GOVERNMENT OF INDIA
MINISTRY OF
PARLIAMENTARY AFFAIRS

Azadi Ka Amrit Mahotsav

my GOV
मेरी सरकार

PREAMBLE TO THE CONSTITUTION

PREAMBLE

WE, THE PEOPLE OF INDIA,

having solemnly resolved to constitute India

into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC

REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity;

and to promote among them all

FRATERNITY assuring the dignity of the individual and

the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this 26th day of

November, 1949, do HEREBY ADOPT, ENACT AND GIVE

TO OURSELVES THIS CONSTITUTION.

I have read the Preamble

Signature

23-01-2022

SRI SIDDHARTHA ACADEMY OF HIGHER EDUCATION

("Deemed to be University u/s 3 of the UGC Act, 1956")
Accredited 'A+' Grade by NAAC
Agalakote, B.H.Road, Tumkur – 572 107.KARNATAKA, INDIA.

No. SSAHE/ACA-S&C/34/UG(BE)/2024   Date: 15/07/2024

NOTIFICATION

Sub: - Ordinance pertaining to Curriculum of Undergraduate Programme Bachelor of Engineering (4th Year Information Science and Engineering)

Ref: Proceedings of the Academic Council meeting held on 10/07/2024 vide agenda No. SSAHE/AC/XXVIII-12/2024

In exercise of the powers vested under section 6 of 6.05 of MoA / Rules of SSAHE, the Revised Ordinance pertaining to Curriculum of Undergraduate Programme Bachelor of Engineering (4th Year Information Science and Engineering) is notified herewith as per Annexure.

By Order,

REGISTRAR

REGISTRAR
Sri Siddhartha Academy of Higher Education
TUMKUR - 572 107, Karnataka.

To,
Dean / Principal, Sri Siddhartha Institute of Technology,

Copy to
1) Office of the Chancellor, SSAHE, for kind information,
2) PA to Vice-Chancellor / PA to Registrar / Controller of Examinations / Finance Officer, SSAHE
3) All Officers of the Academy Examination Branch / Academic Section
4) Guard File / Office copy.

Department of Information Science and Engineering
(Accredited by NBA from 2022-25)

Vision of the Department

"To impart knowledge to young aspirants to develop Information Technology based solutions for the Industrial and Societal needs".

Mission of the Department

➢ Prepare students to acquire knowledge in the field of Information Technology through effective teaching learning methodologies.
➢ Establish conducive environment for better learning through the state of the art curriculum to exhibit talents and ingenuity.
➢ Nurture the students to be industry ready by enhancing their employability skills and entrepreneurial skills.
➢ Develop Information Technology based solution as per the need of Society.

Program Educational Objectives (PEOs)

➢ Analyse, design and develop Information Technology based solutions using suitable platforms.
➢ Accomplish any tasks with ethical values and commitment to meet the societal problems.
➢ Inculcate team work capabilities and managerial skills to become entrepreneur or employee of an organization.
➢ Instil lifelong learning capabilities and to pursue higher education and research.

Program Outcomes (POs)

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

Program Specific Outcomes (PSOs)

1. Able to apply appropriate techniques for storage of huge amount of data and ensuring its integrity.
2. Choose appropriate method for data acquisition from real world and propose suitable solutions to solve problems.

Scheme of Teaching and Examination-2020 (170 Credits Scheme)

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

VII Semester B.E.

SI No.	Course Code		Course Title	Teaching Dept.	L	T	P	Credits	CIE	SEE	Total Marks	Exam Hrs
01	PC	IS7TH1	Cryptography and Network Security	ISE	3	-	0	3	50	50	100	3
02	PC	IS7TH2	Mobile Application Development	ISE	3	-	0	3	50	50	100	3
03	PE	IS7PE3X	Professional Elective-III	ISE	3	-	0	3	50	50	100	3
04	PE	IS7PE4X	Professional Elective-IV	ISE	3	-	0	3	50	50	100	3
05	PE	IS7PE5X	Professional Elective-V	ISE	3	-		3	50	50	100	3
06	PC	IS7LB1	Cryptography and Network Security Laboratory	ISE	0	-	3	1.5	50	50	100	3
07	PC	IS7LB2	Mobile Application Development Laboratory	ISE	0	-	3	1.5	50	50	100	3
08	PC	IS7PW1	Project Work Phase-I	ISE	0	-	4	2	50	-	50	-
L-Lecture, T-Tutorial, P-Practical,/Drawing, CIE-continuous Internal Evaluation, SEE-Semester End Examination				**Total**	**15**	**-**	**10**	**20**	**400**	**350**	**750**	**-**

Professional Elective-III	*Professional Elective-IV*	*Professional Elective-V*
IS7PE31: Agile Technologies IS7PE32: Digital Image Processing IS7PE33: Software Architecture and Design Patterns	IS7PE41: Soft and Evolutionary Computing IS7PE42: Block Chain Technology IS7PE43: Artificial Neural Networks	IS7PE51: Multimedia Computing IS7PE52: Cyber Forensic IS7PE53: Augmented Reality and Virtual Reality

Department: Information Science and Engineering		Semester:	VII
Subject: Cryptography and Network Security			
Subject Code:	IS7TH1	L – T – P - C:	3 – 0 – 0 –3

SI. No.	Course Objectives
1	Understand security mechanism with encryption and decryption ciphers.
2	Illustrate various security algorithms.
3	Understand key management and internet security techniques.
4	Able to learn system security and internet law and cyber-crimes.

Unit	Description	Hrs
I	**Introduction, Symmetric Ciphers: Introduction:** A Model for Network Security. **Classical Encryption Techniques:** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography. **Block Cipher and the Data Encryption Standard:** Block Cipher principles, The Data Encryption Standard, The Strength of DES, Electronic Code Book, Cipher Block Chaining Mode, Cipher Feedback Mode.	08
II	**Number Theory and Public Key Cryptosystem: Number Theory:** Prime Numbers, Format's and Euler's Theorems, Testing for Primality. **Public-Key Cryptography and RSA**: Principles of Public- Key Cryptosystems, The RSA Algorithm. Diffie-Hellman Key Exchange. **Cryptographic Data Integrity Algorithms:** Cryptographic Hash Functions, Two simple hash Functions, Secure Hash Algorithm. **Digital Signatures:** Digital Signatures, Digital Signature Standard.	08
III	**Key Management, Transport-Level Security: Key Management and Distribution:** Symmetric Key distribution using symmetric encryption, Symmetric Key distribution using Asymmetric encryption, Distribution of public keys, X.509 Certificates, Kerberos. Transport level security: Web Security considerations, Secure Sockets Layer and Transport Layer Security.	08
IV	**Internet Security, System Security: Electronic Mail Security**: Pretty Good Privacy. **IP Security**: Overview, IP Security Policy. Intruders: Intruders, Intrusion detection. **Malicious Software**: Types of Malicious Software Viruses.	08
V	**Internet Security, System Security (contd...) and Internet Law and Cyber Crimes: Firewalls**: The need for Firewalls, Firewall Characteristics, Types of Firewalls. Internet and Need for Cyber Law, Modes of Regulation of internet, Types of Cyber Terror Capability, Net Neutrality, Types of Cyber Crimes, India and the Cyber Law, Cyber Crimes and 'The Information Technology Act', 2000, Internet Censorship, Cyber Crimes and Enforcement Agencies.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Analyze various encryption and decryption ciphers.
CO2	Apply public key cryptography algorithms.
CO3	Understand and analyze key management and internet security techniques.
CO4	Understand system security and Indian cyber act to mitigate cyber-crimes.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	3	3	2		2	2					1		
CO2	3	3	3	3		2						1		
CO3	3	3	3	2		2	2					1		
CO4	1	2	3			3		3				1		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Cryptography and Network Security	William Stallings	Seventh Edition, Prentice Hall of India, 2016.
2	Cryptography, Network Security and Cyber Laws	Bernard Menezes	Cengage Learning, 2018
3	Cryptography and Network Security	Atul Kahate	Tata McGraw Hill, 4th Edition 2019

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Network Security: Private Communication in a Public World	Charlie Kaufman, Radia Perlman, Mike Speciner	Second Edition, Pearson, Education Asia.
2	Cyber Security and Cyber Laws	Alfred Basta, Nadine Basta, Mary Brown, Ravindra kumar	Cengage Learning

Department: Information Science and Engineering		Semester:	VII
Subject: Mobile Application Development			
Subject Code:	IS7TH2	L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Learn the basic environment of an Android app.
2	Illustrate the user interface and app functionality.
3	Interpret the techniques of app data access and persistence.
4	Appraise the testing and publishing of an app.

Unit	Description	Hrs
I	**Mobility and Android:** Introduction, Mobility Panorama, Mobile Platforms, App Development Approaches, Android Overview. **Getting Started with Android:** Introduction, Setting up Development Environment, Saying Hello to Android, Traversing an Android App Project Structure, Logical Components of an Android App, Android Tool Repository, Installing and Running App Devices. **Learning with an Application – 3CheersCable:**Introduction, 3CheersCable App, Mobile App Development Challenges, Tenets of a Winning App.	08
II	**App User Interface:** Introduction, Activity, UI Resources, UI Elements and Events, Interaction among Activities, Fragments, Action Bar. **App Functionality - Beyond UI:** Introduction, Threads, AsyncTask, Service, Notifications, Intents and Intent Resolution, Broadcast Receivers, Telephony and SMS.	08
III	**App Data - Persistence and Access:** Introduction, Flat Files, Shared Preferences, Relational Data, Data Sharing Across Apps, Enterprise Data**. Graphics and Animation:** Introduction, Android Graphics, Android Animation**.	08
IV	**Multimedia:** Introduction, Audio, Video and Images, Playback 185, Capture and Storage. **Location Services and Maps:** Introduction, Google Play Services, Location Services, Maps.	08
V	**Sensors:** Introduction, Sensors in Android, Android Sensor Framework, Motion Sensors**,** Position Sensors, Environment Sensors**. Testing Android Apps:** Introduction, Testing Android App Components, App Testing Landscape Overview**. Publishing Apps:** Introduction, Groundwork, Configuring, Packaging, Distributing.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Understand various approaches and technologies for app development.
CO2	Capable of understanding, designing app user interface and implementing app functionality.
CO3	Develop location services using device sensors while building android apps.
CO4	Capable of validating, packaging and moving apps to market.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	3	2	2	3							2		
CO2		3	3	2	1							2		
CO3	1	3	3	3	2							1		
CO4		3	1	2	3									

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Composing Mobile Apps: Learn|Explore|Apply using Android	Anubhav Pradhan, Anil V. Deshpande	Wiley, First Edition-2014

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Android Application Development All in one for Dummies	Barry Burd	2nd Edition: 1, 2015
2	Teach Yourself Android Application Development in 24 Hours	Lauren Darcey	1st Edition, Publication SAMS

Department: Information Science and Engineering		Semester:	VII
Subject: Agile Technologies			
Subject Code:	**IS7PE31**	L – T – P - C:	3 – 0 – 0 –3

Sl. No	Course Objectives
1	Understand the Agile manifesto, principles and the context of agile methods.
2	Know the concrete techniques of design and development that agile teams use to apply.
3	Learn practical tools to work on agile testing, which ones are essentially hyped and useless, which ones are actually harmful, and which ones will truly help you effectively produce high-quality software.
4	Understand various Industry Trends in Agile methodologies and technologies for project development.

Unit	Description	Hrs
I	**Fundamentals of Agile:** The Genesis of Agile, Introduction and background, Agile Manifesto and Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software Development, Agile project management, Design and development practices in Agile projects, Continuous Integration, Refactoring, Pair Programming, Simple Design.	**08**
II	**Agile Scrum Framework:** Introduction to Scrum, Project phases, Agile Estimation, Planning game, Product backlog, Sprint backlog, Iteration planning, User Stories, Characteristics and content of user stories, Project velocity, Burn down chart, Sprint planning and retrospective, Daily scrum, Scrum roles – Product Owner, Scrum Master, Scrum Team, Key challenges to implementing Agile Development and Project management Frameworks.	**08**
III	**Agile Software Design and Development:** Agile design practices, Difference between Agile and Traditional Approach, Role of design Principles including Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Dependency Inversion Principle in Agile Design, Interface Segregation Principles, Refactoring Techniques, Automated build tools, Version control.	**08**
IV	**Agile Testing:** Agile Testing, How is Agile Testing Different, Ten Principles for Agile Testers, Agile Testing Quadrants, Test-Driven Development(TDD), TDD Lifecycle, Acceptance tests, Managing testing cycle, Exploratory testing, Risk based testing, Regression tests, Why Automation, Tools to support the Agile tester.	**08**
V	**Industry Trends:** Agile Marketing, Challenges in Enterprise adoption of Agile methods, Agile ALM, Roles in an Agile project, Agile applicability framework, Agile in Distributed teams, Challenges in Agile, Agile methodology with cloud computing, Balancing Agility with Discipline, Agile rapid application development technologies.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Understand the business values of adopting Agile approaches to Software Development.
CO2	Capable of applying the agile development practices, design principles and refactoring to achieve agility.
CO3	Deploy automated build tools, version control and continuous integration.
CO4	Perform various testing activities within an Agile project.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			3	3	3		3		3	3				
CO2			3	3			2		3			3		
CO3		3	3	3	3									
CO4					3							3		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Agile Software Development with Scrum	By Ken Schawber, Mike Beedle	Publisher: Pearson
2	Agile Testing: A Practical Guide for Testers and Agile Teams	Lisa Crispin, Janet Gregory	Publisher: Addison Wesley
3	Agile Software Development, Principles, Patterns and Practices	Robert C. Martin	Publisher: Prentice Hall
4	Agile Software Development: The Cooperative Game	Alistair Cockburn	Publisher: Addison Wesley
5	User Stories Applied: For Agile Software	Mike Cohn	Publisher: Addison Wesley

Reference Books: Nil

Department: Information Science and Engineering			Semester:	VII
Subject: Digital Image Processing				
Subject Code:	**IS7PE32**		**L – T – P - C:**	**3 – 0 – 0 –3**

Sl. No	Course Objectives
1	Become familiar with digital image fundamentals.
2	Get exposed to simple image enhancement techniques in Spatial and Frequency domain.
3	Earn concepts of degradation function and restoration techniques.
4	Study the image segmentation and representation techniques.

Unit	Description	Hrs
I	**Digital Image Fundamentals:** Steps in Digital Image Processing – Components – Elements of Visual Perception – Image Sensing and Acquisition – Image Sampling and Quantization – Relationships between pixels – Color image fundamentals – RGB, HSI models, Two-dimensional mathematical preliminaries, 2D transforms – DFT, DCT.	**08**
II	**Image Enhancement:** Spatial Domain: Gray level transformations – Histogram processing – Basics of Spatial Filtering Smoothing and Sharpening Spatial Filtering, Frequency Domain: Introduction to Fourier Transform-Smoothing and Sharpening frequency domain filters – Ideal, Butterworth and Gaussian filters, Homomorphic filtering, Color image enhancement.	**08**
III	**Image Restoration:** Image Restoration – degradation model, Properties, Noise models – Mean Filters – Order Statistics – Adaptive filters – Band reject Filters – Band pass Filters – Notch Filters – Optimum Notch Filtering – Inverse Filtering – Wiener filtering.	**08**
IV	**Image Segmentation:** Edge detection, Edge linking via Hough transform – Thresholding – Region based segmentation – Region growing – Region splitting and merging – Morphological processing- erosion and dilation, Segmentation by morphological watersheds – basic concepts – Dam construction – Watershed segmentation algorithm.	**08**
V	**Image Compression And Recognition:** Need for data compression, Huffman, Run Length Encoding, Shift codes, Arithmetic coding, JPEG standard, MPEG. Boundary representation, Boundary description, Fourier Descriptor, Regional Descriptors – Topological feature, Texture – Patterns and Pattern classes – Recognition based on matching.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
CO2	Operate on images using the techniques of smoothing, sharpening and enhancement.
CO3	Understand the restoration concepts and filtering techniques.
CO4	Learn the basics of segmentation, features extraction, compression and recognition methods for color models.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	1										
CO2	2	1	2	2										
CO3	2	1	1	1										
CO4	2	1	1	2										

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Digital Image Processing	Rafael C. Gonzalez, Richard E. Woods	4th Edition, 2017

Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Digital Image Processing	Kenneth R. Castleman	Pearson, 2008

Department: Information Science and Engineering		Semester:	VII
Subject: Software Architecture and Design Patterns			
Subject Code:	**IS7PE33**	**L – T – P - C:**	**3 – 0 – 0 –3**

SI. No	Course Objectives
1	Learn how to add functionality to designs while minimizing complexity.
2	Understand the code qualities required to maintain to keep code flexible.
3	Familiar with the common design patterns.
4	Explore the appropriate patterns for design problems.

Unit	Description	Hrs
I	**Introduction:** What is a design pattern? Describing design patterns, the catalog of design pattern, organizing the catalog, how design patterns solve design problems, how to select a design pattern, how to use a design pattern. What is object- oriented development? , key concepts of object oriented design other related concepts, benefits and drawbacks of the paradigm.	08
II	**Analysis a System:** overview of the analysis phase, stage 1: gathering the requirements functional requirements specification, defining conceptual classes and relationships, using the knowledge of the domain. Design and implementation.	08
III	**Design Pattern Catalog:** Structural patterns, Adapter, bridge, composite, decorator, facade, flyweight and proxy.	08
IV	**Interactive systems and the MVC architecture:** Introduction, The MVC architectural pattern, analyzing a simple drawing program, designing the system, designing of the subsystems, getting into implementation , implementing undo operation , drawing incomplete items, adding a new feature, pattern based solutions.	08
V	**Designing with Distributed Objects:** Client server system, java remote method invocation, implementing an object oriented system on the web, a note on input and output, selection statements, loops and arrays.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Design and implement codes with higher performance and lower complexity.
CO2	Aware of code qualities needed to keep code flexible.
CO3	Experience core design principles and be able to assess the quality of a design with respect to these principles.
CO4	Capable of applying these principles in the design of object oriented systems.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2								3			3		
CO2	1	3	3	3	3							3		
CO3	2	3	3	2								3		
CO4	2	1	3	2								3		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Object-oriented analysis, design and implementation	Brahma Dathan, Sarnath Rammath,	Universities Press, 2015.
2	Design patterns Design Patterns: Elements of Reusable Object-Oriented Software	Erich Gamma, Richard helan, Ralph johman, John Vlissides	Pearson Publication, 2013.

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Pattern Oriented Software Architecture	Frank Buschmann, Regine Meunier, Hans Rohnert	Volume 1, 2007
2	Anti-Patterns: Refactoring Software, Architectures and Projects in Crisis	William J Brown et al.	John Wiley, 2008.

Department: Information Science and Engineering		Semester:	VII
Subject: Soft and Evolutionary Computing			
Subject Code:	IS7PE41	L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Familiarize with the basic concept of soft computing and intelligent systems.
2	Compare with various intelligent systems.
3	Analyse the various soft computing techniques.
4	Understand the concepts of fuzzy logic and other machine intelligence applications.

Unit	Description	Hrs
I	**Introduction to soft computing:** ANN, FS,GA, SI, ES, Comparing among intelligent systems ANN: introduction, biological inspiration, BNN&ANN, classification, first Generation NN, perceptron, illustrative problems.	08
II	**Adaline, Medaline, ANN:** (2nd generation), introduction, BPN, KNN, HNN, BAM, RBF, SVM and illustrative problems.	08
III	**Fuzzy logic:** introduction, human learning ability, undecidability, probability theory, classical set and fuzzy set, fuzzy set operations, fuzzy relations, fuzzy compositions, natural language and fuzzy interpretations, structure of fuzzy inference system, illustrative problems.	08
IV	**Introduction to GA**: GA, procedures, working of GA, GA applications, applicability, evolutionary programming, working of EP, GA based Machine learning classifier system, illustrative problems.	08
V	**Swarm Intelligent system:** Introduction, Background of SI, Ant colony system Working of ACO, Particle swarm Intelligence (PSO).	08

Course Outcomes:

Course outcome	Descriptions
CO1	Understand soft computing techniques.
CO2	Apply the learned techniques to solve realistic problems.
CO3	Differentiate soft computing with hard computing techniques.
CO4	Hybridize the Neural Network and fuzzy logic to form Neuro-fuzzy networks.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2											
CO2	2	2	3	1	1									
CO3	2	2	2											
CO4	2	2	2	2										

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Soft computing	N. P Padhya and S P Simon	Oxford University Press 2015

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Principles of Soft Computing	Shivanandam, Deepa S. N	Wiley India, ISBN 13: 2011

Department: Information Science and Engineering		Semester:	VII
Subject: Block chain Technology			
Subject Code:	**IS7PE42**	L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Understand the basics of Blockchain Technology.
2	Describe the underlying concepts of working of a Blockchain.
3	Explore different Blockchain platforms.
4	Understand the applications of Blockchain technology outside the currency.

Unit	Description	Hrs
I	**Blockchain 101:** Distributed systems, The history of Blockchain, Introduction to Blockchain, Types of Blockchain, CAP theorem and Blockchain Benefits and limitations of Blockchain.	**08**
II	**Decentralization and Cryptography:** Decentralization using Blockchain, Methods of decentralization, Routes to decentralization, Blockchain and full ecosystem decentralization, Smart contract, Decentralized organizations, Decentralized autonomous organizations, Decentralized autonomous corporations, Decentralized autonomous societies, Decentralized applications, Platforms for decentralization, Cryptographic primitives, Asymmetric cryptography, Public and private keys-Hash functions.	**08**
III	**Bitcoin and Alternative coins:** Bitcoin, Transactions, Blockchain Wallets, Bitcoin payments, Alternative Coins - Theoretical foundations, Bitcoin limitations, Namecoin, Litecoin, Primecoin.	**08**
IV	**Smart Contracts and Ethereum 101:** Smart Contracts: Definition, Ricardian contracts. Ethereum 101: Introduction, Ethereum Blockchain, Elements of the Ethereum Blockchain, Precompiled contracts, Accounts, Block, Ether, Messages, The Ethereum network, Applications developed on Ethereum.	**08**
V	**Alternative Blockchains**: Blockchains Kadena, Platforms, Blockchain outside of Currencies: Internet of Things, Government, Health, Finance and Media.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Explain the key elements of Blockchain, decentralization, cryptography and consensus protocols and its architecture.
CO2	Demonstrate the use of Ethereum, Bitcoin, alternative coins, smart contracts, alternative block chains.
CO3	Analyse the design principles of different distributed ledger platforms including Ethereum, Bitcoin and other alternative coins.
CO4	Identify and describe applications of Blockchain beyond crypto currencies.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	1		3									3		
CO3		3		2	2							3		
CO4	1			2		3						2		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Mastering Blockchain Distributed ledgers, decentralization and smart contracts explained	Imran Bashir	Packt Publishing Ltd, Second Edition, ISBN 978-1- 78712-544-5, 2017
2	Blockchain Technology Overview	Dylan Yaga, Peter Mell, Nik Roby Karen Scarfone	NISTIR 8202

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Bitcoin and Crypto currency Technologies: A Comprehensive Introduction	Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder	Princeton University Press (July 19, 2016).
2	Blockchain Basics	D. Drescher	Apress, 2017
3	Mastering Bitcoin	Andreas M Antonopoulos	O'Reilly Media publications, First Edition, ISBN: 978-1- 449-37404-4, Dec. 2014

Department: Information Science and Engineering		Semester:	VII
Subject: Artificial Neural Networks			
Subject Code:	IS7PE43	L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Perceive the basic concepts of ANN, applications and learning techniques.
2	Explain the working of perceptron and multilayer perceptron and related learning algorithms.
3	Gain essential knowledge on convolution neural networks and applications.
4	Explore structured probabilistic models for deep learning.

Unit	Description	Hrs
I	**Artificial Neural Networks – Introduction and Learning Process-I:** What is a Neural Network? Human Brain, Models of a Neuron, Neural Networks Viewed as DG, Feedback, Network Architectures, Error-correction learning, Memory-based learning, Hebbian Learning, Competitive learning, Boltzmann Learning.	08
II	**Learning Process-II and Perceptron:** Learning with a teacher, learning without a teacher, Learning tasks, Memory and adaptation. Statistical Learning Theory, VC dimension, Probably approximately correct model of learning, Single-Layer Perceptrons: Adaptive filtering problem, Unconstrained optimization techniques: Steepest Descent, Newton's, Gauss-Newton; Linear Least-Squares Filter, LMS algorithm, Learning curves, Learning rate annealing techniques, Perceptron and Convergence theorem.	08
III	**Multilayer Perceptron and Generalization:** BP algorithm, Two passes of computation, Sequential and Batch Modes of training, Stopping Criteria, XOR problem, Heuristics for BP algorithm to perform better, Output representation and Decision rule, Generalization, Universal approximation theorem, Cross-validation.	08
IV	**Convolution Networks:** Convolution Operation, Motivation, Pooling, Convolution and Pooling as an Infinitely Strong Prior, Variants of the basic convolution function, Structured Outputs, Data types, Efficient Convolution Algorithms, Random or Unsupervised features, The Neuroscientific basis for convolutional networks.	08
V	**Structured Probabilistic Models for Deep Learning:** The challenge of unstructured modeling, Using graphs to describe model structure: Directed, Undirected, Partition function, Energy-based models, Factor graphs; Sampling from graphical models, Advantages of structured modeling, learning about dependencies, Inference and approximate inference, The deep learning approach to structured probabilistic models.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Describe basic concepts of neural network, its applications and various learning models.
CO2	Analyse different Network Architectures, learning tasks, convolutional networks and deep learning models.
CO3	Investigate and apply neural networks model and learning techniques to solve problems related to society and industry.
CO4	Demonstrate a prototype application developed using any NN tools and APIs.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2												
CO2	2	3	1											
CO3	2	2	3	2	1									
CO4	2	2	2	2	3									

Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Neural Networks – A Comprehensive Foundation	Simon Haykin	2ndEdition, 2005. PHI, (Units I to III).
2	Deep Learning (Adaptive Computation and Machine Learning Series)	Ian Good fellow, Yoshua Bengioand Aaron Courville	(3 January 2017), MIT Press, ISBN-13: 978- 0262035613.
3	Introduction to Artificial Neural Networks	Gunjan Goswami	2012 Edition, S.K. Kataria & Sons; ISBN-13: 978-9350142967.
4	Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms	Nikhil Buduma	2nd Edition, by O'Reilly Publications, 2017, ISBN-13:9781491925614.

Department: Information Science and Engineering		Semester:	VII
Subject: Multimedia Computing			
Subject Code:	IS7PE51		L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Learn and understand technical aspect of Multimedia Systems.
2	Understand the standards available for different audio, video and text applications.
3	Design and develop various Multimedia Systems applicable in real-time.
4	Learn various multimedia authoring systems.

Unit	Description	Hrs
I	**Introduction, Media and Data Streams, Audio Technology:** Multimedia Elements; Multimedia Applications; Multimedia Systems Architecture; Evolving Technologies for Multimedia Systems; Defining Objects for Multimedia Systems; Multimedia Data Interface Standards; The need for Data Compression; Multimedia Databases. Media: Perception Media, Representation Media, Presentation Media, Storage Media, Transmission Media, Information Exchange Media, Presentation Spaces & Values, and Presentation Dimensions; Key Properties of a Multimedia System: Discrete & Continuous Media, Independence Media, Computer Controlled Systems, Integration; Characterizing Data Streams: Asynchronous Transmission Mode, Synchronous Transmission Mode, Isochronous Transmission Mode; Characterizing Continuous Media Data Streams. Sound: Frequency, Amplitude, Sound Perception and Psychoacoustics; Audio Representation on Computers; Three Dimensional Sound Projection; Music and MIDI Standards; Speech Signals; Speech Output; Speech Input; Speech Transmission.	08
II	**Graphics and Images, Video Technology, Computer-Based Animation:** Capturing Graphics and Images Computer Assisted Graphics and Image Processing; Reconstructing Images; Graphics and Image Output Options. Basics; Television Systems; Digitalization of Video Signals; Digital Television; Basic Concepts; Specification of Animations; Methods of Controlling Animation; Display of Animation; Transmission of Animation; Virtual Reality Modeling Language.	08
III	**Data Compression 1:** Storage Space; Coding Requirements; Source, Entropy, and Hybrid Coding; Basic Compression Techniques; JPEG: Image Preparation, Lossy Sequential DCT-based Mode, Expanded Lossy DCT-based Mode, Lossless Mode, Hierarchical Mode. **Data Compression 2:** H.261 (Px64) and H.263: Image Preparation, Coding Algorithms, Data Stream, H.263+ and H.263L; MPEG: Video Encoding, Audio Coding, Data Stream, MPEG-2, MPEG-4, MPEG-7; Fractal Compression.	08

IV	**Optical Storage Media:** History of Optical Storage; Basic Technology; Video Discs and Other WORMs; Compact Disc Digital Audio; Compact Disc Read Only Memory; CD-ROM Extended Architecture; Further CD-ROM-Based Developments; Compact Disc Recordable; Compact Disc Magneto-Optical; Compact Disc Read/Write; Digital Versatile Disc. **DATA AND FILE FORMAT STANDARDS:** Rich-Text Format; TIFF File Format; Resource Interchange File Format (RIFF); MIDI File Format; JPEG DIB File Format for Still and Motion Images; AVI Indeo File Format; MPEG Standards; TWAIN.	08
V	**Content Analysis:** Simple Vs. Complex Features; Analysis of Individual Images; Analysis of Image Sequences; Audio Analysis; Applications. **MULTIMEDIA APPLICATION DESIGN:** Multimedia Application Classes; Types of Multimedia Systems; Virtual Reality Design; Components of Multimedia Systems; Organizing Multimedia Databases; Application Workflow Design Issues; Distributed Application Design Issues.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Know the challenges of handling media files.
CO2	Able to use different compression techniques to reduce the storage space for media files.
CO3	Use different techniques to ensure better quality of audio and video stream.
CO4	Understand the need for different types of file formats for audio and video data.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	2	2	1		2									
CO3	2	2	2		2									
CO4	2	1	1											

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Multimedia Fundamentals	Ralf Steinmetz, Klara Narstedt:	Vol 1-Media Coding and Content Processing, 2nd Edition, Pearson Education, 2003.Chapters 2, 3, 4, 5, 6, 7, 8, 9).
2	Multimedia Systems Design	Prabhat K. Andleigh, Kiran Thakrar	PHI, 2015. (Chapters 1, 3,7), 978-9332549388

Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Multimedia Communication Systems: Techniques, Standards, and Networks	K.R Rao, Zoran S. Bojkovic and Dragorad A. Milovanovic	Pearson Education, 2002, ISBN: 978-0130313980
2	Multimedia Information Networking	Nalin K Sharad:	PHI, 2003, ISBN: 9788120321359.

Department: Information Science and Engineering		Semester:	VII
Subject: Cyber Forensic			
Subject Code:	**IS7PE52**	**L – T – P - C:**	**3 – 0 – 0 –3**

SI. No	Course Objectives
1	Present the students with a comprehensive understanding of digital forensic principles and the collection, preservation, and analysis of digital evidence.
2	Enlighten the importance of forensic principles and procedures, legal considerations, digital evidence controls, and the documentation of forensic analysis.
3	Develop an understanding of the different applications and methods for conducting network and digital forensic acquisition and analysis.
4	Familiarize with various tools used in preventing and detecting cyber crimes

Unit	Description	Hrs
I	**Understanding Cyber Forensics And Legal Aspects:** Forensics Fundamentals ; Computer Forensics and Law Enforcement- Indian Cyber Forensic-Forensics Services, Professional Forensics Methodology- Types of Forensics Technology Forensics system and Services : Forensics on - Internet Usage – Intrusion - Firewall and Storage Area Network; Occurrence of Cyber-crimes- Cyber Detectives- Fighting Cyber Crimes Forensic Process.	08
II	**Computer Forensics:** Data Backup and Recovery - Test Disk Suite, Data Recovery Solution, Hiding and Recovering Hidden data, Evidence Collection and Data Seizure.	08
III	**Digital Forensics And Preservation:** Digital Repositories – Evidence Collection – Data Preservation Approaches – Meta Data and Historic records – Legal aspects.	08
IV	**Forensic Data Analysis:** Basic Steps of Forensic Analysis in Windows and Linux – Forensic Scenario – Email Analysis – File Signature Analysis – Hash Analysis – Forensic Examination of log files Mobile Device. **Security And Forensics:** Introduction to Mobile Forensic – Android Device – Analysis-Android Malware – iOS Forensic Analysis – SIM Forensic Analysis – Case study.	08
V	**Cloud Forensics:** Working with the cloud vendor, obtaining evidence, Reviewing logs and APIs. Current Computer Forensic Tools: Overview of different software packages – Encase-Autopsy-Magnet – Wireshark -Mobile Forensic Tools – SQLite Case study Report Preparation A real Forensic case study – Processing a complete Forensic case – Preparing Forensic Report.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Explain the responsibilities and liabilities of a computer forensic investigator.
CO2	Plan and prepare for an incident requiring computer forensic skills.
CO3	Seize a computer from a crime scene without damaging it or risking it becoming inadmissible in a court of law.
CO4	Demonstrate the ability to perform basic forensic data acquisition and analysis using computer and network based applications and utilities.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2							3						
CO2		3		2										
CO3		2	3	2								2		
CO4	1	3			3	2						2		

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Computer forensics: Computer Crime Scene investigation	J. R. Vacca	2nd Ed. Hanover, NH, United States: Charles River Media, 2015.(ISBN No.: 978-1-58- 450389-7).
2	Digital Forensics with Open Source Tools: Using Open Source Platform Tools for Performing Computer Forensics on Target Systems: Windows, Mac, Linux, Unix, etc.	C. Altheide, H. Carvey, and R. Davidson	1st Ed. United States: Syngress Media,U.S., 2011 (ISBN No. : 978-1-59- 749586-8)

Reference Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Android forensics: Investigation, Analysis, and Mobile Security for Google Android	A. Hoog and J. McCash	Waltham, MA: Syngress Media,U.S., 2011. (ISBN No.: 1597496510).

Department: Information Science and Engineering		Semester:	VII
Subject: Augmented Reality and Virtual Reality			
Subject Code:	**IS7PE53**	L – T – P - C:	3 – 0 – 0 –3

SI. No	Course Objectives
1	Provide a foundation to the fast growing field of Augmented Reality.
2	Know the functionalities of various Augmented Reality devices.
3	Familiarize the historical and modern overviews and perspectives on Virtual Reality.
4	Understand the fundamentals of sensation, perception, technical and engineering aspects of Virtual Reality systems.

Unit	Description	Hrs
I	**Virtual Reality and Virtual Environment:** The historical development of VR – Scientific landmarks Computer Graphics, Real-time Computer Graphics, Flight Simulation, Virtual environments, Requirements of VR, Benefits of Virtual reality. **Hardware Technologies For 3d User Interfaces:** Visual displays, Auditory displays, Haptic displays, Choosing Output devices for 3D User Interfaces.	**08**
II	**3d User Interface Input Hardware:** Input device characteristics, Desktop input devices, Tracking devices, 3D Mice, Special Purpose Input Devices, Direct Human Input, Home-Brewed Input Devices, Choosing Input devices for 3D interfaces.	**08**
III	**Software Technologies**: Database –World Space, World coordinate, World environment, Objects –Geometry, Position / Orientation, Hierarchy, Bounding Volume, Scripts and other attributes, VR Environment –VR Database, Tessellated Data, LODs, Cullers and Occluders, Lights and Cameras, Scripts, Interaction –Simple, Feedback, Graphical User Interface, Control Panel, 2D Controls, Hardware Controls, Room / Stage / Area Descriptions, World Authoring and Playback, VR toolkits, Available software in the market.	**08**
IV	**3d Interaction Techniques:** 3D Manipulation tasks, Manipulation techniques and Input devices, Interaction Techniques for 3D Manipulation, Design Guidelines –3D Travel tasks, Travel Techniques, Design Guidelines – Theoretical Foundations of Way finding, User Centered Way finding Support, Environment Centered Way finding Support, Evaluating Way finding Aids, Design Guidelines –System Control, Classification, Graphical Menus, Voice commands, Gestrual Commands, Tools, Multimodal System Control Techniques, Design Guidelines, Case study: Mixing System Control Methods, Symbolic Input tasks, symbolic Input techniques, Design Guidelines, Beyond Text and Number entry. **Designing And Developing 3d User Interfaces:**	**08**

	Strategies for Designing and Developing Guidelines and Evaluation. **Virtual Reality Applications:** Engineering, Architecture, Education, Medicine, Entertainment, Science, Training.	
V	Augmented and Mixed Reality, Taxonomy, technology and features of augmented reality, difference between AR and VR, Challenges with AR, AR systems and functionality, Augmented reality methods, visualization techniques for augmented reality, wireless displays in educational augmented reality applications, mobile projection interfaces, marker-less tracking for augmented reality, enhancing interactivity in AR environments, evaluating AR systems.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Describe how Augmented Reality systems work and list the applications of Augmented Reality.
CO2	Analyse the hardware requirement of Augmented Reality.
CO3	Describe how VR systems work and list the applications of Virtual Reality
CO4	Design and implement the hardware that enables Virtual Reality systems to be built.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2												
CO2	1	3	1											
CO3	2	3	3	2	1									
CO4	1	2	2	2	1									

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Augmented Reality: Principles & Practice	Schmalstieg/Hollerer	Publisher : Pearson Education India; First edition (12 October 2016) ISBN-13 978-9332578494

Reference Books: Nil

Department: Information Science and Engineering		Semester:	VII
Subject: Cryptography and Network Security Laboratory			
Subject Code:	IS7LB1	L – T – P - C:	0– 0 – 3 –1.5

Sl. No	Course Objectives
1	Learn to implement substitution and transposition techniques.
2	Exposed to practical aspects of symmetric and asymmetric cryptographic algorithms to encrypt and decrypt data.
3	Learn to implement hash function concepts.
4	Gain knowledge on intrusion prevention and packet sniffer analysis tools.

LAB CONTENT

Sl. No	Experiment Description
Cycle 1	**PART A** 1. Program to illustrate Caesar Cipher. 2. Program to illustrate Playfair Cipher. 3. Program to illustrate Hill Cipher. 4. Program to illustrate Vigenere Cipher. 5. Implement the following TRANSPOSITION TECHNIQUES concepts: Rail fence – row & Column Transformation. 6. Implement the DES algorithm. 7. Implement the SHA-1 algorithm. 8. Implement MD5 algorithm. 9. Implement the Signature Scheme - Digital Signature Standard. 10. Implement Fermat's Theorem, Euler's totient function to check primality of a given number. 11. Implement RSA algorithm. 12. Implement Diffie Hellman algorithm.
Cycle 2	1. Write program to implement AES algorithm. 2. Creation of digital signature secures data storage, secure data transmission using GNUPG. 3. Configure and demonstrate use of Traffic monitoring tool such as Wireshark.

Course Outcomes:

Course outcome	Descriptions
CO1	Implement cryptographic cipher techniques.
CO2	Develop various security algorithms.
CO3	Apply hash algorithms to generate hash code for better security.
CO4	Utilize different open source tools for network security and analysis.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2	2	2		2		2						
CO2	1	3	2	2								1		
CO3	1	1	1	1										
CO4		1		2	3									

Pattern for practical exam conduction:

a. Experiment Distribution:

- For laboratories having only one part: Students are allowed to pick one experiment from the lot with equal opportunity.
- For laboratories having PART A and PART B: Students are allowed to pick one experiment from PART A and one experiment from PART B, with equal opportunity.

b. Change of experiment is allowed only once and 20% of the maximum marks to be deducted.

Department: Information Science and Engineering		Semester:	VII

Subject: Mobile Application Development Laboratory			
Subject Code:	IS7LB2		L – T – P - C:	0– 0 – 3 –1.5

SI. No	Course Objectives
1	Build an application using Android Development Environment.
2	Examine responsive user interface across wide range of devices.
3	Learn and acquire the art of Android Programming.
4	Create a mobile Application by using various components like activity, views, services, content providers and receivers.

LAB CONTENT

| SI. No.	Experiment Description
Cycle 1	1. Create an application to design a Visiting Card. The Visiting card should have a company logo at the top right corner. The company name should be displayed in Capital letters, aligned to the center. Information like the name of the employee, job title, phone number, address, email, fax and the website address is to be displayed. Insert a horizontal line between the job title and the phone number. 2. Develop an Android application using controls like Button, TextView, EditText for designing a Calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.

SIMPLE CALCULATOR
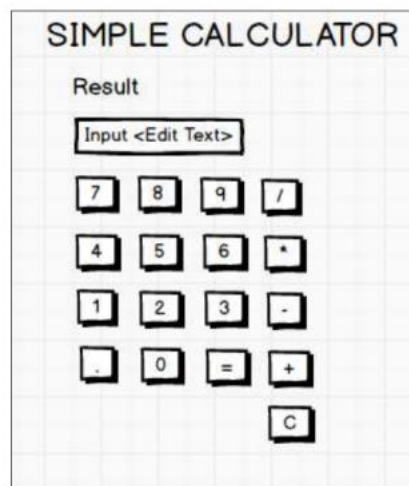
3. Create a SIGN Up activity with Username and Password. Validation of password should happen based on the following rules:
   - Password should contain uppercase and lowercase letters.
   - Password should contain letters and numbers.
   - Password should contain special characters.
   - Minimum length of the password (the default value is 8).

On successful SIGN UP proceed to the next Login activity. Here the user should SIGN IN using the Username and Password created during signup activity. If the Username and Password are matched then navigate to the next activity which displays a message saying <Successful Login= or else display a toast message saying <Login Failed=. The user is given only two attempts and after that display a toast message saying <Failed Login Attempts= and disable the SIGN IN button.
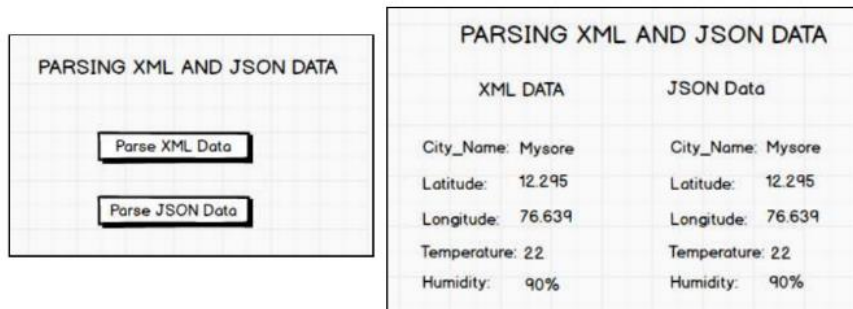Use Bundle to transfer information from one activity to another.

4. Develop an application to set an image as wallpaper. On click of a button, the wallpaper image should start to change randomly every 30 seconds.

CHANGING WALLPAPER APPLICATION

CLICK HERE TO CHANGE WALLPAPER
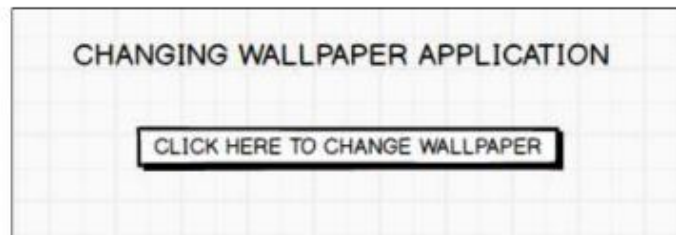
5. Write a program to create an activity with two buttons START and STOP. On Pressing of the START button, the activity must start the counter by displaying the numbers from one and the counter must keep on counting until the STOP button is pressed. Display the counter value in a TextView control.

COUNTER APPLICATION

Counter Value

START

STOP

6. Create two files of XML and JSON type with values for City_Name, Latitude, Longitude, Temperature, and Humidity. Develop an application to create an activity with two buttons to parse the XML and JSON files which when clicked should display the data in their respective layouts side by side.
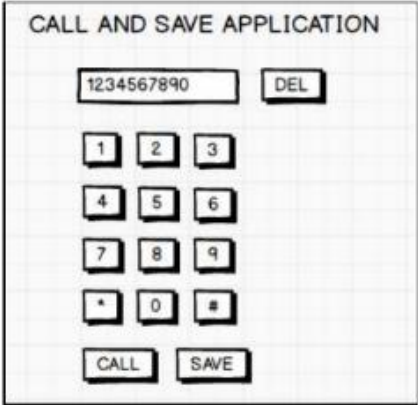
PARSING XML AND JSON DATA

Parse XML Data

Parse JSON Data

PARSING XML AND JSON DATA

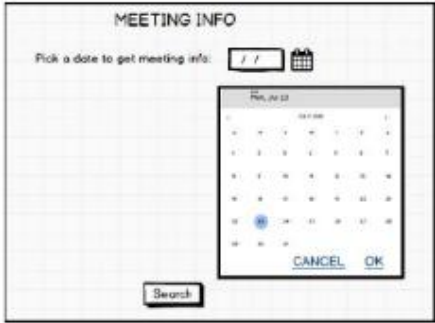|	XML DATA	JSON Data
City_Name:	Mysore	Mysore
Latitude:	12.295	12.295
Longitude:	76.639	76.639
Temperature:	22	22
Humidity:	90%	90%

7. Develop a simple application with one Edit Text so that the user can write some text in it. Create a button called <Convert Text to Speech= that converts the user input text into voice.

TEXT TO SPEECH APPLICATION

Convert Text to Speech
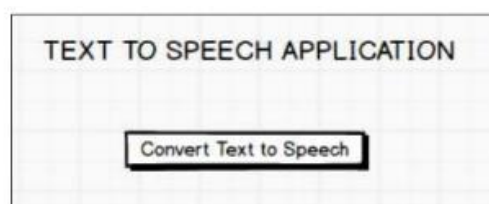
8. Create an activity like a phone dialer with CALL and SAVE buttons. On pressing the CALL button, it must call the phone number and on pressing the SAVE button it must save the number to the phone contacts.

CALL AND SAVE APPLICATION

Cycle 2

1. Write a program to enter Medicine Name, Date and Time of the Day as input from the user and store it in the SQLite database. Input for Time of the Day should be either Morning or Afternoon or Evening or Night. Trigger an alarm based on the Date and Time of the Day and display the Medicine Name.

MEDICINE DATABASE

2. Develop a content provider application with an activity called <Meeting Schedule= which takes Date, Time and Meeting Agenda as input from the user and store this information into the SQLite database. Create another application with an activity called <Meeting Info= having DatePicker control, which on the selection of a date should display the Meeting Agenda information for that particular date, else it should display a toast message saying <No Meeting on this Date".

MEETING SCHEDULE / MEETING INFO

3. Create an application to receive an incoming SMS which is notified to the user. On clicking this SMS notification, the message content and the number should be displayed on the screen. Use appropriate emulator control to send the SMS message to your application.

```
SMS APPLICATION

Display SMS Number

Display SMS Message
```
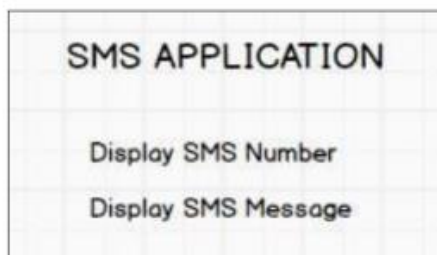
4. Write a program to create an activity having a Text box, and also Save, Open and Create buttons. The user has to write some text in the Text box. On pressing the Create button the text should be saved as a text file in MkSDcard. On subsequent changes to the text, the Save button should be pressed to store the latest content to the same file. On pressing the Open button, it should display the contents from the previously stored files in the Text box. If the user tries to save the contents in the Textbox to a file without creating it, then a toast message has to be displayed saying <FirstCreate a File=.

```
FILE APPLICATION

Create     Open


Save
```
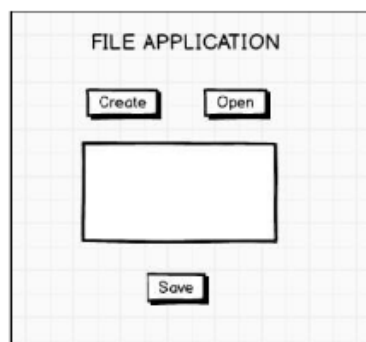
Course Outcomes:

Course outcome	Descriptions
CO1	Build an application using Android development environment.
CO2	Experiment with the method of storing, sharing and retrieving the data in Android Applications.
CO3	Examine responsive user interface across wide range of devices.
CO4	Create a mobile Application by using various components like activity, views, services, content providers and receivers.

Department: Information Science and Engineering		Semester:	VII
Subject: Project Work Phase – I			
Subject Code:	IS7PW1	L – T – P - C:	0 – 0 – 4 –2

Unit	Description	Hrs
-	**Scheme of Evaluation** 1. Students shall carry out a detailed survey on the Area and the Topic on which they are interested to do the Project work. Students are expected to prepare documentation and submit three different Synopses to the Evaluation Committee. 2. Evaluation Committee will review the synopsis and suggest suitable area for project. If project proposals are not to the expected standards or outdates then recommend the students resubmit the refined synopsis. 3. Students are expected to give a detailed presentation on the Topic approved and justify the panel members to start their project work. 4. Presentation consists of Basic Overview of the Project which includes Introduction, Literature Survey, Problem Statement, Motivation, Objectives, Requirement Analysis and Specification, Features of Existing and Proposed System and Algorithms Selected. **Evaluation Scheme - I (50% percent of CIE):** Continuous evaluation will be done by respective Project Guides based on the Regularity, Technical Knowledge and Competence, Programming Skills, Communication Skills, Demonstration skills, Collaborative Learning and Documentation Skills of the students. **Evaluation Scheme - II (50% percent of CIE):** Students are evaluated by the team of faculty members based on the Presentation, Technical Competence, Slides Preparation, Team Working Abilities, Questionnaires and overall Performance in the Seminar-1 and Seminar-2 of Project Phase-I.	-

Course Outcomes:

Course outcome	Descriptions
CO1	Identify the problem in the specified area by a literature survey.
CO2	Analyze the problem and identify the different modules/algorithms to solve the problems.
CO3	Choose the platform to solve the selected problem.
CO4	Document and present the proposed plan of the project development.

Scheme of Teaching and Examination-2020 (170 Credits Scheme)

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

VIII Semester B.E.

Sl No.		Course Code	Course Title	Teaching Dept.	L	T	P	Credits	CIE	SEE	Total Marks	Exam Hrs
01	PE	IS8PE1X	Professional Elective-VI	ISE	3	-	0	3	50	50	100	3
02	PE	IS8PE2X	Professional Elective-VII	ISE	3	-	0	3	50	50	100	3
03	PC	IS8TS1	Technical Seminar	ISE	0	-	0	1	50	-	50	-
04	PC	IS8PW2	Project Work Phase-II	ISE	0	-	18	9	50	50	100	3
L-Lecture, T-Tutorial, P-Practical,/Drawing, CIE-continuous Internal Evaluation, SEE-Semester End Examination				**Total**	**12**	**-**	**18**	**16**	**200**	**150**	**350**	**-**

Professional Elective-VI	Professional Elective-VII
IS8PE11: Social Network Analysis IS8PE12: Pattern Recognition IS8PE13: Web Mining	IS8PE21: Deep Learning IS8PE22: Green Computing IS8PE23: Software Project Management

Department: Information Science and Engineering		Semester:	VIII
Subject: Social Network Analysis			
Subject Code:	**IS8PE11**	**L – T – P - C:**	**3-0-0-3**

Sl. No	Course Objectives
1	Understand the concept of semantic web and related applications.
2	Learn knowledge representation using ontology.
3	Understand human behavior in social web and related communities.
4	Learn visualization of social networks.

Unit	Description	Hrs
I	**The Semantic Web and Social Networks:** Introduction to Semantic Web: Limitations of current Web – Development of Semantic Web -Emergence of the Social Web – Social Network analysis: Development of Social Network Analysis- Key concepts and measures in network analysis.	**08**
II	**Semantic Technology for Social Network Analysis:** Electronic sources for network analysis: Electronic discussion networks, Blogs and online communities – Web-based networks-Ontology-based knowledge Representation –Resource Description Framework – Web Ontology Language- Modeling and aggregating social network data: State-of-the-art in network data representation - Ontological representation of social individuals – Ontological representation of social relationships - Aggregating and reasoning with social network data.	**08**
III	**Extraction and Mining Communities in Web Social Networks:** Detecting communities in social networks – Definition of community – Evaluating communities – Methods for community detection and mining – Applications of community mining algorithms – Tools for detecting communities - social network infrastructures and communities – Decentralized online social networks – Challenges of DOSNs - General Purpose DOSNs.	**08**
IV	**Predicting Human Behavior and Privacy Issues:** Understanding and predicting human behavior for social communities – User data management, Inference and Distribution – Enabling new human experiences – The Technologies - Privacy in online social networks – Trust in online environment – Trust models based on subjective logic – Trust network analysis – Trust transitivity analysis – Combining trust and reputation – Trust derivation based on trust comparisons.	**08**

V	**Visualization and Applications of Social Networks:** Graph theory – Centrality – Clustering – Node-Edge Diagrams – Matrix representation – Visualizing online social networks, Visualizing social networks with matrix-based representations – Matrix and Node-Link Diagrams– Hybrid representations – Applications – Cover networks – Community welfare - Collaboration networks – Co-Citation networks.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Develop semantic web related applications.
CO2	Represent knowledge using ontology.
CO3	Predict human behavior in social web and related communities.
CO4	Visualize social networks.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2										
CO2	2	2	2		1									
CO3	2	2	2		1									
CO4	2	2	2	2	2									

Text Books: Nil

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Social Networks and the Semantic Web	Peter Mika	First Edition, Springer 2007, ISBN: 978-0387710006.
2	Handbook of Social Network Technologies and Applications	Borko Furht,	1st, Edition, Springer, 2010, ISBN: 978-1441971418
3	Web Mining and Social Networking – Techniques and applications	Guandong Xu, Yanchun Zhang and Lin Li,	First Edition Springer, 2011, ISBN: 978-1441977359.
4	Social information Retrieval Systems: Emerging Technologies and Applications for Searching the Web Effectively	Dion Goh and Schubert Foo	IGI Global Snippet, 2008, ISBN: 9781599045436.
5	Collaborative and Social Information Retrieval and Access: Techniques for Improved user Modeling	Max Chevalier, Christine Julien and Chantal Soulé-Dupuy	IGI Global Snippet, 2009, ISBN: 978-1605663067.
6	The Social Semantic Web	John G. Breslin, Alexander Passant and Stefan Decker	Springer, 2009, ISBN: 978-3642011719.
7	Social Networks and the Semantic Web	Peter Mika	First Edition, Springer 2007, ISBN: 978-0387710006.
8	Handbook of Social Network Technologies and Applications	Borko Furht,	1st, Edition, Springer, 2010, ISBN: 978-1441971418
9	Web Mining and Social Networking – Techniques and applications	Guandong Xu, Yanchun Zhang and Lin Li,	First Edition Springer, 2011, ISBN: 978-1441977359.

Department: Information Science and Engineering		Semester:	VIII
Subject: Pattern Recognition			
Subject Code:	**IS8PE12**	**L – T – P - C:**	**3-0-0-3**

Sl. No	Course Objectives
1	Learn the fundamentals of pattern recognition and its relevance to classical and modern problems.
2	Understand where, when and how pattern recognition can be applied.
3	Familiar with several applications of pattern recognition on classical computer and electrical engineering problems.
4	Explore more on recent applications of pattern recognition.

Unit	Description	Hrs
I	**Introduction:** Machine perception, an example; Pattern Recognition System; The Design Cycle; Learning and Adaptation.	08
II	Bayesian Decision Theory: Introduction, Bayesian Decision Theory; Continuous Features, Minimum error rate, classification, classifiers, discriminant functions, and decision surfaces; The normal density; Discriminant functions for the normal density.	08
III	Maximum-likelihood and Bayesian Parameter Estimation: Introduction; Maximum-likelihood estimation; Bayesian Estimation; Bayesian parameter estimation: Gaussian Case, general theory; Hidden Markov Models.	08
IV	Linear Discriminant Functions: Introduction; Linear Discriminant Functions and Decision Surfaces; Generalized Linear Discriminant Functions; The Two-Category Linearly Separable case; Minimizing the Perception Criterion Functions; Relaxation Procedures; Non-separable Behavior; Minimum Squared-Error procedures; The Ho-Kashyap procedures.	08
V	**Unsupervised Learning and Clustering:** Introduction; Mixture Densities and Identifiability; Maximum-Likelihood Estimates; Application to Normal Mixtures; Unsupervised Bayesian Learning; Data Description and Clustering; Criterion Functions for Clustering.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Describe the basic concepts in pattern recognition.
CO2	Use state-of-the-art algorithms in pattern recognition research.
CO3	Apply pattern recognition theories, such as Bayes classifier, linear discriminant analysis.
CO4	Make use of pattern recognition techniques in practical problems.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	1										
CO2	2	1	2	2										
CO3	2	1	1	1										
CO4	2	1	1	2										

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Pattern Classification	Richard O. Duda, Peter E. Hart, and David G.Stork:	2nd Edition, Wiley-Interscience, 2012.ISBN: 111858600X, 9781118586006

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Pattern Recognition and Image Analysis	Earl Gose,Richard Johnsonbaugh,Steve Jost	PHI, Indian Reprint 2015. ISBN: 0132364158, 9780132364157

Department: Information Science and Engineering		Semester:	VIII
Subject: Web Mining			
Subject Code:	**IS8PE13**	**L – T – P - C:**	**3-0-0-3**

SI. No	Course Objectives
1	Acquire the knowledge of Web search, indexing and query processing.
2	Perform web content mining for retrieving most relevant documents.
3	Analyze on web structure and usage patterns.
4	Familiarize with various algorithms used in the process of web data mining.

Unit	Description	Hrs
I	**Introduction:** A Brief History of the Web and the Internet, Web Data Mining, Web Search Engines, Document representation. **Web Crawling:** Basic Crawler Algorithm, Universal Crawlers, Preferential Crawlers: Focused Crawlers, Topical Crawlers.	08
II	**Indexing**: Static and Dynamic Inverted Index– Index Construction and Index Compression- Latent Semantic Indexing. Searching using an Inverted Index: Sequential Search - Pattern Matching - Similarity search**.**	08
III	**Web Structure Mining:** Link Analysis, Social Network Analysis, Co-Citation and Bibliographic Coupling, Page Rank Weighted Page Rank, HITS, Community Discovery.	08
IV	**Web Content Mining:** Classification: Decision tree for Text Document, Naive Bayesian Text Classification, Ensemble of Classifiers. Clustering: K means Clustering, Hierarchical Clustering, Probability Based Clustering.	08
V	**Web Usage Mining:** Click stream Analysis, Log Files, Data Collection and Pre-Processing, Data Modelling for Web Usage Mining, The BIRCH Clustering Algorithm, Modelling web user interests using clustering- Affinity Analysis and the A Priori Algorithm, Binning.	08

Course Outcomes:

Course outcome	Descriptions
CO1	Describe web mining and understand the need for web mining
CO2	Build crawler and index the retrieved pages.
CO3	Perform analysis on web structure and its content.
CO4	Analyze social media data using Machine Learning techniques.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2					2								
CO2	1		3		1	2						2		
CO3	1	3	2		2							2		
CO4	1	3		2	3							3		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data (Data Centric Systems and Applications)	Bing Liu	Springer; 2nd Edition 2011. ISBN 978-3-642-19459-7 e-ISBN 978-3-642-19460-3
2	Data Mining the Web Uncovering Patterns in Web Content, Structure, and Usage	Zdravko Markov, Daniel T. Larose	John Wiley & Sons, Inc., 2010 978-0471666554

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Mining the Social Web: Data Mining Facebook, Twitter, LinkedIn, Instagram, GitHub, and More	Matthew A. Russell , Mikhail Klassen	O'Reilly Media; 3rd edition (4 December 2018) ISBN 978-1491985045

Department: Information Science and Engineering		Semester:	VIII
Subject: Deep Learning			
Subject Code:	**IS8PE21**	**L – T – P - C:**	**3-0-0-3**

SI. No	Course Objectives
1	Understand the fundamentals of deep learning.
2	Know the theory behind Convolutional Neural Networks, Autoencoders and RNN.
3	Illustrate the strength and weaknesses of many popular deep learning approaches.
4	Introduce major deep learning algorithms, the problem settings, and their applications to solve real world problems.

Unit	Description	Hrs
I	**Introduction to Deep Learning:** Introduction, Deep learning Model, Historical Trends in Deep Learning, Machine Learning Basics: Learning Algorithms, Supervised Learning Algorithms, Unsupervised Learning Algorithms.	**08**
II	**Feedforward Networks:** Introduction to feedforward neural networks, Gradient-Based Learning, Back Propagation and Other Differentiation Algorithms. Regularization for Deep Learning.	**08**
III	**Optimization for Training Deep Models:** Empirical Risk Minimization, Challenges in Neural Network Optimization, Basic Algorithms: Stochastic Gradient Descent, Parameter Initialization Strategies, Algorithms with Adaptive Learning Rates: The AdaGrad algorithm, The RMSProp algorithm, Choosing the Right Optimization Algorithm.Right Optimization Algorithm.	**08**
IV	**Convolutional Networks:** The Convolution Operation, Pooling, Convolution and Pooling as an Infinitely Strong Prior, Variants of the Basic Convolution Function, Structured Outputs, Data Types, Efficient Convolution Algorithms, Random or Unsupervised Features- LeNet, AlexNet.	**08**
V	**Recurrent and Recursive Neural Networks:** Unfolding Computational Graphs, Recurrent Neural Network, Bidirectional RNNs, Deep Recurrent Networks, Recursive Neural Networks, The Long Short Term Memory and Other Gated RNNs. Applications: Large-Scale Deep Learning, Computer, Speech Recognition, Natural Language Processing and Other Applications.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Understand the fundamental issues and challenges of deep learning data, model selection, model complexity etc.,
CO2	Describe the various deep learning algorithms and their applications.
CO3	Apply CNN and RNN model for real time applications.
CO4	Identify various challenges involved in designing and implementing deep learning algorithms.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2												
CO2	2	3	1											
CO3	2	2	3	2	1									
CO4	2	2	2	2	3									

Text Books:

Sl No	Text Book title	Author	Volume and Year of Edition
1	Deep Learning	Ian Good Fellow, Yoshua Bengio, and Aaron Courville:	The MIT Press, 2016, ISBN: 0262035618
2	Learning deep architectures for AI Foundations and trends in Machine Learning	Bengio, Yoshua	2009
3	Deep Learning Made Easy with R: A Gentle Introduction for Data Science	N.D.Lewis	January 2016

Department: Information Science and Engineering		Semester:	VIII
Subject: Green Computing			
Subject Code:	**IS8PE22**	L – T – P - C:	**3-0-0-3**

SI. No	Course Objectives
1	Study the concepts related to Green IT.
2	Understand the working of Green devices and hardware along with software methods.
3	Learn green enterprise activities, managing the green IT and various laws, standards, protocols along with outlook of green IT.

Unit	Description	Hrs
I	**An Overview:** Introduction, Environmental Concerns and Sustainable Development, Environmental Impacts of IT, Green IT, Holistic Approach to Greening IT, Greening IT, Applying IT for enhancing Environmental sustainability, Green IT Standards and Eco-Labelling of IT, Enterprise Green IT strategy, Green IT: Burden or Opportunity?	**08**
II	**Green Devices and Hardware with Green Software:** Green Devices and Hardware: Introduction, Life Cycle of a device or hardware, Reuse, Recycle and Dispose. Green Software: Introduction, Energy-saving software techniques, Evaluating and Measuring software Impact to platform power.	**08**
III	**Managing Green IT:** Introduction, Strategizing Green Initiatives, Implementation of Green IT, Information Assurance, Communication and Social media.	**08**
IV	**Regulating the Green IT:** Laws, Standards and Protocols Introduction, The regulatory environment and IT manufacturers, Non regulatory government initiatives.	**08**
V	**Industry associations** and standards bodies, Green building standards, Green data canters, Social movements and Greenpeace.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Describe the concepts of technologies that conform to low-power computation.
CO2	Use a variety of technologies applied in building a green system and to identify the various key sustainability and green IT trends.
CO3	Discuss the various laws, standards and protocols for regulating green IT.
CO4	Apply a range of tools to help monitor and design green systems.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	2				2	3					2		
CO2	2	1		1		2	3					2		
CO3	1	2				2	3					2		
CO4	1	1	2		2	2	3					2		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Harnessing Green IT Principles and Practices	San Murugesan, G.R.,Gangadharan Wiley	Publication, 2013 ISBN:9788126539680

Reference Books: Nil

Department: Information Science and Engineering		Semester:	VIII
Subject: Software Project Management			
Subject Code:	**IS8PE23**	**L – T – P - C:**	**3-0-0-3**

Sl. No	Course Objectives
1	Understand the Software Project Planning and Evaluation techniques to manage projects at each stage of the software development life cycle (SDLC).
2	Learn the concepts of activity planning and risk management principles.
3	Familiar with Managing software projects and control Software deliverables.
4	Know the skills to manage the various phases involved in project management, tracking mechanisms and people management, to deliver successful software projects that support organization strategic goals.

Unit	Description	Hrs
I	**Project Evaluation and Project Planning:** Importance of Software Project Management – Activities Methodologies – Categorization of Software Projects – Setting objectives – Management Principles – Management Control – Project portfolio Management – Cost benefit evaluation technology – Risk evaluation – Strategic program Management – Stepwise Project Planning.	**08**
II	**Project Life Cycle and Effort Estimation:** Software process and Process Models – Choice of Process models - mental delivery – Rapid Application development – Agile methods – Extreme Programming – SCRUM – Managing interactive processes – Basics of Software estimation – Effort and Cost estimation techniques – COSMIC Full function points - COCOMO II A Parametric Productivity Model - Staffing Pattern.	**08**
III	**Activity Planning and Risk Management:** Objectives of Activity planning – Project schedules – Activities – Sequencing and scheduling – Network Planning models – Forward Pass & Backward Pass techniques – Critical path (CRM) method – Risk identification – Assessment – Monitoring – PERT technique – Monte Carlo simulation.	**08**
IV	**Project Management and Control:** Framework for Management and control – Collection of data Project termination – Visualizing progress – Cost monitoring – Earned Value Analysis-Project tracking–Change control- Software Configuration.	**08**
V	**Staffing in Software Projects:** Managing people – Organizational behavior – Best methods of staff selection– Motivation – The Oldham-Hackman job characteristic model – Ethical and Programmed concerns – Working in teams – Decision making – Team structures – Virtual teams – Communications genres – Communication plans.	**08**

Course Outcomes:

Course outcome	Descriptions
CO1	Analyse Project Management principles, project management concepts, framework, process models and software effort estimation techniques.
CO2	Estimate the risks involved in various project activities.
CO3	Identify the checkpoints and understand the project reporting structures with project progress.
CO4	Understand tracking mechanisms using project management principles and plan staff selection process and issues related to people management.

Course Articulation Matrix:

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3					2				3			
CO2	3	2	3				2	2				2		
CO3	2	2							3	3		2		
CO4							2		3	3		3		

Text Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	Software Project Management	Bob Hughes and Mike Cotterell	Fifth Edition, Tata McGraw Hill,New Delhi, 2012.

Reference Books:

SI No	Text Book title	Author	Volume and Year of Edition
1	A Guide to Project Management Body of Knowledge" PMBOK Guide	PMBOK	6th edition PMI publisher, 2017.
2	Effective Software Project Management	Robert K.Wysocki	Wiley Publication, 2011.
3	SoftwareProject Management	Walker Royce	Addison-Wesley, 1998.
4	Managing Global Software Projects	Gopalaswamy Ramesh	McGraw Hill Education (India), Fourteenth Reprint 2013.

Department: Information Science and Engineering		Semester:	VIII
Subject: Technical Seminar			
Subject Code:	IS8TS1	L – T – P - C:	0– 0 – 0 – 1

Unit	Description	Hrs
-	**<u>Guidelines for preparing Technical Seminar</u>** **1. Selection of topic/area:** Select a paper according to the specialization of students. Papers from any other approved journals can also be selected. **2. Approval to the selected topic:** After selecting the paper, get approval from the concerned faculty in charge. **3. Study of topic:** Students are requested to acquire a thorough knowledge on the subject by referring back papers and reference books (These may be included as references at the end of the paper) on the corresponding area. **4. Seminar:** Final seminar is presented by the students through slides.	-

Course Outcomes:

Course outcome	Descriptions
CO1	Survey the changes in the technologies relevant to the topic selected.
CO2	Discuss the technology and interpret the impact on the society, environment and domain.
CO3	Compile report of the study and present to the audience.
CO4	Survey the changes in the technologies relevant to the topic selected.

Department: Information Science and Engineering		Semester:	VIII
Subject: Project Work Phase – II			
Subject Code:	IS8PW2	L – T – P - C:	0–0–18–9

Unit	Description	Hrs
-	**Scheme of Evaluation** **1.** Students shall present on the System Design Phase which includes System Architecture, High Level Design, Low Level Design, System Models, System Modules, Implementation Tools used and Algorithms used and implemented. **2.** Final seminar on the complete project is presented by the students. **Project Phase - II Demonstration** Students have to demonstrate the working model of the Project to their respective guides. **Evaluation Scheme-I (50% percent of CIE):** Continuous evaluation will be done by respective **Project Guides** based on the Regularity, Technical Knowledge and Competence, Programming Skills. Communication Skills, Demonstration skills, Collaborative Learning and Documentation Skills of the students. **Evaluation Scheme II (50% percent of CIE):** Students are evaluated by the team of faculty members based on the Presentation, Technical Competence, Slides Preparation, Team Working Abilities, Questionnaires and overall Performance in the Seminar-1 and Seminar-2 of Project Phase-1. Students are required to meet their respective project guides on a stipulated day once in a week and update their progress and get signature from the guides without fail.	-

Course Outcomes:

Course outcome	Descriptions
CO1	Design a suitable system to solve the problem identified in project work phase-1 and plan to work as a team.
CO2	Implement the design using necessary algorithms and by incorporating the necessary suggestions, if any.
CO3	Test the performance of the system with suitable data and demonstrate the project.
CO4	Document the project work and present the work carried out to the audience.