*(CA)Class Assignment/Free Speech Exercises / JAM – 60% | (ETE) Group Presentations/Mock Interviews/GD/ Reasoning, Quant & Aptitude – 40%*	
	Text book/s*	*Wiley's Quantitative Aptitude-P Anand* | ***Quantum CAT – ArihantPublications*** | ***Quicker Maths- M. Tyra*** | *Power of Positive Action (English, Paperback, Napoleon Hill)* | *Streets of Attitude (English, Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness - Nathaniel Brandon* | *Goal Setting (English, Paperback, Wilson Dobson*	

Syllabus:CSE 346, Artificial Intelligence

School: SET		**Batch : 2018**
Program: B.Tech		**Current Academic Year:**
Branch: CSE		**Semester:**VI
1	Course Code	CSE346 | Course Name
2	Course Title	Artificial Intelligence
3	Credits	4
4	Contact Hours (L-T-P)	3-0-2
	Course Status	Core
5	Course Objective	The objective of the course is to introduce basic fundamental concepts in Artificial Intelligence (AI), with a practical approach in understanding them. To visualize the scope of AI and its role in futuristic development.
6	Course Outcomes	Students will be able to: **CO1:** Compare AI and non-AI solutions. **CO2:** Apply AI techniques in problem solving. **CO3:** Analyze the best search technique and implement it in real-life applications.

		CO4: Classify supervised and unsupervised learning and knowledge representation. CO5: To explore the scope of AI in various application domains.			
7	Course Description	This course introduces basic aspects of Artificial intelligence comparing the AI and conventional solutions to real world problems, utilizing and analyze AI techniques for identifying optimal solutions to search strategies.			
8	Outline syllabus				CO Mapping
	Unit 1	**INTRODUCTION TO AI**			
	A	Foundation of AI, Goals of AI, History and AI course line,			CO1, CO5
	B	Introduction to Intelligent Agents; Environment; Structure of Agent,			CO1, CO5
	C	AI Solutions Vs Conventional Solutions; a philosophical approach; a practical approach.			CO1, CO5
	Unit 2	**PROBLEM SOLVING AGENTS**			
	A	Problem solving using Search Techniques; Problems; Solutions; Optimality,			CO1, CO2, CO3
	B	Informed Search Strategies; Greedy Best-First; A* Search; Heuristic Functions,			CO1, CO2, CO3
	C	Uninformed Search Strategies; BFS; DFS; DLS; UCS; IDFS; BDS. Local Search algorithms: Hill Climbing, genetic Algorithms.			CO1, CO2, CO3
	Unit 3	**KNOWLEDGE & REASONING**			
	A	Knowledge-Based Agents; clause form, First-Order Logic; Syntax-Semantics in FOL;			CO1,CO4
	B	Representation revisited, ; Simple usage; Inference Procedure; Inference in FOL;			CO1, CO4
	C	Forward Chaining; Backward Chaining; Resolution			CO4
	Unit 4	**LEARNING**			
	A	Common Sense Vs Learning; Components; Representations; Forms of learning, Feedback, Learning Types: Supervised; Unsupervised;			CO4
	B	Reinforcement Learnings, Decision trees,			CO4
	C	Artificial Neural Networks: Introduction, types of networks; Single Layer and Multi-Layer n/w.			CO4
	Unit 5	**APPLICATIONS**			
	A	case studies on NLP, Image Processing;,			CO1,CO5
	B	Robotics – Hardware; Vision; Navigation based case studies,			CO1,CO5
	C	Water jug problem and similar case studies			CO1,CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	5. Russell S &Norvig P, *Artificial Intelligence: A Modern Approach*, Prentice Hall.			
	Other References	14. *Rich E*& Knight K, *Artificial Intelligence,* Tata McGraw Hill, Edition 3.			

		15. Dan W. Patterson, Artificial Intelligence & Expert Systems, Pearson Education with Prentice Hall India. Indian Edition.	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** Compare between AI and non-AI solutions.	PO1,PO2,PO7,PO9,PO10, ,PSO1
2.	**CO2:** Apply AI techniques in problem solving.	PO2, PO3, PO4, PO5, PSO2
3.	**CO3:** Analyze the best search technique and implement it in real-life applications.	PO1,PO2,PO3,PO4, PO6, PO9, PO11, PO12
4.	**CO4:** Classify supervised and unsupervised learning and knowledge representation.	PO6,PO11, PSO5
5.	CO5: To explore the scope of AI in various application domains.	PO9, PO11,PO12, PSO5

PO and PSO mapping with level of strength for Course Name Artificial Intelligence**(Course Code CSE 346)**

Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	1	--	--	3	-	2	2	-	-	3	-	-	-	-
CO2	1	2	3	3	3	--	--	1	1	1	-	-	1	2	-	-	-
CO3	3	3	3	3	--	2	--	1	2	1	3	2	-	-	-	-	-
CO4	1	1	1	1	-	3	--	1	1	-	3	1	1	1	1	1	3
CO5	1	1	1	1	-	-	--	1	3	1	3	2	1	1	1	1	2

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus:CSP 346, Artificial Intelligence Lab

School: SET		**Batch: 2018-2022**
Program: B.Tech CSE		**Current Academic Year: 2018**
Branch: CSE		**Semester: VI**
1	Course Code	CSP346
2	Course Title	Artificial Intelligence Lab
3	Credits	2
4	Contact Hours	3-0-2

	(L-T-P)				
	Course Status	Compulsory			
5	Course Objective	The objective is to gain knowledge of basic concepts of artificial intelligence and machine learning.			
6	Course Outcomes	Upon successful completion of this course, the student will be able to: CO1. Identify the basic components of library environment and installations. CO2. Understand the working of machine learning libraries. CO3. Analyze the significant methodology needs to be applied for data preprocessing. CO4. Develop some application oriented projects on Image Processing, Natural Language Processing etc CO5. Identify how to use github and submit back genuine contributions on the same.			
7	Course Description	Artificial Intelligence Lab covers the hands-on, understanding and analysis of machine learning technology and to trace its recent trend.			
8	Outline syllabus				CO Mapping
	Unit 1	**Library Environment Understanding and installation**			
		3. To install the pypi libraries for Machine Learning. 4. Review of python datatypes for Artificial Intelligence and Machine Learning			CO1
	Unit 2	**Machine Learning Experiments**			
		1. Develop a machine learning model for standard database using Support Vector Machines 2. Develop a machine learning model for standard database using Decision Trees. **3.** Develop a machine learning model for standard database using Random Forest.			CO2
	Unit 3	**Data Preprocessing**			
		1. Deploy standardization and normalization on some standard dataset. **2.** Deploy Principal Component Analysis to extract relevant features on some standard database.			CO3
	Unit 4	**Application Oriented Experiment**			
		1. Develop a decision boundary for facial recognition purpose. 2. Develop a decision boundary to predict the emotions from the human voice.			CO4
	Unit 5	**Industry Oriented Experiments**			
		1. Understanding of github and conda environments. **2.** To use the github packages and libraries to frame a standard project and commit back to github.			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

	Text book/s*	1. Russell S &Norvig P, *Artificial Intelligence: A Modern Approach*, Prentice Hall.	
	Other References	1. D. H. Wolpert. The supervised learning no-free-lunch theorems. In Soft Computing and Industry, pages 25–42. Springer, 2002. 2. V. Vapnik. The nature of statistical learning theory. Springer Science & Business Media, 2013. 3. C. J. Burges. A tutorial on support vector machines for pattern recognition. Data mining and knowledge discovery, 2(2):121–167, 1998. 4. J. H. Friedman, J. L. Bentley, and R. A. Finkel. An algorithm for finding best matches in logarithmic expected time. ACM Transactions on Mathematical Software (TOMS), 3(3):209–226, 1977.	

Syllabus: CSP 301, Technical Skill Enhancement Course-2(Application Development Lab)

School: SET		**Batch: 2018**	
Program: BTech		**Current Academic Year: 2018-19**	
Branch:		**Semester:2**	
1	Course Code	CSP301	
2	Course Title	Application Development Lab	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Compulsory/Elective	
5	Course Objective	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools (ADT)) and learn how and when to apply the different components to develop a working system.	
6	Course Outcomes	On successful completion of the course, the student will: 1. Design App user Interface 2. Perform Event driven programming 3. Implement relational Databases on devices using SQLite 4. Examine the usage of commonly available device sensors while building Android App	
7	Course Description	The course will introduce concepts of the Android platform, Android application components, Activities and their lifecycle, UI design. It will also help students to build applications according to their problem statements.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Android**	

		1. Configuration of android SDK and test run of application on device 2. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. 3. Develop an Android Application to implement Activity life cycle.	CO1
	Unit 2	**Android UI Components**	CO1
		4. Create a layout of Calculator using Grid layout. 5. Develop an Android Application to implement event listener on above layout. 6. Develop an Android Application to implement implicit intent.	CO1
	Unit 3	**Services and Notification**	
		7. Develop an Android Application to implement Service life cycle 8. Develop an Android Application to implement status bar notification 9. Create a menu with 5 options and selected option should appear in text box	CO1,CO2
	Unit 4	**Working with SQL Lite**	CO1,CO2
		10. Create and Login application as above. On successful login, pop up the message. 11. Create an application to implement Create, Insert and update operation on the database. 12. Create an application to perform Delete and retrieve operation on the database.	CO1,CO2
	Unit 5	**Sensor Device**	
		13. Develop an Android Application to detect availability of all sensors. 14. Develop an Android Application to Fetch data from sensors 15. Develop an Android Application for development of compass application with help of Orientation sensor	CO1
	Mode of examination	Jury/Practical/Viva	
	Weightage Distribution	CA: 60% / MTE: 0% / ETE: 40%	
	Text book/s*	1. Anubhav Pradhan and Anil V. Deshpande , Composing Mobile Apps: Learn, Explore, Apply Using Android , 1st Edition, Wiley India.	

	Other References	1. Wei-Meng Lee , Beginning Android 4 Application Development. 2. Neil Smyth ,Android Studio Development essentials-Android 6	

Syllabus: Android Development(Program Elective-2)

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year: 18-19**	
Branch: CSE		**Semester: VI**	
1	Course Code	CSE-350 Course Name	
2	Course Title	Android Development	
3	Credits	4	
4	Contact Hours (L-T-P)	3-0-2	
	Course Status	Core/Elective	
5	Course Objective	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools (ADT)) and learn how and when to apply the different components to develop a working system.	
6	Course Outcomes	On successful completion of the course, the student will: 1. Design App user Interface 2. Perform Event driven programming 3. Implement relational Databases on devices using SQLite 4. Examine the usage of commonly available device sensors while building Android App	
7	Course Description	The course will introduce concepts of the Android platform, Android application components, Activities and their lifecycle, UI design.It will also help students to build applications according to their problem statements.	
8	Outline syllabus		CO Mapping
	Unit-1	**Introduction to OOP**	
	A	History, The meaning of Object Orientation, Features of OOP, OOPs concepts, object identity	
	B	Encapsulation, information hiding,	
	C	polymorphism inheritance, Interfaces	
	Unit-2	**Introduction to DBMS**	
	A	Relational data model concepts ,Concept of keys, Mapping Constraints	
	B	DDL and DML commands: Create, Insert, update, alter etc. Fetch and update database	
	C	Unary Relational Operations: SELECT and PROJECT Relational Algebra Operations from Set Theory .	
	Unit-3	**Introduction to Operating System**	
		Process Concepts (PCB, Process States , Process Operations, Inter process communication)	
		Memory Hierarchy, Memory Management Unit, Paging, Segmentation	

		Types of Operating Systems (Batch, Multiprogramming ,Multi-Tasking , Multiprocessing, Distributed and Real Time Operating System)		
	Unit 4	**Android UI Components**		
	A	Layouts-Linear layout, Relative layout, Table layout, Frame layout		CO1,CO2
	B	Button, TextView, EditTextView, Label, List, Radio Button, Checkbox		CO1,CO2
	C	Concept of intent, configuration of intent, Intent filters		CO1,CO2
	Unit 5	**Activities, Services and Notification**		
	A	Services- states and life cycle		CO1
	B	Type of notification, Toast notification, status bar notification		CO1,CO2
	C	Creating Menu Option Menu, Context Menu		CO1,CO2
	Mode of examination	Theory		
	Weightage Distribution	CA	MTE	ETE
		30%	20%	50%
	Text book/s*	1. Anubhav Pradhan and Anil V. Deshpande , Composing Mobile Apps: Learn, Explore, Apply Using Android , 1st Edition,Wiley India.		
	Other References	1. Wei-Meng Lee , Beginning Android 4 Application Development. 2. Neil Smyth ,Android Studio Development essentials-Android 6		

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:**Design App user Interface	PO4,PO5,PSO4
2.	**CO2:**Perform Event driven programming	PO3,PO5
3.	**CO3:**Implement relational Databases on devices using SQLite	PO4,PO5,PO9
4.	**CO4:**Examine the usage of commonly available device sensors while building Android App	PO5,PO7,PO12,PSO4

PO and PSO mapping with level of strength for Android Development(Course Code CSE 350)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO 3	PSO 4
CO1	1	2	2	3	3	2	1	2	2	2	2	2	1	2	2	3
CO2	2	2	3	2	3	1	1	2	2	2	1	2	2	2	2	2
CO3	2	1	2	3	3	1	2	-	3	2	2	2	-	1	1	2
CO4	2	1	1	1	3	1	3	-	2	1	2	3	-	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus:CSE 351Introduction to Cloud Computing(Program Elective-2)

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year: 2018-19**	
Branch: CSE/IT		**Semester: VI**	
1	Course Code	CSE351	Course Name
2	Course Title	**Introduction to Cloud Computing**	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	Elective	
5	Course Objective	5. Provide students with an overview of the fundamental concepts of Cloud Computing. 6. Gain insight into the challenges and limitations Models of cloud computing. 7. To learn the various technologies of the cloud computing paradigm and learn about recent advances in Cloud Computing and enabling technologies. 8. Prepare students for research in the area of cloud Computing risks, cloud security challenges and virtual security management. 9. Enhance students communication and problem solving skills	
6	Course Outcomes	Students will be able to: **CO1:** To understand the cloud computing Concepts. **CO2:**Explain how and why this paradigm came about and the influence of several enabling technologies like Virtualization (e.g. VMware) and Google file systems **CO3:**Build cloud based applications using MS Azure, Amazon AWS and/or Google App Engine. **CO4:**Understanding of Cloud Computing risk issues, Cloud security challenges and management of Virtual system security.	
7	Course Description	This course introduces advanced aspects of Cloud Computing, encompassing the principles, to analyze the cloud, identify the problems, and choose the relevant models and algorithms to apply.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction Cloud Computing**	
	A	Introduction to distributed systems, Defining Cloud Computing, Understanding of Cloud Architecture: Composability, Infrastructure, Platform, Virtual Appliances, Communication Protocols, Applications, Understanding Services: SaaS, PaaS, IaaS, Service	CO1, CO2

		Oriented Architecture(SOA),Salesforce.com and CRM SaaS	
	Unit 2	**Understanding Abstraction and Virtualization**	
	A	Advanced Load Balancing, the Google Cloud, Virtual machine types, VMware vSphere, Understanding Machine Imaging, Porting Applications. **Storage in the Cloud:** Google file system.	CO1, CO2,CO4
	Unit 3	**Cloud Computing with the Titans**	
	A	Google Web Services: Google app Engine, Google Web Toolkit. Amazon: Amazon Elastic Cloud Computing, Amazon Simple Storage System, Amazon Block Store (EBS). Microsoft: Azure Service Platform, Exchange Online.	CO1,CO2,CO3
	Unit 4	**Cloud Computing Risk Issues**	
	A	The CIA Triad: Confidentiality, Integrity, And Availability. Privacy and Compliance: PCI DSS, Information Privacy and Privacy law. Common Threats and Vulnerability: Logon Abuse, Inappropriate System Use, Eavesdropping, Denial-of-service (DoS) Attack, Session Hijacking Attack. Cloud Service Provider (CSP) Risks: Back Door, Spoofing, Replay Attack, Social Engineering Attack, Dumpster Diving, Trojan Horse and Malware.	CO1,CO2,CO3
	Unit 5	**Cloud Computing Security Challenges and virtualization**	
	A	Security Policy Implementation, Policy Types: Senior Management Statement of Policy, Regulatory Policies, Advisory Policies, And Informative Policies.	CO1,CO2,CO3
	B	**Virtual Security Management:**Virtual Threats: Hypervisor Risks, Increase Denial of Service Risk. VM-Specific Security Techniques: Hardening the Virtual Machine, Securing VM Remote Access.	CO1,CO2,CO3
	Mode of examination	Theory	
	Weightage Distribution	CA	MTE
		30%	20%
	Text book/s* Other References	6. Barrie Sosinsky "*Cloud Computing (Bible)"*,Wiley 7. Anthony T.Velte, Toby J. Velte, Robert Elsenpeter"Cloud Computing: A Practical Approach" TATA McGRAW-HILL Edition. 8. Ronald L. Krutz and Russell Dean Vines, "Cloud Security: A comprehensive Guide to Secure Cloud Computing", WILEY.	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** To understand the cloud computing Concepts	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:**Explain how and why this paradigm came about and the influence of several enabling technologies like Virtualization (e.g. VMware) and Google file systems	PO1, PO3, PO4, PSO2
3.	**CO3:**Build cloud based applications using MS Azure, Amazon AWS and/or Google App Engine.	PO1,PO2,PO3,PO4
4.	**CO4:**Understanding of Cloud Computing risk issues, Cloud security challenges and management of Virtual system security.	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Introduction to Cloud Computing (Course Code CSE 351)

Cos	PO 1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 352, Web Designing (Program Elective-3)

School: SET		**Batch : 2018**
Program: B.Tech		**Current Academic Year: 2018-19**
Branch:CSE/IT		**Semester:VI**
1	Course Code	CSE352 | Course Name:
2	Course Title	Web Designing
3	Credits	3
4	Contact Hours (L-T-P)	3-0-0
	Course Status	Elective
5	Course Objective	The objective of this course is to provide a foundation of technologies and technical skills in web development. Based upon the development of a web, this course provides an insight of computer and networking technologies, and hands on experience in web programming.

6	Course Outcomes	1) Design and develop a simple interactive web application 2) Demonstrate the ability to design web sites utilizing multiple tools and techniques. 3) Build dynamic web pages using JavaScript 4) Apply the network programming knowledge to setup a web site	
7	Course Description	This course is an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Web Page: Static and dynamic sites, client and server end technology, URL syntax, open source web design tools overview.	CO1,CO2
	B	HTML basic tags, image map, implementation of links, table, form design.	CO1
	C	Page layout design: using frame, div and span tag, iframes, DHTML	CO1,CO2
	Unit 2	**HTML5**	
	A	New elements, semantic, canvas, offline webpage, canvas, SVG	CO1
	B	HTML Media: video, audio, HTML API: geolocation	CO2
	C	Location storage, Migration from HTML to HTML5.	CO2
	Unit 3	**CSS**	
	A	CSS: Introduction, syntax, selector, text formatting, margin, align, Positioning, background formatting, Navigation bar, and image gallery.	CO2,CO3
	B	CSS3: Introduction, colors, text formatting, fonts formatting, Background formatting	CO2
	C	2D transform, Transition, animation, user interface	CO4
	Unit 4	**XML**	
	A	XML: Introduction, syntax, well form XML document	CO1,CO2
	B	DTD, schema, XML Technology: xlink, xpath, xpointer, xslt	CO1,CO2
	C	displaying XML file data into HTML file	CO2
	Unit 5	**Java Script**	
	A	Syntax, comment, statement, variable, operators, conditional statements, looping statements	CO3,CO4
	B	functions, object, events, Accessing form elements	CO3,CO4
	C	History, pop up windows, cookies.	CO3,CO4
	Mode of examination	Theory	
	Weightage Distribution	CA: 30% / MTE: 20% / ETE: 50%	
	Text book/s*	5. Ivan Bayross,"HTML,DHTML, JavaScript, Perl & CGI", BPB Publication 6. Rick Delorme," Programming in HTML5 with JavaScript and CSS3", Microsoft	
	Other References	1. Burdman, "Collaborative Web Development" Addison Wesley.	

		2. Chris Bates, "Web Programing Building Internet Applications", 2nd Edition, WILEY. 3. Steven Holzner,"PHP: The Complete Reference", TataMcGraw Hill Publication	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: Design and develop a simple interactive web application	PO3,PO8,PO12,PSO3
2.	CO2: Demonstrate the ability to design web sites utilizing multiple tools and techniques.	PO3,PO5,PO10,PO12,PSO1,PSO2
3.	CO3:Build dynamic web pages using JavaScript	PO3,PO12
4.	CO4: Apply the network programming knowledge to setup a web site	PO10,PO12

PO and PSO mapping with level of strength for Course Web Designing(CSE 352)

Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4
CO1	1	2	3	1	1	1	2	3	2	2	1	3	2	2	3	3
CO2	1	2	3	2	3	1	2	2	2	3	2	3	3	3	1	1
CO3	1	2	3	--	2	1	2	2	2	2	--	3	2	2	1	3
CO4	1	2	2	1	2	1	2	2	--	3	1	3	2	1	1	2

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 353, Software Project Management (Program Elective-3)

School: SET		**Batch : 2018-2022**
Program: B. Tech		**Current Academic Year:**
Branch:CSE		**Semester:VI**
1	Course Code	CSE353
2	Course Title	**Software Project Management**
3	Credits	3
4	Contact Hours (L-T-P)	3-0-0
	Course Status	Elective

5	Course Objective	1. Introduces students with an overview and concepts of software project management. 2. Gain insight into the challenges and limitations of different phases of software project management 3. Using techniques for planning, monitoring and control of software projects 4. Prepare students understand project evaluation and software effort estimation. 5. Enhance the managerial and leadership skillsof the students	
6	Course Outcomes	Students will be able to: **CO1:** Apply software project management and engineering methods in the projects under taken. **CO2:**design and conduct a software effort estimation in a project under taken **CO3: d**evelop the ability to lead or, work in a team till the completion of a project. **CO4:** Have an ability understand and identify various software project management problems, and solve these problems by designing and selecting appropriate strategies, and methods.	
7	Course Description	This course introduces concepts of software project management in which Project Planning, Project Evaluation, Software Effort estimation, Monitoring and control and Managing contracts tools and techniques are included.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Introduction to software project management, software projects versus other types of project,	CO1, CO2
	B	activities covered by software project management, the project as a system, problems with software projects,	CO1, CO2
	C	management control, stakeholders, requirement specification, information and control in organization.	CO1, CO2
	Unit 2	**Project Planning**	
	A	Introduction to step wise project planning, select project, identify project scope and objectives,	CO1, CO2,CO4
	B	identify project infrastructure, analyze project characteristics, identify project products and activities,	CO1, CO2,CO4
	C	estimate effort for each activity, identify activity risk, allocate resources, review/publicize plan, execute plan and lower levels of planning	CO1, CO2,CO4
	Unit 3	**Project Evaluation**	
	A	Strategic assessment, Technical assessment: cost-benefit analysis, cash flow forecasting,	CO1,CO2,CO3
	B	cost-benefit evaluation techniques, risk evaluation.	CO1,CO2,CO3

	C	Application development models: the waterfall model, the V-process model, the spiral model, software prototyping, tools			CO4
	Unit 4	**Software Effort estimation**			
	A	Introduction, Where are estimates done?, problems with over and under estimates,			CO1,CO2,CO3
	B	the basis for software estimating, effort estimation techniques, expert judgment, estimating by analogy, Albert function point analysis,			CO1,CO2,CO3
	C	Function points MARK II, object points, COCOMO, publishing the resource schedule, cost schedule, the scheduling sequence			CO1,CO2,CO3
	Unit 5	**Monitoring and Managing contracts**			
	A	Creating the framework, collecting the data, visualizing progress, cost monitoring, earned value,			CO1,CO2,CO3
	B	prioritizing monitoring, getting the project back to target, change control.			CO1,CO2,CO3
	C	Managing contracts: types of contract, stages in contract placement, typical terms of a contract, contract management, contract management, acceptance.			CO1,CO2,CO3
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Software Project Management, Bob Hughes and Mike Cotterell, McGraw Hill			
	Other References	2. Software Project Management A Unified Framework, Walker Royce, Addison-Wesley 3. A practitioner's Guide to Software Engineering, Roger Pressman, Tata McGraw Hill 2014 8th edition. 4. Basics of Software Project Management, NIIT, Prentice-Hall India, Latest Edition.			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:** Apply software project management and engineering methods in the projects under taken.	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:**design and conduct a software effort estimation in a project under taken	PO1, PO3, PO4, PSO2
3.	**CO3:**Develop the ability to lead or, work in a team till the completion of a project.	PO1,PO2,PO3,PO4

4.	**CO4:** Have an ability understand and identify various software project management problems, and solve these problems by designing and selecting appropriate strategies, and methods.	PO9, PO10,PO11

PO and PSO mapping with level of strength for Course Name Software Project Management (CSE 353)

Cos	PO1	PO 2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 398, Project Based Learning (PBL) -4

School: SET		**Batch : 2018**
Program: B.Tech		**Current Academic Year: 2018**
Branch: CSE		**Semester: 6th**
1	Course Code	**CSP398** Course Name: Project Based Learning -4
2	Course Title	Project Based Learning-4
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Compulsory
5	Course Objective	10. To align student's skill and interests with a realistic problem or project 11. To understand the significance of problem and its scope 12. Students will make decisions within a framework
6	Course Outcomes	Students will be able to: CO1: Acquire practical knowledge within the chosen area of technology for project development CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach CO3: To design and implementsolutions to open-endedproblem/project. CO4: Develop effective communication skills for presentation of project related activities CO5: To deploy and justify the project and contribute as an individual or in a team in development of technical projects CO6: Use different tools forcommunication, design,

		implementation, testing andreport writing.			
7	Course Description	In PBL-4, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester.			
8	Outline syllabus				CO Mapping
	Unit 1	Problem Definition,Team/Group formation and Project Assignment. Create Software Requirement Specification			CO1, CO2
	Unit 2	Finalize and present the functional design brief, concept designs and the outline design process results to an outline design report.			CO1, CO2
	Unit 3	Implementation or Coding: the actual coding work of different modules/units is started.			CO1, CO2, CO3
	Unit 4	Test the project modules			CO3, CO4
	Unit 5	Demonstrate and execute Project with the team. The presentation, report, work done during the term supported by the documentation, forms the basis of assessment.			CO4, CO5, CO6
		Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References. Presentation – PBL-4			
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: Acquire practical knowledge within the chosen area of technology for project development	PO1, PO2, PO4, PO9, PO10, PO11, PO12
2.	CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: Discuss and accumulate the background information	PO1, PO2, PO5, PO9, PO10, PO11, PO12
4.	CO4: Develop effective communication skills for presentation of project related activities	PO1, PO2, PO6, PO9, PO10, PO11, PO12

5.	CO5: Contribute as an individual or in a team in development of technical projects	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12
6.	CO6: Prepare a technical report based on theproject.	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Project Based Learning -4 (Course Code CSP398)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	3	-	-	-	-	3	3	2	3
CO2	3	2	-	3	-	-	2	-	3	3	2	3
CO3	3	2	-	-	2	-	-	-	3	3	2	3
CO4	3	3	-	-	-	2	-	-	3	3	2	3
CO4	3	3	2	2	2	2	3	3	3	3	2	3
CO4	3	3	2	2	2	2	3	3	3	3	2	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 458, Web Technology

School: SET		**Batch : 2018**
Program: Btech		**Current Academic Year: 2018-19**
Branch:CSE		**Semester:7**
1	Course Code	CSE458 Course Name
2	Course Title	Web Technology
3	Credits	4
4	Contact Hours (L-T-P)	3-0-2
	Course Status	Compulsory
5	Course Objective	Provide the knowledge to design and develop web application with and without database. Students will gain the skills and project-based experience needed for entry into web application and development careers. It provides information about web technologies that relate to the interface between web servers and their clients.
6	Course Outcomes	On successful completion of this module students will be able to: 6. Design interactive web pages 7. Design web pages/site having validation on user data access. 8. Develop web site for small business and organization or for individual

		9. Client server communication RMI			
7	Course Description	The purpose of this course is to give students the basic understanding of how different computers and devices to communicate and share resources as well as to give the basic overview of the different technologies.			
8	Outline syllabus				CO Mapping
	Unit 1	**INTRODUCTION TO HTML & JAVA SCRIPT**			
	A	HTML basic tags, various links implementation, image map, table formatting, form design.			CO1
	B	**Java Script:** Introduction, syntax, comment, statement, variable, operators, Conditional statements, looping statements			CO2
	C	Functions, object, events, Accessing form elements, validating form elements			CO2
	Unit 2	**XML**			
	A	Introduction, syntax, well form XML document, DTD, schema			CO1,CO3
	B	XML Processors/Parser: DOM and SAX			CO1,CO3
	C	XML Technology: xlink, xpath, xpointer, xslt , displaying XML file data into HTML file			CO1,CO3
	Unit 3	**JAVA APPLET & SERVLET**			
	A	Introduction to Applet , Creation of applet,Managing Applets			CO1,CO3
	B	Introduction to JDBC and its Components,Implementing JDBC in Applet.			CO1,CO3
	C	Servlet, Creating Servlet, Managing request and response in Servlet, Servlet Collaboration, Session Tracking			CO1,CO3
	Unit 4	**JAVA SERVER PAGES & ENTERPRISE JAVA BEANS**			
	A	Introduction to JSP , Life cycle of JSP,JSP Application Design			CO3
	B	Scripting elements, scriptlet tag, expression tag, declaration tag, Implicit Objects, JSP Objects, Directive Elements			CO3
	C	EJB - Introduction, Components of EJB, Architecture of EJB			CO3
	Unit 5	**RMI AND JAVA NETWORKING**			
	A	Remote Method Invocation - Introduction, Structure of RMI, Implementing RMI			CO4
	B	Sockets: Introduction, Application, TCP socket, UDP socket			CO4
	C	Socket Implementation, Client and Server sockets, data transmission over socket			CO4
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Ivan Bayross,"HTML,DHTML, JavaScript, Perl & CGI", BPB Publication 2. Schildt H, "The Complete Reference JAVA2", TMH 3. Schildt H, "The Complete Reference J2EE", TMH			
	Other References	2. Rick Delorme," Programming in HTML5 with JavaScript and CSS3", Microsoft			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1:Design interactive web pages by applying CSS .	PO3,PO5,PO8,PO12,PS01,PSO3,PSO4
1.	CO2: Design web page which has animation and dynamic data	PO3,PO5,PO8,PO10,PSO3,PSO4
2.	CO3: Design web pages/site having validation on user data access. .	PO3,PO4,PO5,PO8,PO10, PS01,PSO3,PSO4
3.	CO4: Develop web site for small business and organization or for individual	PO3,PO4,PO5,PO8,PO10, PO12,PSO3,PSO4

PO and PSO mapping with level of strength for Course Web Technology(Course Code CSE 458)

Cos	PO1	PO2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO 11	PO12	PS O1	PSO2	PSO3	PSO4
CO1	1	-	3	1	3	2	-	3	2	2	2	3	3	-	3	3
CO2	2	-	3	2	3	2	-	3	1	3	2	3	2	-	3	3
CO3	1	-	3	3	3	2	-	3	1	3	2	3	3	-	3	3
CO4	2	-	3	3	3	2	-	3	2	3	2	3	2	-	3	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSP 458, Web Technology Lab

School: SET		**Batch: 2018**
Program: BTECH		**Current Academic Year:**
Branch:CSE		**Semester: VII**
1	Course Code	**CSP458**
2	Course Title	Web Technology Lab
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	Provide the knowledge to design and develop web application with and without database. Students will gain the skills and project-based experience needed for entry into web application and development careers. It provides information about web technologies that relate to the interface between web servers and their clients.
5	Course Objective	On successful completion of this module students will be able to: 1. Design interactive web pages 2. Design web pages/site having validation on user data access. 3. Develop web site for small business and organization or for individual 4. Client server communication RMI

6	Course Outcomes	This course is an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how different computers and devices to communicate and share resources as well as to give the basic overview of the different technologies.	
7	Course Description		
8	Outline syllabus		CO Mapping
	Unit 1	**INTRODUCTION TO HTML & JAVA SCRIPT**	
		1. Write HTML code to design College Website 2. Write HTML code to design students registration form 3. Write javascript code to perform validation on above form.	CO1, CO2
	Unit 2	**XML**	
		1. Write a program in XML to create Product Catalog. 2. Write a program for Product Catalog DTD. 3. Write a program to display the XML file data into HTML file.	CO1,CO2
	Unit 3	**JAVA APPLET & SERVLET**	
		1. Write a program to count number of character in words in the text written in text area. 2. Write a program to draw circle using mouse click event. 3. Write a program to insert and then retrieve name,rollno,and branch rom the database using JDBC	CO2, CO3,CO4
	Unit 4	**JAVA SERVER PAGES & ENTERPRISE JAVA BEANS**	
		1. Write a program to create registration form using jsp. 2. Write a program to describe jsp:param,jsp:include and jsp forward action. 3. Write a program to implement EJB	CO1,CO2,CO3
	Unit 5	**RMI AND JAVA NETWORKING**	

		1. Write a program to perform addition using RMI 2. Create Chat application using TCP socket Programming. 3. Write a program in which Client keeps reading input from user and sends to the server until "Over" is typed.			CO3,CO4
	Mode of examination	Jury/Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	1. Ivan Bayross,"HTML,DHTML, JavaScript, Perl & CGI", BPB Publication 2. Schildt H, "The Complete Reference JAVA2", TMH 3. Schildt H, "The Complete Reference J2EE", TMH			
	Other References	4. Rick Delorme," Programming in HTML5 with JavaScript and CSS3", Microsoft			

Syllabus: CSP 497, Major Project -1

School: SET		**Batch : 2018 - 2022**	
Program: B.Tech		**Current Academic Year: 2018-2019**	
Branch: CSE		**Semester: 7th**	
1	Course Code	**CSP497**	Course Name: Major Project -1
2	Course Title	Major Project -1	
3	Credits	3	
4	Contact Hours (L-T-P)	0-0-6	
	Course Status	Compulsory	
5	Course Objective	13. To align student's skill and interests with a realistic problem or project 14. To understand the significance of problem and its scope 15. To realize the outcome artifacts of the project. 16. Students will make decisions within a framework	
6	Course Outcomes	Students will be able to: CO1: Identify problems in engineering and technology in selected field of interest. Gather and manage the information required to develop a project CO2: Discuss and accumulate the background information CO3: Synthesize and apply prior knowledge of mathematics, computer science and engineering. CO4: To prepare the designs requirements, functional and concept design.	

		CO5: To build and evaluate the modules to verify the required need of the project. CO6: To start the actual implementation of the project work to produce the deliverables. To design and implement solutions to open-ended problem/project.			
7	Course Description	The object of Major Project-I is to enable the student to take up investigative study in the broad field of Computer Science & Engineering, either fully theoretical/practical orinvolving both theoretical and practical work to be assigned by the Department on an individual basis or two/three students in a group, under the guidance of a Supervisor.			
8	Outline syllabus				CO Mapping
	Unit 1	Problem identification, Literature survey/Gather & analyze information from multiple sources			CO1, CO2
	Unit 2	Formulate solution/ Problem Description: Project Planning, Time and Cost Estimation and budgeting, Risk Management, Project scheduling and Planning Tools: Work Breakdown structure, LRC, Gantt charts, CPM/PERT Networks. Creating System Requirement Specifications (Functional & Non Functional)			CO1, CO2, CO3
	Unit 3	Preparing Design: Data Flow Diagrams & Flow Charts, Use of appropriate tools and techniques for project design			CO2, CO3, CO4
	Unit 4	Identify and Implement Project Modules			CO4, CO5
	Unit 5	Use of appropriate tools/technologies for coding the modules			CO4, CO5, CO6
		Report on final problem statement, specifications, project schedule, final concept design and project schedule Report and Presentation - Project Modules development			
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: Identify problems in engineering and technology in selected field of interest. Gather and manage the information required to develop a project	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12
2.	CO2: Discuss and accumulate the background information.	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: Synthesize and apply prior knowledge of mathematics, computer science and engineering	PO1, PO2, PO3, PO6, PO5, PO9, PO10, PO11, PO12
4.	CO4: To prepare the designs requirements, functional and concept design	PO1, PO2, PO3, PO6, PO7, PO9, PO10, PO11, PO12

5.	CO5: To build and evaluate the prototype to verify the required need of the project.	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12
6.	To start the actual implementation of the project work to produce the deliverables. To design and implement solutions to open-ended problem/project.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Major Project -1 (Course Code CSP497)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	-	-	2	3	3	2	3
CO2	3	2	3	3	3	-	2	-	3	3	2	3
CO3	3	2	3	-	3	3	-	-	3	3	2	3
CO4	3	2	3	-	-	2	2	-	3	3	2	3
CO5	3	2	3	3	3	-	2	2	2	3	3	3
CO6	3	2	3	3	3	1	3	3	3	3	3	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 499, Industrial Internship-III

School: SET		**Batch : 2018-2022**
Program:B.Tech		**Current Academic Year:**
Branch: CSE		**Semester:VII**
1	Course Code	CSP499 Course Name
2	Course Title	Industrial Internship-III
3	Credits	1
4	Contact Hours (L-T-P)	0-0-2
	Course Status	UG
5	Course Objective	1. Get hands-on experience about real world problems in a field relevant to their major of studies. 2. Acquire confidence for employment after graduation. 3. Acquire skills important for time management, discipline, selflearning 4. Effective communication and so on. Learn practically about team-work, collaboration, and leadership.
6	Course Outcomes	CO1: Arrive at work as scheduled, ready to work, and stay for the agreed upon time

		CO2: Present yourself in a professional manner at all times, including being appropriately dressed for your workplace CO 3: Communicate any concerns with your supervisor and the internship coordinator in a timely manner and respectfully CO 4: Demonstrate enthusiasm and interest in what you are doing; ask questions and take initiative as appropriate. CO 5. Exposure to professional and ethical responsibility			
7	Course Description	The Internship aims to offer students the opportunity to apply their knowledge in real-life environments through an industry placement for eight-weeks. It is expected that the skills students will gain from working with an organization will help them perform better on their jobs after graduation. In addition, the Internship greatly increases the chances for students to obtain full time employment after graduation.			
8	Outline syllabus				CO Mapping
	Unit 1	Define objectives and conditions for the internship, ensuring students that it is related to the study path carried out at the University. Specify the names of the university supervisor, the Host Organization supervisor and the duration, the period in which the internship will be carried out and any changes in duration			**CO1**
	Unit 2	The internship work plan is drawn up in consultation with the student, the supervising faculty at the university and the internship supervisor for the organisation offering the internship.			**CO2**
	Unit 3	Project during Internship involves: a) project activated by the Program Director / Host Organization. b) Project activity to be monitored by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project.			**CO3,CO6**
	Unit 4	Submission of evaluation form and final report completed by the intern.			**CO3,CO4**
	Unit 5	Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee.			**CO4,CO5**
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	NIL	40%	
	Text book/s*	NA			
	Other References	NA			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: Arrive at work as scheduled, ready to work, and stay for the agreed upon time.	PO1, PO2, PO12, PSO4
2.	CO2: Present yourself in a professional manner at all times, including being appropriately dressed for your workplace	PO1, PO12, PSO1, PSO4
3.	CO 3: Communicate any concerns with your supervisor and the internship coordinator in a timely manner and respectfully	PO1, PO2, PO12, PSO2, PSO4
4.	CO 4: Demonstrate enthusiasm and interest in what you are doing; ask questions and take initiative as appropriate.	PO1, PO12, PSO2, PSO4
17.	CO 5. Exposure to professional and ethical responsibility	PO1, PO6, PO8, PO12, PSO2, PSO4

PO and PSO mapping with level of strength for Industrial Internship-III(Course Code CSP 499)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	-	-	-	-	-	-	-	-	-	3	3	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO3	3	2	-	-	-	-	-	-	-	-	-	3	-	2	-	3	-
CO4	3	-	-	-	-	-	-	-	-	-	-	3	-	3	-	2	-
CO5	3	-	-	-	-	2	-	2	-	-	-	3	-	3	-	3	-

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: ARP 401, Problem Solving Creative Thinking and Leadership Skills

School: SET		**Batch :** 2018-22	
Program:		**Current Academic Year:** 2018-19	
Branch: CSE		**Semester:** VIIth |PSC	
1	Course Code	**ARC 401**	Course Name **Problem Solving Creative Thinking and Leadership Skills**
2	Course Title	**Problem Solving Creative Thinking and Leadership Skills**	

3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status		
5	Course Objective	To enhance holistic development of students and improve their employability skills. Provide a 360 degree exposure to learning elements of Business English readiness program, behavioural traits, achieve softer communication levels and a positive self-branding along with augmenting numerical and altitudinal abilities. To up skill and upgrade students' across varied industry needs to enhance employability skills. By the end of this semester, a will have entered the last threshold of his/her employability enhancement and skill building activity exercise.	
6	Course Outcomes	CO1: *Inculcate Innovative & Critical Thinking abilities | Problem Solving attitude* CO2:*Team Building & Team Synergy | Ownership | Accountability | Trust* CO3: *Time Management | Leadership skills | Verbal Abilities-5* CO4: *Level-5 of quant , aptitude and reasoning abilities*	
7	Course Description	This is the final level of the program where in a student is now a step away from full readiness to step out and greet the world. This semester equips students with Innovative & Critical Thinking abilities, Problem Solving attitude,Team Building, Team Synergy,Ownership, Accountability, Trust, Time Management, Leadership skills and Verbal Abilities-5	
8	Outline syllabus – ARC 401		
	Unit 1	**Campus to Corporate**	**CO MAPPING**
	A	Innovative & Critical Thinking | Problem Solving	CO1
	B	Team Building & Team Synergy | Ownership | Accountability | Trust	CO2
	C	Time Management | Leadership skills | Verbal Abilities-5	CO3
	Unit 2	**Introduction to APTITUDE TRAINING- Reasoning- Logical/ Analytical**	
	A	Puzzles | Linear Arrangement & Circular | AMCAT Practice Paper Exercise Kit	CO4
	B	E- Litmus Practice Paper Kit	CO4
	C	C- Cube Practice Test	CO4
	Unit 3	**Quantitative Aptitude**	
	A	AMCAT Practice Paper Exercise Kit	CO4
	B	E- Litmus Practice Paper Kit	CO4
	C	C- Cube Practice Test	CO4
	Weightage Distribution	*(CA)Class Assignment/Free Speech Exercises / JAM – 60% | (ETE) Group Presentations/Mock Interviews/GD/ Reasoning, Quant & Aptitude – 40%*	
	Text book/s*	*Wiley's Quantitative Aptitude-P Anand* | ***Quantum CAT – ArihantPublications*** | ***Quicker Maths- M. Tyra*** | *Power of Positive Action (English, Paperback, Napoleon Hill)* | *Streets of Attitude (English, Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness - Nathaniel Brandon* | *Goal Setting (English, Paperback, Wilson Dobson*	

Syllabus: CSE 460, Mobile Computing (-4)

School: SET		**Batch : 2018**	
Program: B.Tech		**Current Academic Year:**	
Branch:CSE		**Semester:VII**	
1	Course Code	CSE460 | Course Name	
2	Course Title	Mobile Computing	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	ELECTIVE	
5	Course Objective	The objective of the course is to impart knowledge of mobile and wireless computing systems and techniques.	
6	Course Outcomes	Students will be able to: CO1. Understand the basic concepts and principles in mobile computing. CO2.Analyze the structure and components for mobile IP and mobility Management. CO3. Develop algorithms for allocation estimations based on different positioning techniques and platforms. CO4. Design and develop mobile applications.	
7	Course Description	This course will give you an understanding of mobile computer systems particularly in the context of wireless network systems such as 2G/3G/4G mobile telephony, data networks, and other wireless networks and infrastructure.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction**	
	A	Wireless transmission , Frequencies for radio transmission	CO1, CO2
	B	Signals , Antennas , Signal Propagation , Multiplexing, Modulations	CO1, CO2
	C	Spread spectrum, MAC, SDMA , FDMA , TDMA , CDMA , Cellular Wireless Networks	CO1, CO2
	Unit 2	**Telecommunication Networks**	
	A	GSM: Mobile services, System architecture, Radio interface, Protocols	CO1,CO2,CO4
	B	Localization and calling, Handover, Security	CO1,CO2,CO4
	C	General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes,	CO1,CO2,CO4
	Unit 3	**Wireless LANs**	
	A	Introduction to IEEE 802.11b/g/n	CO1,CO2,CO3
	B	Bluetooth technologies and architecture.	CO1,CO2,CO3
	C	HIPERLAN, WML programming	CO4,CO2
	Unit 4	**Mobile Network Layer**	

	A	Mobile IP Goals, Entities, IP packet Delivery Agent Advertisement and Discovery, Registration.			CO1,CO2
	B	Hidden and exposed terminal problems ,Routing protocols classification			CO1,CO2
	C	DSDV, DSR, AODV , Security			CO1,CO2,CO3
	Unit 5	**Mobile Transport Layer & Wireless Application Protocol**			
	A	Traditional TCP, Indirect TCP,			CO1,CO2,CO4
	B	Snooping TCP, Mobile TCP			CO1,CO2,CO4
	C	WAP: Protocols, Architecture			CO1,CO2,CO4
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1.JochenSchiller : Mobile Communication, Pearson Education.			
	Other References	1.U. Hansman and L. Merck : Principles of Mobile Computing", 2nd Ed., Springer. 2. D. Milojicic, F. Douglis. : Mobility Processes, Computers and Agents",Addison Wesley.			

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1. Understand the basic concepts and principles in mobile computing.	PO1,PO2,PO3,PO4,PSO1
2.	CO2.Analyze the structure and components for mobile IP and mobility Management.	PO1, PO3, PO4, PSO2
3.	CO3. Develop algorithms for allocation estimations based on different positioning techniques and platforms.	PO1,PO2,PO3,PO4
4.	CO4. Design and develop mobile applications.	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Mobile Computing(Course Code CSE 460)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1

CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

Syllabus: CSE 459, Software Testing(-4)

School: SET		**Batch : 2018-22**	
Program:B.Tech		**Current Academic Year:**	
Branch:CSE/IT		**Semester:VII**	
1	Course Code	CSE459 Course Name	
2	Course Title	Software Testing	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	ELECTIVE	
5	Course Objective	The primary objective of this course is to introduce and instruct software testing and Quality assurance concepts, strategies, and techniques in order to develop a total understanding of the testing process and how it impacts the software project.	
6	Course Outcomes	Students will be able to: CO1: Perform functional and non-functional testing CO2: Design test case and make test case report CO3:Locate bugs and analyze their impact CO4:Perform control flow and data flow testing CO5:Memorize how to effectively plan your tests, communicate the bugs you find, and measure your success as a software tester CO6:Assess various test automation tools available in market and choose appropriate tool for kinds of testing	
7	Course Description	This course will examine fundamental software testing and related program analysis techniques. In particular, the important phases of testing will be reviewed, emphasizing the significance of each phase when testing different types of software. The course will also include concepts such as test generation, test coverage, regression testing, mutation testing, program analysis (e.g., program-flow and data-flow analysis), and test prioritization.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction	
	A	Human and errors, Testing Objectives, Principles of Testing, Behaviour and Correctness, Debugging and its techniques	CO1, CO2
	B	Software metrics, Software Testing Life Cycle, Testing activities and Levels, Testing myths and facts	CO1, CO2
	C	Testing exit criteria, Bug defect life cycle, White Box and Black Box Testing	CO1, CO2, CO6
	Unit 2	Unit Testing	
	A	Concept of Unit Testing, Static Unit Testing, Defect Prevention, Dynamic Unit Testing, Mutation Testing	CO1, CO2,CO4
	B	Control Flow Testing: Overview of Control Flow Testing, Control Flow Graph, Paths in a Control Flow Graph	CO1, CO2,CO4
	C	Path Selection Criteria, Regression testing , Agile testing	CO1, CO2,CO4
	Unit 3	Data Flow & Performance testing	

	A	Data Flow Anomaly, Overview of Dynamic Data Flow Testing, Data Flow Graph, Data Flow Terms	CO1,CO2,CO3
	B	Data Flow Testing Criteria, Comparison of Data Flow Test Selection Criteria, Feasible Paths and Test Selection Criteria	CO1,CO2,CO3
	C	Integration Testing: Integration Testing, Integration Techniques , Performance testing: Stress , Load , Volume	CO4, CO6
	Unit 4	Functional Testing	
	A	Equivalence Class Partitioning, Boundary Value Analysis, Decision Tables, Random Testing, Error Guessing, Category Partition	CO1,CO2,CO3
	B	Test case designing – Test cases, Test case format, Test case designing, Acceptance testing and criteria	CO1,CO2,CO3
	C	Automation testing**:** Need for automation , categorization of Testing tools, Selection of testing tools, Guidelines for automated testing	CO1,CO2,CO3
	Unit 5	Controlling and Monitoring	
	A	Test metrics and measurements –project, progress and productivity metrics – Status Meetings – Reports and Control Issues – Criteria for Test Completion – SCM	CO1,CO2,CO3,CO6
	B	Types ofreviews – Developing a review program – Components of Review Plans– Reporting	CO1,CO2,CO3
	C	Review Results. – evaluating software quality – defect prevention – testing maturitymodel	CO1,CO2,CO3,CO6
	Mode of examination	Theory	
	Weightage Distribution	CA / MTE / ETE 30% / 20% / 50%	
	Text book/s*	1. SagarNaik&PiyuTripathy, “Software Testing and Quality Assurance: Theory and Practice”, Wiley.	
	Other References	1.Naresh Chauhan, “Software Testing : Principles and practices”, Oxford university press 2.Boris Beizer, “Software Testing Techniques”, Dreamtech Press 3.K.K. Aggrawal and Yogesh Singh, “ Software Engineering” New Age International Publication	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	**CO1:**Perform functional and non-functional testing	PO1,PO2,PO3,PO4,PSO1
2.	**CO2:**Design test case and make test case report	PO1, PO3, PO4, PSO2
3.	**CO3:**Locate bugs and analyze their impact	PO1,PO2,PO3,PO4
4.	**CO4:** Perform control flow and data flow testing	PO9, PO10,PO11, PSO5
5.	**CO5**: Memorize how to effectively plan your tests, communicate the bugs you find, and measure your success as a	PO1,PO2,PO3,PO4

	software tester.	
6.	**CO6:**Assess various test automation tools available in market and choose appropriate tool for kinds of testing	PO1, PO3, PO4, PSO2

PO and PSO mapping with level of strength for Course Name Software Testing(Course Code CSE 459)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3
CO5	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO6	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2

1-Slight (Low) **2-Moderate (Medium)** **3-Substantial (High)**

Syllabus: CSP 498, Major Project - 2

School: SET		**Batch : 2018 – 2022**
Program: B.Tech		**Current Academic Year: 2018-2019**
Branch: CSE / IT		**Semester: 3rd**
1	Course Code	**CSP498** Course Name: Major Project -2
2	Course Title	Major Project -2
3	Credits	9
4	Contact Hours (L-T-P)	0-0-18
	Course Status	Compulsory
5	Course Objective	1. To understand the concept of project design after the completion of project planning 2. Students making decisions within a framework 3. Continuous evaluation of the project 4. A final product to be evaluated for quality

6	Course Outcomes	Students will be able to: CO1: To identify the test procedure for each implemented module CO2: To perform testing using test techniques associated with the white box and black box test-approach methods CO3: To deploy and justify the project after successful testing CO4: Use different tools forcommunication, testing andreport writing. CO5:Enhancing the technical skill and report writing. CO6: To provide a goodtraining for the students in R&D work and technical leadership.			
7	Course Description	The objective of Major Project-II is to enable the student to extend further the development of project till testing and deployment under the guidance of a Supervisor.			
8	Outline syllabus				CO Mapping
	Unit 1	Testing of the modules, Use of appropriate tools/techniques for testing			CO1, CO2
	Unit 2	Deploy & demonstrate developed modules of the project			CO1, CO2, CO3
	Unit 3	Preparing a Project Report in the standard format for being evaluated by the Supervisor			CO4, CO5, CO6
	Unit 4	Submission of Project and Report to Departmental Committee			CO4, CO5, CO6
	Unit 5	Final Presentation before Departmental Committee			CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		60%	NA	40%	
	Text book/s*				
	Other References				

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO)
1.	CO1: To start the actual implementation of the project work to produce the deliverables. To design and implementsolutions to open-endedproblem/project.	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12

2.	CO2: To identify the test procedure for each implemented module	PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12
3.	CO3: To perform testing using test techniques associated with the white box and black box test-approach methods	PO1, PO2, PO3, PO6, PO5, PO9, PO10, PO11, PO12
4.	CO4: To deploy and justify the project after successful testing	PO1, PO2, PO3, PO6, PO7, PO9, PO10, PO11, PO12
5.	CO5:Use different tools forcommunication, design,implementation, testing andreport writing.	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12
6.	CO6: To provide a goodtraining for the students in R&D work and technical leadership.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12

PO and PSO mapping with level of strength for Course Name Major Project -2 (Course Code CSP498)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	-	-	2	3	3	2	3
CO2	3	2	3	3	3	-	2	-	3	3	2	3
CO3	3	2	3	-	3	3	-	-	3	3	2	3
CO4	3	2	3	-	-	2	2	-	3	3	2	3
CO5	3	2	3	3	3	-	2	2	2	3	3	3
CO6	3	2	3	3	3	1	2	2	2	3	3	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 454(-5)

School:		**Batch : 2018-22**	
Program: B.Tech		**Current Academic Year:**	
Branch:CSE		**Semester:VIII**	
1	Course Code	CSE454	Course Name
2	Course Title	Wireless Networks	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	UG	
5	Course Objective	The objective of this course is to enable students to understand the basic concepts of wireless networks specially MANETs and Sensor networks and apply these concepts for designing, evaluating and comparing wireless networks.	

6	Course Outcomes	Students will be able to: CO1: Differentiate between various types of wireless networks. CO2: Compare various MAC and routing protocols in sensor networks. CO3: Analyze energy management issue in MANETs. CO4: Establish a sensor networks.			
7	Course Description	Overview of wireless network architectures including cellular networks, local area networks, multi-hop wireless networks such as ad hoc networks, mesh networks, and sensor networks; capacity of wireless networks; medium access control, routing protocols, and transport protocols for wireless networks; mechanisms to improve performance and security in wireless networks; energy-efficient protocols for sensor networks.			
8	Outline syllabus				CO Mapping
	Unit 1	**FUNDAMENTAL OF WIRELESS NETWORKS**			
	A	Basic Networking Concepts			CO1, CO2
	B	Wireless LANs and PANs: Bluetooth, 802.11, and Hiper LAN			CO1, CO2
	C	Wireless internet, mobile ip (wi-fi routers)			CO1, CO2,CO3
	Unit 2	**INTRODUCTION TO MANETs**			
	A	Overview of MANETs			CO1, CO2,CO4
	B	Cellular vs. Ad-hoc networks, issues and challenges			CO1, CO2,CO4
	C	MAC protocols for ad-hoc networks			CO1, CO2,CO4
	Unit 3	**CHALLENGES IN MANETs**			
	A	Routing protocols for ad-hoc networks, DSR/AODV etc. (NS2)			CO1,CO2,CO3
	B	Transport protocols for ad-hoc networks			CO1,CO2,CO3
	C	Energy Management in Ad-Hoc Wireless Networks			CO2,CO4
	Unit 4	**SENSOR NETWORKS**			
	A	Introduction, Applications and Issues			CO1,CO2,CO3
	B	Networking Sensors, MAC protocols and Routing protocols			CO1,CO2,CO3
	C	Infrastructure Establishment Issues			CO1,CO2,CO3
	Unit 5	**CHALLENGES IN SENSOR NETWORKS**			
	A	Tasking and control in sensor networks			CO1,CO2,CO4
	B	Sensor network plat forms and tools, emerging trends in sensor networks **(SENSE)**			CO1,CO2,CO4
	C	Establishing sensor network using Zigbee,			CO1,CO2,CO4
	Mode of examination	Enabling Technologies For Wireless Sensor Networks.			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1.Ad Hoc Wireless Networks: Architectures and Protocols. C. Siva Ram Murthy, Prentice Hall PTR.			
	Other References	1.Wireless Sensor Networks: An Information Processing Approach, Feng Zhao and Leonidas Guibas, Publisher: Morgan Kaufmann.			

		2. Ad-hoc networks and sensor networks: Theory and Applications, D.D. Marios, D.P. Agarwal World Scientific.	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO1: Differentiate between various types of wireless networks	PO1,PO2,PO3,PO4,PSO1
2.	CO2: Compare various MAC and routing protocols in sensor networks.	PO1, PO3, PO4, PSO2
3.	CO3: Analyze energy management issue in MANETs	PO1,PO2,PO3,PO4
4.	CO4: Establish a sensor networks.	PO9, PO10,PO11, PSO5

PO and PSO mapping with level of strength for Course Name Wireless Networks (Course Code CSE 454)

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	--	--	--	2	2	1	2	1	3	2	2	1	2
CO2	3	2	3	3	--	--	--	2	2	2	1	1	2	3	2	1	2
CO3	3	3	3	3	--	--	--	1	1	1	3	2	3	2	1	1	1
CO4	2	2	2	2	1	--	--	2	3	3	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSA403, Digital Image Processing (-5)

School: SET		**Batch : 2018-2022**	
Program: B-TECH		**Current Academic Year:**	
Branch: CSE		**Semester: VIII**	
1	Course Code	**CSA 403**	Course Name: Digital Image Processing
2	Course Title	Digital Image Processing	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	UG	
5	Course Objective	**Students will try to learn:** 18. To study the image fundamentals and mathematical transforms necessary for image processing. 19. To study the image enhancement techniques 20. To study image restoration procedures. 21. To study the image compression procedures	

6	Course Outcomes	Students will be able to: CO-1. ***Recognize*** the fundamental concepts of a digital image processing system. CO-2. ***Formulate*** images in the frequency domain using various transformations. CO-3. ***Perform*** operations for image enhancement and image restoration. CO-4. ***Interpret*** image segmentation and representation techniques. CO-5. ***Design*** Image application for recognitions. CO-6. ***Support*** Computer Vision techniques in intelligent systems.			
7	Course Description	Basic concepts of Digital Image Processing			
8	Outline syllabus				CO Mapping
	Unit 1	**Introduction**			
	A	**Fundamental of digital image processing:**			CO1,
	B	**Image Enhancement** in Spatial Domain			CO1
	C	Arithmetic/Logic Operations in Image enhancement			CO1
	Unit 2	**Image Enhancement in Frequency Domain**			
	A	Fourier Transform Filters –			CO2
	B	Low-pass filter in frequency domain			CO2
	C	High-pass filter in frequency domain			CO2
	Unit 3	**Image Restoration & segmentation**			
	A	Restoration Process model.			CO3
	B	Segmentation and Region Extraction,			CO3
	C	Edge Detection and Corner Detection.			CO3
	Unit 4	**Color Image Processing**			
	A	Color Models, Color Transformation			CO4
	B	Morphological Image Processing			CO4
	C	Morphological Operations			CO4
	Unit 5	**Application of Digital Image Processing**			
	A	Face Recognition			CO5 ,CO6
	B	Optical character recognition			CO5,CO6
	C	Computer vision			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	1. Digital Image Processing 2nd Edition, Rafael C. Gonzalvez and Richard E. Woods. Published by: Pearson Education.			

	Other References	1. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY. 2. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ.

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	CO-1. ***Recognize*** the fundamental concepts of a digital image processing system.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
2.	CO-2. ***Formulate*** images in the frequency domain using various transformations.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
3.	CO-3. ***Perform*** operations for image enhancement and image restoration.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
4.	CO-4. ***Interpret*** image segmentation and representation techniques.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
5.	CO-5. ***Design*** Image application for recognitions.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5
6.	CO-6. ***Support*** Computer Vision techniques in intelligent systems.	PO1,PO2,PO3,PO11,PO12 PSO1,PSO2,PSO3,PSO4,SPO5

PO and PSO mapping with level of strength for Course Name Digital Image Processing(CSA 403)

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO 3	PS O4	PS O5
CO1	3	2	3	-	-	-	-	-	-	-	2	1	3	2	2	1	2
CO2	3	2	3	-	-	-	-	-	-	-	2	1	3	2	2	1	2
CO3	3	2	3	-	-	-	-	-	-	-	1	1	2	3	2	1	2
CO4	3	2	3	-	-	-	-	-	-	-	3	2	3	2	1	1	1
CO5	3	2	3	-	-	-	-	-	-	-	3	1	2	2	2	1	3
CO6	3	2	3	-	-	-	-	-	-	-	3	1	2	2	2	1	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Syllabus: CSE 456, Distributed System Concepts & Design (-6)

School: SET		**Batch :** 2018-22	
Program: B.Tech		**Current Academic Year:** 2018-19	
Branch: CSE		**Semester: VIII**	
1	Course Code	CSE456 | Course Name	
2	Course Title	Distributed System Concepts & Design	
3	Credits	3	
4	Contact Hours (L-T-P)	3-0-0	
	Course Status	ELECTIVE	
5	Course Objective	The course aims to provide an understanding of the principles on which the distributed systems are based; their architecture, algorithms and how they meet the demands of contemporary distributed applications. The course covers the building blocks for a study of distributed systems, and addressing the characteristics and the challenges that must be addressed in their design: scalability, heterogeneity, security and failure handling being the most significant.	
6	Course Outcomes	CO1: Understand the basic elements and concepts related to distributed system technologies CO2: Acquire knowledge of the core architectural aspects of distributed systems CO 3: Design and implement distributed applications CO 4:Distinguish the main underlying components of distributed systems and centralized system CO 5: Use and apply important security algorithms in distributed systems	
7	Course Description	This course covers issues and solutions related to the design and the implementation of distributed algorithms for different issues of distributed system.	
8	Outline syllabus		CO Mapping
	Unit 1	**Characterization of Distributed Systems**	
	A	Introduction, Examples of distributed Systems	CO1
	B	Resource sharing and the Web Challenges.	CO2
	C	System Models: Architectural models, Fundamental Models	CO2
	Unit 2	**Theoretical Foundation for Distributed System**	
	A	Limitation of Distributed system: Absence of global clock, shared memory	CO2, CO3
	B	Logical clocks; Lamport's logical clock, vector logical clocks	CO2, CO3
	C	Causal ordering of messages. Termination detection.	CO2, CO3
	Unit 3	**Distributed Mutual Exclusion**	
	A	Classification of distributed mutual exclusion, requirement of mutual exclusion theorem	CO3, CO4
	B	Token based Mutual exclusion algorithms, Non token based Mutual exclusion algorithms	CO3, CO4

	C	Performance metric for distributed mutual exclusion algorithms	CO3, CO4
	Unit 4	**Distributed Deadlock Detection**	
	A	System model, resource vs. communication deadlocks	CO3, CO4
	B	Deadlock prevention, avoidance, detection & resolution, centralized dead lock detection,	CO3, CO4
	C	distributed dead lock detection: Path pushing algorithms, edge chasing algorithms.	CO3, CO4
	Unit 5	**Data Security & Case Study**	
	A	Introduction , A Model of Cryptography, Private key cryptography	Co1,CO3, CO4
	B	Public key cryptography, Authentication in Distributed System	CO1, CO3, CO4
	C	Case study: The Kerberos System.	CO1, CO3, CO4
	Mode of examination	Theory	
	Weightage Distribution	CA	MTE
		30%	20%
	Text book/s*	1.Coulouris et al, *Distributed System: Concepts and Design,* Pearson Education	
	Other References	1. Singhal & Shivaratri, *Advanced Concept in Operating Systems*, Tata McGraw Hill. 2. Tanenbaum A S, Distributed *System*, Prentice Hall India 3.Stallings, W, *Cryptography and Network Security, 4th Edition*, Prentice hall India	

CO and PO Mapping

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific Outcomes (PSO)
1.	Understand the basic elements and concepts related to distributed system technologies	PO1, PO2, PSO1, PSO3
2.	Acquire knowledge of the core architectural aspects of distributed systems	PO1,PO2, PO3, PO4, PO9, PSO1, PSO2, PSO3
3.	Design and implement distributed applications	PO1, PO2, PO9, PSO1, PSO2, PSO3
4.	Distinguish the main underlying components of distributed systems and centralized system	PO1, PO2, PO9, PSO1,PSO2, PSO3
5.	Use and apply important security algorithms in distributed systems	PO1, PO2, PO9, PSO1,PSO2, PSO3

PO and PSO mapping with level of strength for Course Name Distributed System Concepts & Design **(Course Code CSE 456)**

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CSE 456	Distributed System Concepts & Design															
	CO1	2		1										2		1
	CO2		2		1					2				3	1	
	CO3	3	3	2						3					3	
	CO4	3	3	2	3					3					3	
	CO5	1	3	3	3	1				2				3	3	2