



**CAYMET'S**  
**Siddhant College of Engineering, Sudumbare.**  
**Information Technology Department.**  
**B.E. 2019 Pattern**

**COURSES OUTCOMES**

**Semester I**

**414441: Information Storage and Retrieval**

- CO1.** Understand the concept of Information retrieval and to apply clustering in information retrieval.
- CO2.** Use an indexing approach for retrieval of text and multimedia data.
- CO3.** Evaluate performance of information retrieval systems.
- CO4.** Apply the concepts of multimedia and distributed information retrieval.
- CO5.** Use appropriate tools in analyzing the web information
- CO6.** Simulate the working of a search engine and recommender system.

**414442: Software Project Management**

- CO1.** Apply the practices and methods for successful Software Project Management
- CO2.** Create Design and Evaluate Project
- CO3.** Analyze Project Schedule and calculate Risk Management with help of tools. **CO4.** Demonstrate different tools used for Project Tracking, Monitoring & Control. **CO5.** Identify Staff Selection Process and the issues related to Staff Management.
- CO6.** Discuss and use modern tools for Software Project Management.

**414443: Deep Learning**

- CO1.** Understand the theoretical foundations, algorithms, and methodologies of Deep Learning.
- CO2.** Apply the concepts of Convolution Neural Networks and use of popular CNN architectures.
- CO3.** Compare Feed Forward Neural Network and Recurrent Neural Network and learn modeling the time dimension using RNN and LSTM.
- CO4.** Elaborate unsupervised deep learning algorithms like Autoencoders.
- CO5.** Explore Representation Learning and Transfer Learning techniques using variants of CNN architecture.
- CO6.** Evaluate the performance of deep learning algorithms and to provide solution for various real-world applications.

**414444: Elective - III (Mobile Computing)**

- CO1.** understand the basic concepts of mobile computing, MAC and different multiplexing technics. **CO2.** understand Protocols, Connection Establishment, Frequency Allocation, Routing of mobile telecommunication system like GSM, GPRS, UMTS.
- CO3.** understand the Generations of Mobile Communication Technologies

**C04.** learn mobile IP , Adhoc – Network, Reactive Routing protocols, Multicast Routing. **C05.** obtaining knowledge of transport layer protocol TCP, File System, and different application layer protocols.

**C06.** gain knowledge about different mobile platforms, operating Systems, Software Development Kit, Security Issues.

#### **414444: Elective – III (High Performance Computing)**

**C01.** Understand concepts of parallel computing, its application areas and parallel computing platforms

**C02.** Apply different Parallel programming paradigm and Decomposition Techniques.

**C03.** Correlate various communication calls.

**C04.** Analyze and Measure different Performance Metrics.

**C05.** Perform CUDA Programming.

**C06.** Build the logic to develop parallel algorithms for high performance computing.

#### **414444: Elective – III (Multimedia Technology)**

**C01.** Understand basic building block and applications of Multimedia.

**C02.** Solve and analyze different algorithms for text and image compression.

**C03.** Classify different audio and video file formats of Multimedia.

**C04.** Apply open-source authoring tools of animation.

**C05.** List various devices used in virtual reality and its use in daily life.

**C06.** Recognize emerging trends in Multimedia.

#### **414444: Elective – III (Smart Computing)**

**C01.** Demonstrate the knowledge of design of smart computing and its applications.

**C02.** Describe different generations of mobile and mobile computing projects **C03.** Demonstrate the knowledge of design of Ubicomp and its applications. **C04.** Explain smart devices and services used Ubicomp.

**C05.** Implement interfacing of various sensors, actuators to the development boards

**C06.** Compare various IoT communication technologies and smart computing applications.

#### **414445: Elective – IV (Bioinformatics)**

**C01.** Integrate biological concepts with information technologies to study the biological system.

**C02.** Study Gene structure, various biological database, and methods to manage the different types of biological data.

**C03.** Describe principles and algorithms of pairwise and multiple alignments.

**C04.** Study various bioinformatics tools and Algorithm.

**C05.** Understand modeling and simulation in bioinformatics, drug discovery process. and ProteinStructure.

**C06.** To Gain awareness in field of System Biology and Human Disease.

**414445: Elective – IV (Introduction to DevOps)**

**C01.** Understand the fundamental concepts of DevOps

**C02.** Link the background of DevOps with other technologies

**C03.** Comprehend the concept of continuous integration and continuous delivery

**C04.** Compare various stages of continuous deployment and test strategies **C05.** Justify the importance of monitoring system and reliability engineering

**C06.** Use the latest tools in DevOps

**414445: Elective – IV (Computer Vision)**

**C01.** Implement fundamental image processing techniques required for computer vision.

**C02.** Apply feature extraction techniques.

**C03.** Apply Hough Transform for line, circle, and ellipse detections.

**C04.** Understand three-dimensional analysis techniques.

**C05.** Develop skills to develop applications using computer vision techniques.

**414445: Elective – IV (Wireless Communication)**

**C01:** Articulate the fundamental concept of cellular system.

**C02:** Analyse the fundamentals of cellular systems.

**C03:** Illustrate multiple access technique for effective utilization of spectrum.

**C04:** Design and analyse the WAP Programming Model in networking environment.

**C05:** Learn and understand security issues, challenges and tools in wireless communication.

**C06:** Explore the emerging trends and applications in wireless communication.

**414446: Lab Practice III**

**C01.** Understand the concept of Information retrieval and to apply clustering in informationretrieval.

**C02.** Use appropriate indexing approach for retrieval of text and multimedia data. Evaluate performanceof information retrieval systems.

**C03.** Apply appropriate tools in analyzing the web information.

**C04.** Map the concepts of the subject on recent developments in the Information retrieval field.

**414447: Lab Practice IV**

- C01.** Learn and Use various Deep Learning tools and packages.
- C02.** Build and train a deep Neural Network models for use in various applications.
- C03.** Apply Deep Learning techniques like CNN, RNN Auto encoders to solve real word Problems.
- C04.** Evaluate the performance of the model build using Deep Learning.

#### **414448: Project Stage I**

- C01.** To apply knowledge of mathematics, science, and engineering to formulate the Problemstatement.
- C02.** To design and conduct experiments, as well as to analyze and interpret data.
- C03.** Understand the professional and ethical responsibility.
- C04.** To communicate effectively.
- C05.** Get broad education which is necessary to understand the impact of engineering solutions in aglobal, economic, environmental, and societal context.
- C06.** Recognition of the need for, and an ability to engage in life-long learning.
- C07.** To use the techniques, skills, and modern engineering tools necessary for engineeringpractices.
- C08.** To design a system, component, or process to meet desired needs within realistic constraints suchas economic, environmental, social, political, ethical, health and safety,manufacturability, and sustainability.

#### **414449A: Audit Course 7**

##### **Copyrights and Patents**

- C01.** Understand the concepts of Intellectual Property Rights.
- C02.** Understand the knowledge about Copyrights and Trademark.
- C03.** Understand the knowledge how to protect trade secrets.

#### **414449B: Audit Course 7**

##### **Stress Management By Yoga**

- C01.**Understand the reasonsfor
- C02.**Understand the role Yoga.
- C03.**Develop healthy mind in a healthy body.
- C04.**Develop overall efficiency.

#### **414449C: Audit Course 7**

##### **English for Research Paper Writing**

- C01.** Understand that how to improve writing skills and level of readability.
- C02.** Identify and categorize about what to write in each section.
- C03.** Ensure the good quality of paper at very first-time submission.

## Semester II

### 414450: Distributed Systems

- C01.** Demonstrate the core concepts of distributed systems.
- C02.** Understand the concept of middleware of distributed systems.
- C03.** Understand Inter-process communication methods and analyze different coordinationalgorithms.
- C04.** Comprehend the importance of replication to achieve fault tolerance in distributed systems.
- C05.** Analyze the design and functioning of existing distributed file systems, distributed multimedia, anddistributed web-based systems.
- C06.** Understand various Recent Trends in distributed systems.

### 414451: Elective-V (Software Defined Network)

- C01.** Acquire fundamental knowledge of SDN exploring the need, characteristics, and architecture ofSDN and methods of API's in SDN.
- C02.** Recognize Open Flow protocols and its forwarding, pipeline model and use cases of SDNcontroller.
- C03.** Demonstrate virtualization and Cloud computing services ofSDN.
- C04.** Comprehend IT Infrastructure and understand the data centerin SDN.
- C05.** Analyse various security issues and challenges in SDN.
- C06.** Comprehend SDN application areas and future.

### 414451: Elective- V (Social Computing)

- C01.** Understand basics of Social Media Analytics
- C02.** Correlate Network Measures for Social Media Data
- C03.** Visualize mining in social media data
- C04.** Discuss the Social Similarities
- C05.** Interpret social media behavior
- C06.** Apply Social Media Computations for Google+

### 414451: Elective V (Natural Language Processing)

- C01.** Understand and analyze the natural language text and model.
- C02.** Analyze the natural language syntactically.
- C03.** Analyze and study natural language logically.
- C04.** Process the natural language text based on relations and knowledge.
- C05.** Evaluate the natural language text using models and apply modeling techniques for

automatic document separation and text mining.

**C06.** Apply information retrieval techniques.

**414451: Elective-V (Soft Computing)**

**C01.** Learn soft computing techniques and their roles in problemsolving.

**C02.** Understand and Analyze various Artificial neural network techniques

**C03.** Understand and define the fuzzy systems for problem solving.

**C04.** Understand and apply the concepts of genetic algorithms for problem solving.

**C05.** Identify and select a suitable Soft Computing method to solve the problem

**C06.** Identify and understand the role of soft computing models in various applications

**414451: Elective V (Game Engineering)**

**C01.** Describe fundamentals of game engineering and the social- ethical issues in game development.

**C02.** Develop creative and critical thinking skills for designing compelling games.

**C03.** Apply game mechanics to make game more enjoyable.

**C04.** Analyze Games over Networks and Peer Effects.

**C05.** Demonstrate an understanding of various tools that are used in game development. **C06.** Apply mathematical and game programming knowledge and skills to solve development tasks.

**414452: ElectiveVI (Ethical Hacking and Security)**

**C01.** Identify Ethical hacking processes and become acquainted with Penetration testing.

**C02.** Recognize Foot printing techniques and apply in real time applications

**C03.** Build knowledge about Meta sploit tool with Kali Linux

**C04.** Differentiate Privilege Escalation in Windows and Linux

**C05.** Construct Secure Web Applications to understand Hacking Techniques.

**C06.** Recognize Wifi Hacking and Security techniques.

**414452: Elective-VI (Augmented and Virtual Reality)**

**C01.** Analyze how Virtual Reality systems work.

**C02.** Understand the representation of Virtual world.

**C03.** Describe the importance of motion and tracking in VR systems. **C04.** Analyze how AR systems work and list the applications of AR. **C05.** Identify the working of various AR components and AR devices.

**C06.** Make use of computer vision concepts for AR.

**414452: Elective VI (Business Analytics and Intelligence)**

- C01.** Apply conceptual knowledge on how Business Intelligence is used in decision making process
- C02.** Use modelling concepts in Business Intelligence
- C03.** Understand and apply the concepts of business reports and analytics with the help of visualization for business performance management
- C04.** Comprehend the model-based decision making using prescriptive analytics
- C05.** Analyze the role of analytics and intelligence in Business
- C06.** Comprehend different Business Intelligence trends and its future impacts

#### **414452: Elective-VI (Blockchain Technology)**

- C01.** Understand the concept of cryptography and decentralization.
- C02.** Acquire fundamental knowledge of blockchain with issues associated with it.
- C03.** Acquire knowledge of Ethereum blockchain platform.
- C04.** Understand hyper ledger fabric platform.
- C05.** Acquire the knowledge regarding working of tokenization.
- C06.** Describe the applications and risk involved

#### **414453: Startup and Entrepreneurship**

1. able to understand key concepts and framework of innovation and start-up ecosystem.
2. gain knowledge of how to develop start up ecosystem, its key components and how to influence and managedynamics between them and increase the productivity of ecosystem.
3. understand the role of different stakeholders in ecosystem in building and supporting growth of start-ups.
4. have insight into global trend in start-up ecosystem and product development. mapping different start-up ecosystems and developing performance indicators.

#### **414454: Lab Practice - V**

1. Demonstrate knowledge of the core concepts and techniques in distributed systems.
2. Learn how to apply principles of state-of-the-Art Distributed systems in practical application.
3. Design, build and test application programs on distributed systems

#### **414455: Lab Practice VI (Ethical Hacking and Security)**

- C01.** Perform internal and external vulnerability analysis on web application and network.
- C02.** Comprehend the hacker's mindset while conducting reconnaissance and systemhacking.
- C03.** Implement industry standard security protocols to prevent cyber-attacks.
- C04.** Carry-out the same tactics, techniques, and procedures as actual hackers.

### **414455: Lab Practice VI (Business Analytics and Intelligence)**

- CO1.** Compare and analyze different analytical tools used by businesses
- CO2.** Understand the application of critical notion of KPI using real time case studies
- CO3.** Design and implement the analytical models using suitable tools
- CO4.** Create visualizations using suitable tools

### **414455: Lab Practice VI (Blockchain Technology)**

1. To implement small blockchain experimentations.
2. Identify Consensus mechanism for Blockchain Application.

### **414456 : Project-II**

1. To apply engineering and mathematical knowledge to investigate / select proper technology / Algorithms suitable to solve the problem in hand.
  2. To apply knowledge of statistics for analysis of results and express conclusion and justification for the same.
  3. To design and conduct experiments, as well as to analyze and interpret data or develop prototype model of the application.
  4. To communicate effectively.
  5. Get broad education which is necessary to understand the impact of engineering solutions in a global, economic, environmental, ethically and societal context.
- Recognition of the need for, and an ability to engage in life-long learning.

### **414457A: Audit Course 8**

#### **Functional Programming in Haskell**

- CO1.** Understand the correctness of programs.
- CO2.** Make use of higher-order functions.
- CO3.** Make use of the data encapsulation and parametric polymorphism for functional programming.
- CO4.** Understand the importance of the 'type checking' of values/functions to develop programs relatively faster.

### **414457B: Audit Course 8**

#### **Cyber Laws And Use Of Social Media**



**CO1.** Understand the importance of IT Act.

**CO2.** Understand the significance of cyber laws and its practices.

**CO3.** Identify and Analyze software vulnerabilities and security solutions to reduce the risk of exploitation.

**CO4.** To study various privacy and security concerns of Online social media.

#### **414457C: Audit Course8**

#### **Constitution Of India**

**CO1.** Understand the Principles of the Indian Constitution.

**CO2.** Understand and identify the growth of the demand for civil rights in India.

**CO3.** Understand the organizations of governance.

**CO4.** Understand the role and functions of local administration.