



CAYMET'S
Siddhant College of Engineering, Sudumbare.
Computer Engineering Department.
B.E. 2019 Pattern

COURSES OUTCOMES

Semester I

410241: Design and Analysis of Algorithms

C01: Formulate the problem

C02: Analyze the asymptotic performance of algorithms

C03: Decide and apply algorithmic strategies to solve given problem

C04: Find optimal solution by applying various methods

C05: Analyze and Apply Scheduling and Sorting Algorithms.

C06: Solve problems for multi-core or distributed or concurrent environments

410242: Machine Learning

C01: Identify the needs and challenges of machine learning for real time applications.

C02: Apply various data pre-processing techniques to simplify and speed up machine learning algorithms.

C03: Select and apply appropriately supervised machine learning algorithms for real time applications.

C04: Implement variants of multi-class classifier and measure its performance.

C05 :Compare and contrast different clustering algorithms.

C06: Design a neural network for solving engineering problems.

410243: Block chain Technology

C01: Interpret the fundamentals and basic concepts in Block chain C02: Compare the working of different block chain platforms C03: Use Crypto wallet for cryptocurrency based transactions

C04: Analyze the importance of block chain in finding the solution to the real-world problems.

C05: Illustrate the Ethereum public block chain platform

C06: Identify relative application where block chain technology can be effectively used and implemented.

Elective III

410244(A): Pervasive Computing

C01.Demonstrate fundamental concepts in pervasive computing.

C02.Explain pervasive devices and decide appropriate one as per the need of real time applications.

C03.Classify and analyze context aware systems for their efficiency in different ICT systems.

C04.Illustrate intelligent systems and generic intelligent interactive applications.

C05.Design HCI systems in pervasive computing environment.

C06.Explore the security challenges and know the role of ethics in the context of pervasive computing.

Elective III

410244(B): Multimedia Techniques

C01: Describe the media and supporting devices commonly associated with multimedia information and systems.

C02: Demonstrate the use of content-based information analysis in a multimedia information system.

C03: Critique multimedia presentations in terms of their appropriate use of audio, video, graphics, color, and other information presentation concepts.

C04: Implement a multimedia application using an authoring system.

C05: Understanding of technologies for tracking, navigation and gestural control.

C06: Implement Multimedia Internet of Things Architectures.

Elective III

410244(C): Cyber Security and Digital Forensics at the end of the course, the student should be able to:

C01: Analyze threats in order to protect or defend it in cyberspace from cyber-attacks.

C02: Build appropriate security solutions against cyber-attacks.

C03: Underline the need of digital forensic and role of digital evidences.

C04: Explain rules and types of evidence collection

C05: Analyze, validate and process crime scenes

C06: Identify the methods to generate legal evidence and supporting investigation reports.

Elective III

410244(D): Object oriented Modeling and Design

C01: Describe the concepts of object-oriented and basic class modelling.

C02: Draw class diagrams, sequence diagrams and interaction diagrams to solve problems.

C03: Choose and apply a befitting design pattern for the given problem

C04: To Analyze applications, architectural Styles & software control strategies

C05: To develop Class design Models & choose Legacy Systems.

C06: To Understand Design Patterns

Elective III

410244(E): Digital Signal Processing

C01: Understand the mathematical models and representations of DT Signals and Systems C02: Apply different transforms like Fourier and Z-Transform from applications point of view.

C03: Understand the design and implementation of DT systems as DT filters with filter structures and different transforms.

C04: Demonstrate the knowledge of signals and systems for design and analysis of systems

C05: Apply knowledge and use the signal transforms for digital processing applications C06: To understand Filtering and Different Filter Structures

Elective IV

410245(A): Information Retrieval

C01: Implement the concept of Information Retrieval

C02: Generate quality information out of retrieved information

C03: Apply techniques such as classification, clustering, and filtering over multimedia to analyze the information

C04: Evaluate and analyze retrieved information

C05: Understand the data in various Application and Extensions of information retrieval

C06: Understand Parallel information retrieving and web structure.

Elective IV

410245(B): GPU Programming and Architecture

After completion of the course, students should be able to-

C01: Describe GPU architecture

C02: Write programs using CUDA, identify issues and debug them.

C03: Implement efficient algorithms in GPUs for common application kernels, such as matrix multiplication

C04: Write simple programs using Open CL

C05: Identify efficient parallel programming patterns to solve problems

C06: Explore the modern GPUs architecture and it's Applications.

Elective IV

410245(C): Mobile Computing

C01: Develop a strong grounding in the fundamentals of mobile Networks

C02: Apply knowledge in MAC, Network, and Transport Layer protocols of Wireless Network

C03: Illustrate Global System for Mobile Communications

C04: Use the 3G/4G technology based network with bandwidth capacity planning, VLR and HLR identification algorithms

C05: Classify network and transport layer of mobile communication

C06: Design & development of various wireless network protocols using simulation tools

Elective IV

410245 (D): Software Testing and Quality Assurance

C01: Describe fundamental concepts in software testing such as manual testing, automation testing and software quality assurance.

C02: Design and Develop project test plan, design test cases, test data, and conduct test operations.

C03: Apply recent automation tool for various software testing for testing software.

C04: Apply different approaches of quality management, assurance, and quality standard to software system.

C05: Apply and analyze effectiveness Software Quality Tools.

C06: Apply tools necessary for efficient testing framework.

Elective IV

410245(E): Compilers

C01: Design and implement a lexical analyzer using LEX tools C02: Design and implement a syntax analyzer using YACC tools

C03: Understand syntax-directed translation and run-time environment C04 : Generate intermediate codes for high-level statements.

C05 :Construct algorithms to produce computer code.

C06: Analyze and transform programs to improve their time and memory efficiency

410246: Laboratory Practice III

C01: Apply preprocessing techniques on datasets.

C02: Implement and evaluate linear regression and random forest regression models.

C03: Apply and evaluate classification and clustering techniques.

C04: Analyze performance of an algorithm.

C05: Implement an algorithm that follows one of the following algorithm design strategies: divide and conquer, greedy, dynamic programming, backtracking, branch and bound.

C06: Interpret the basic concepts in Block chain technology and its applications

410247: Laboratory Practice IV

CO1: Apply android application development for solving real life problems CO2: Design and develop system using various multimedia components.

CO3: Identify various vulnerabilities and demonstrate using various tools. CO4: Apply information retrieval tools for natural language processing

CO5: Develop an application using open source GPU programming languages CO6: Apply software testing tools to perform automated testing

410248: Project Work Stage I

- Solve real life problems by applying knowledge.
- Analyze alternative approaches, apply and use most appropriate one for feasible solution.
- Write precise reports and technical documents in a nutshell.
- Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work
- Inter-personal relationships, conflict management and leadership quality.

Course 7 AC7 – I: MOOC-learn New Skill

CO1: To acquire additional knowledge and skill.

410249: Audit Course 7

AC7 – II: Entrepreneurship Development

CO1: Understand the legalities in product development

CO2: Undertake the process of IPR, Trademarks, Copyright and patenting

CO3: Understand and apply functional plans

CO4: Manage Entrepreneurial Finance

CO5: Inculcate managerial skill as an entrepreneur

410249: Audit Course 7 AC7 – III: Botnet of Things

CO1: Implement security as a culture and show mistakes that make applications vulnerable to attacks.

CO2: Understand various attacks like DoS, buffer overflow, web specific, database specific, web -spoofing attacks.

CO3: Demonstrate skills needed to deal with common programming errors that lead to most security problems and to learn how to develop secure applications

410249: Audit Course 7 AC7 – IV: 3D Printing

CO1: Understand the basic knowledge of Shop Floor Safety rules and regulations basics of Machine tools and 3D printing machines

CO2: Understand the concept of concept of technical sketching, multi-view drawings, Lettering, tolerance, and metric construction

CO3: Identify and distinguish drafting terminologies and construction of geometrical figures using drawing instruments, procedure to prepare a drawing sheet as per SP-46:2003

CO4: Describe and explain practical aspects to generate detailed and assembly views with dimensions, annotations, in 3D Modeling software.

CO5: Apply concepts and fabricate the simple mechanical parts, prototype/ end use product for 3D Printing

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410249: Audit Course 7

AC7 – V: Industrial Safety and Environment Consciousness

On completion of the course, learner will be able to–

CO1: Develop the plan for Safety performance

CO2: Demonstrate the action plan for accidents and hazards

CO3: Apply the safety and security norms in the industry

CO4: Evaluate the environmental issues of Industrialization

Semester II

410250: High Performance Computing

CO1: Understand various Parallel Paradigm

CO2: Design and Develop an efficient parallel algorithm to solve given problem CO3: Illustrate data communication operations on various parallel architecture CO4: Analyze and measure performance of modern parallel computing systems CO5: Apply CUDA architecture for parallel programming

CO6: Analyze the performance of HPC applications

410251: Deep Learning

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410251: Deep Learning

C01: Understand the basics of Deep Learning and apply the tools to implement deep learning applications

C02: Evaluate the performance of deep learning models (e.g., with respect to the bias-variance trade- off, overfitting and under fitting, estimation of test error).

C03: To apply the technique of Convolution (CNN) and Recurrent Neural Network (RNN) for implementing Deep Learning models

C04: To implement and apply deep generative models.

C05: Construct and apply on-policy reinforcement learning algorithms

C06: To Understand Reinforcement Learning Process Elective V

410252(A): Natural Language Processing

C01: Describe the fundamental concepts of NLP, challenges and issues in NLP C02: Analyze Natural languages morphologically, syntactical and semantically OR Describe the concepts of morphology, syntax, semantics of natural language

C03: Illustrate various language modelling techniques

C04: Integrate the NLP techniques for the information retrieval task

C05: Demonstrate the use of NLP tools and techniques for text-based processing of natural languages

C06: Develop real world NLP applications Elective V

410252 (B): Image Processing

CO1: Apply Relevant Mathematics Required for Digital Image Processing. CO2: Apply Special and Frequency Domain Method for Image Enhancement. CO3: Apply algorithmic approaches for Image segmentation.

CO4: Summarize the Concept of Image Compression and Object Recognition.

CO5: Explore the Image Restoration Techniques.

CO6: Explore the Medical and Satellite Image Processing Applications. Elective V

410252(C): Software Defined Networks

CO1: Interpret the need of Software Defined networking solutions.

CO2: Analyze different methodologies for sustainable Software Defined Networking solutions.

CO3: Select best practices for design, deploy and troubleshoot of next generation networks.

CO4: Develop programmability of network elements.

CO5: Demonstrate virtualization and SDN Controllers using Open Flow protocol CO6: Design and develop various applications of SDN

410252(D): Advanced Digital Signal Processing

CO1: Understand and apply different transforms for the design of DT/Digital systems

CO2: Explore the knowledge of adaptive filtering and Multi-rate DSP

CO3: Design DT systems in the field/area of adaptive filtering, spectral estimation and multi-rates

CO4: Explore use of DCT and WT in speech and image processing

CO5: Develop algorithms in the field of speech , image processing and other DSP applications

CO6: Identify Image Processing Techniques

Elective VI

410253(A): Pattern Recognition

CO1: Analyze various type of pattern recognition techniques

CO2: Identify and apply various pattern recognition and classification approaches to solve the problems

CO3: Evaluate statistical and structural pattern recognition

CO4: Percept recent advances in pattern recognition confined to various applications CO5:

Implement Bellman's optimality principle and dynamic programming CO6: Analyze Patterns using Genetic Algorithms & Pattern recognition applications.

Elective VI

410253(B): Soft Computing

CO1: Understand requirement of soft computing and be aware of various soft computing techniques.

CO2: Understand Artificial Neural Network and its characteristics and implement ANN algorithms.

CO3: Understand and Implement Evolutionary Computing Techniques.

CO4: Understand the Fuzzy logic and Implement fuzzy algorithms for solving real life problems.

CO5: Apply knowledge of Genetic algorithms for problem solving.

CO6: Develop hybrid systems for problem solving. Elective VI

410253(C): Business Intelligence On completion of this course, the students will be able to

C01: Differentiate the concepts of Decision Support System & Business Intelligence

C02: Use Data Warehouse & Business Architecture to design a BI system.

C03: Build graphical reports

C04: Apply different data preprocessing techniques on dataset

C05: Implement machine learning algorithms as per business needs

C06: Identify role of BI in marketing, logistics, and finance and telecommunication sector

410253(D): Quantum Computing

C01: To understand the concepts of Quantum Computing

C02: To understand and get exposure to mathematical foundation and quantum mechanics

C03: To understand and implement building blocks of Quantum circuits

C04: To understand quantum information, its processing and Simulation tools

C05: To understand basic signal processing algorithms FT, DFT and FFT

C06: To study and solve examples of Quantum Fourier Transforms and their applications

410255: Laboratory Practice V

C01: Analyze and measure performance of sequential and parallel algorithms.

C02: Design and Implement solutions for multicore/Distributed/parallel environment.

C03: Identify and apply the suitable algorithms to solve AI/ML problems. C04: Apply the technique of Deep Neural network for implementing linear regression and classification.

C05: Apply the technique of Convolution (CNN) for implementing Deep Learning models.

C06: Design and develop Recurrent Neural Network (RNN) for prediction.

410256: Laboratory Practice VI

C01: Apply basic principles of elective subjects to problem solving and modeling.

C02: Use tools and techniques in the area of software development to build mini projects

C03: Design and develop applications on subjects of their choice.

C04: Generate and manage deployment, administration & security.

410256: Project Work Stage II

C01: Show evidence of independent investigation

C02: Critically analyze the results and their interpretation.

C03: Report and present the original results in an orderly way and placing the open questions in the right perspective.

C04: Link techniques and results from literature as well as actual research and future research lines with the research.

C05: Appreciate practical implications and constraints of the specialist subject

410257: Audit Course 8

AC8 – I: Usability Engineering

C01: Describe the human centered design process and usability engineering process and their roles in system design and development.

C02: Discuss usability design guidelines, their foundations, assumptions, advantages, and weaknesses.

C03: Design a user interface based on analysis of human needs and prepare a prototype system.

C04: Assess user interfaces using different usability engineering techniques.

C05: Present the design decisions

410257: Audit Course 8

AC8 – II: Conversational Interfaces

C01: Develop an effective interface for conversation

C02: Explore advanced concepts in user interface

410257: Audit Course 8

AC8–III: Social Media And Analytics

C01: Develop a far deeper understanding of the changing digital land scape.

C02: Identify some of the latest digital marketing trends and skill sets needed for today's marketer.

C03: Successful planning, prediction, and management of digital marketing campaigns

C04: Assess user interfaces using different usability engineering techniques.

C05: Implement smart management of different digital assets for marketing needs.

C06: Assess digital marketing as a long term career opportunity.

410257: Audit Course 8

AC8 – IV: MOOC-learn New Skill

C01: To acquire additional knowledge and skill. 410249: Audit Course 8 AC8 – V: Emotional Intelligence