

SEMESTER I

18ZC01 APPLIED MATHEMATICS FOR COMPUTER SCIENCE ENGINEERING

2 2 0 3

Course Objective:

1. To provide in depth knowledge of number theory for application problems.
2. To employ the concepts of graph theory and stochastic processes in several application problems.

Course Outcome:

- CO1:** Apply Euclidean algorithm, extended Euclidean algorithm, Euler Fermat theorem, Chinese remainder theorem, compute the output of Euler totient function and solve linear congruence equation.
- CO2:** Generate pseudo random numbers, perform test for primality and implement classical and public key cryptosystems.
- CO3:** Model the situations that occur in their respective fields into graphs, represent graphs using various representations, determine Euler circuit, Hamiltonian circuit in a graph, apply the algorithms to solve Chinese postman problem and traveling salesman problem.
- CO4:** Distinguish various types of stochastic process and model problems of stochastic nature to analyze effect of system performance

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		S	S	M
CO2	S		S	S	M
CO3	S		S	S	M
CO4	S		S	S	M

18ZC02/18ZS02 ADVANCED DATA STRUCTURES AND ALGORITHMS

3 0 0 3

Course Objective:

1. To analyze the complexity of algorithms and understand parallel algorithms.
2. To use search trees, heaps, kd trees, graph algorithms, sets and hashing to solve problems.

Course Outcome:

- CO1:** Analyze the time complexity of algorithms and describe the working of parallel algorithms
- CO2:** Solve problems using tree structures
- CO3:** Solve problems using graphical structures
- CO4:** Solve problems using disjoint sets and describe the various hashing and collision resolution techniques

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		M	S	S
CO2	S		M	S	S
CO3	S		M	S	S
CO4	S		M	S	S

18ZC03/18ZS03 DATABASE MANAGEMENT SYSTEMS

3 2 0 4

Course Objective:

1. To impart knowledge in various database systems and their concepts for modern application development
2. To develop applications using NoSQL database

Course Outcome:

- CO1:** Describe relational database concepts and write queries in SQL
CO2: Understand query processing and apply optimization algorithms
CO3: Understand system implementation techniques and security in database
CO4: Explain NoSQL databases and explore Neo4J

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	W		S	W
CO2	M		M	M	M
CO3			M	M	
CO4	M		M	M	W

18ZC04 ADVANCED COMPUTER ARCHITECTURE

3 0 0 3

Course Objective:

1. To impart broad and deep knowledge of contemporary computer architecture issues and techniques.
2. To discuss techniques used in high performance scalable multiprocessor systems.

Course Outcome:

- CO1:** Describe the principles of computer design and analyze the performance of Processor and Memory
CO2: Identify the design issues and hazards involved in parallelizing and pipelining the systems and suggest techniques to overcome it.
CO3: Exposed to developing applications for high performance computing systems.
CO4: Understand modern architecture and analyze performance issues of parallel processing systems

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M	M		
CO2	M		M	M	
CO3	M		S	M	
CO4			S	S	

18ZC05/18ZS05 ANALYSIS AND DESIGN OF SOFTWARE SYSTEMS

3 0 0 3

Course Objective:

1. Understand characteristics of software engineering paradigms
2. Analyze and identify appropriate models for designing software systems.

Course Outcome:

- CO1:** Outline the significant role of software development in large scale software systems and identify suitable software process model for a project.
CO2: Apply suitable analysis modeling approaches for a software system.
CO3: Design and develop behavioural and structural models based on system requirements.
CO4: Apply appropriate methods for system design.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M		M	W
CO2	M		M	S	M
CO3			M	M	
CO4	M		M	S	M

18ZC51/18ZS51 ADVANCED DATA STRUCTURES AND ALGORITHMS LABORATORY

0042

Course Objective:

1. To understand various advanced data structures and identify their strengths and weaknesses.
2. To identify and apply the suitable data structure for the given real world problem.

Course Outcome:

CO1: Use suitable data structures to design solution for real world problems

CO2: Develop, debug, test and document the designed solutions

CO - PO MAPPING

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	M		S	S	S
CO2		S	M	S	S

18ZC81 ENGLISH FOR RESEARCH PAPER WRITING

0 0 4 0

Course Objective:

1. To learn the english language skills to write a good technical paper
2. To learn the structure and elements of a good research paper

Course Outcome:

CO1: Understand the usage of appropriate english words and phrases in preparing a technical report

CO2: Understand the meaning of the structure and various elements of a technical paper

CO3 : Convert a project work into a publishable paper

CO4: Conduct a literature survey on a chosen topic and write a survey paper

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1		S	M		
CO2		S	M		
CO3	M	S	M		M
CO4	M	S	M		M

SEMESTER II

18ZC06/18ZS06 DATA INTENSIVE COMPUTING SYSTEMS

3 0 0 3

Course Objective:

1. To analyze, design, and implement effective solutions for data-intensive applications.
2. To decide the algorithms and programming models for a data intensive application.

Course Outcome:

- CO1:** Describe big data infrastructure and characteristics.
CO2: Describe characteristics of NoSQL stores and study components of NoSQL platforms.
CO3: Use appropriate preprocessing, Correlation, regression to solve problems.
CO4: Apply clustering and classification techniques and time series concepts for forecasting.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		M	S	S
CO2	S		M	S	S
CO3	S		M	S	S
CO4	S		M	S	S

18ZC07/18ZS24 ADVANCED OPERATING SYSTEMS

2 2 0 3

Course Objective:

1. To understand and apply Process scheduling and process synchronization.
2. Be familiar with Distributed operating systems and resource management
3. To know about Real time and Mobile operating system

Course Outcome:

- CO1:** Apply process scheduling and synchronization concepts and also describe memory management techniques.
CO2: Analyze Mutual exclusion, Deadlock detection and agreement protocols in Distributed operating system.

CO3: Summarize various resource management techniques for distributed systems.
 CO4: Illustrate different features of real time and mobile operating systems.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S	S	M	M	
CO2	S	S	M	S	
CO3	S	S	M	M	
CO4	M	S	M	M	

18ZC08/18ZS35 ADVANCED COMPUTER NETWORKS

3 0 0 3

Course Objective:

1. To understand the Internet architecture and the challenges involved in Internet routing, QoS provisioning, TCP performance modeling
2. To learn about the high speed circuit switched networks
3. To impart knowledge about the different wireless networking technologies

Course Outcome:

CO1: Apply the traffic engineering principles of inter domain routing algorithms in Global Internet and Multicast scenarios
 CO2: Analyze the performance of TCP sliding window, congestion control and resource allocation strategies
 CO3: Summarize design principles of ATM networks and Gigabit Ethernets
 CO4: Outline the design and performance issues of different wireless networking technologies

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			S	S	
CO2			S	S	
CO3			S	S	

CO4	M	M	S	S	
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18ZC09 EMBEDDED SYSTEMS

3 2 0 4

Course Objective:

1. To have knowledge about the basic functions and concepts of embedded systems.
2. To provide experience to integrate hardware and software for embedded systems.
3. To explain real time operating systems, inter-task communication and an embedded software development tool.

Course Outcome:

CO1: Summarize design and development of embedded systems and apply memory management techniques and Interrupts in embedded applications.

CO2: Apply communication interface implementation techniques to develop embedded applications.

CO3: Apply the concepts of Real time Operating System in solving problems.

CO4: Identify and use various software development tools to validate and debug embedded systems.

CO - PO MAPPING

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S		M		S
CO2	S		M		S
CO3	S		M		S
CO4	S		M		S

18ZC52/18ZS52 DATA INTENSIVE COMPUTING SYSTEMS LABORATORY

0 0 4 2

Course Objective:

1. Demonstrate an ability to use tools like MongoDB, Neo4J, Hadoop, R-tool to efficiently store retrieve and process Big Data.
2. Implement Several Data Intensive tasks using Map Reduce paradigm and R.

Course Outcome:

CO1: Use suitable framework to efficiently store, retrieve and process data intensive problems.

CO2: Develop, debug, test and document the designed solutions for data intensive problems.

CO - PO MAPPING

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	M		S	S	S
CO2		S	M	S	S

18ZC61/18ZS61 INDUSTRY VISIT & TECHNICAL SEMINAR

0 0 4 2

Course Objective:

- 1.To provide an opportunity to the students to interact with industry people as well as to learn practically through interaction, working methods and employment practices.
- 2.To provide an exposure to current work practices as opposed to possibly theoretical knowledge being taught at college.

Course Outcome:

- CO1:Visit the relevant industries and gain knowledge about their process and functioning.
CO2:Generate technical presentations to communicate complex, technical ideas to various types of audiences.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5

CO1		S			
CO2		S			

18AE82 RESEARCH METHODOLOGY AND IPR

0060

Course Objective:

1. To introduce students to formal research methods and practices
2. To impart knowledge on intellectual property rights
3. To impart knowledge on patenting system

Course Outcome:

CO1: Apply standard statistical techniques for data collection and analysis of time series data sets

CO2: Choose a research problem, define its scope and objectives, choose a standard dataset, apply statistical analysis on the chosen data set and document the results

CO3: Understand the patenting system and administration

CO4: Understanding the developments and case studies in IPR

PO CO	P O1	P O2	P O3	PO 4	PO 5
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CO1	S	S	S	S	
CO2	W		S	S	
CO3	S	S	S	S	M
CO4	S	M	S	S	M

SEMESTER III

18ZC53/18ZS53 SOFTWARE DEVELOPMENT LABORATORY

Course Objective:

1. To enable students to continue exposition of methods and tools of software development.
2. Provides an opportunity to apply and investigate theoretical and conceptual knowledge of software development.
3. To enable students to learn and practice the stages of software development.

Course Outcome:

Students will be able to

CO1: Prepare project plan, SRS, Design document, code document and test case documentations.

CO2: Acquire software development skills through various stages of software development.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S	S	S	S	
CO2	S	S	S	S	S

18ZC71/18ZS71 PROJECT WORK I

0063

Course Objective:

1. Identify the real world problem and understand literature related to the problem
2. Develop a model to solve the problem and propose suitable solution.
3. Present and Document the work done by following ethical practices.

Course Outcome:

- CO1: Identification of Problem, Conduct of Literature survey and Solution Generation, code development, interpretation of results
By application of relevant knowledge and skill, Evaluation of results obtained.
- CO2: Documentation and Presentation of the work done in the given structure and format.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		S	S	S
CO2	M	S	M	M	S

SEMESTER IV

18ZC72/18ZS72 PROJECT WORK II

002814

Course Objective:

1. Identify the real world problem and understand literature related to the problem
2. Develop a model to solve the problem and propose suitable solution.
3. Present and Document the work done by following ethical practices.

Course Outcome:

CO1: Identification of Problem, Conduct of Literature survey and Solution Generation, code development, interpretation of results by application of relevant knowledge and skill, Evaluation of results obtained and performance analysis with existing methods.
 CO2: Documentation and Presentation of the work done in the given structure and format.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		S	S	S
CO2	M	S	M	M	S

ELECTIVE THEORY COURSES**18ZC21 CLOUD COMPUTING****2 2 0 3****Course Objective:**

- 1.To Understand the architecture and concept of different cloud models: IaaS, PaaS, SaaS and virtualization
2. To Learn about the cloud applications,tools and Technologies
3. To explain the core issues of cloud computing such as security, privacy, and interoperability.

Course Outcome:

CO1: Understand the concepts, key technologies, strengths, and limitations of cloud computing
 CO2: Describe the significance of virtualization categories in cloud computing
 CO3: Understand different cloud programming tools and technologies
 CO4: Summarize various cloud security mechanisms.

(8+7)

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M			
CO2	M	M			
CO3	S	M		M	M
CO4	S	M		M	M

18ZC22 XML AND WEB SERVICES

2 2 0 3

Course Objective:

1. To understand and write well-formed XML Schemas and extract data from XML
2. To create, deploy, and call Web services using Java, PHP, C# .NET

Course Outcome:

CO1: Understand and write well-formed XML documents, DTD and XML schema

CO2: Design XML Schema using XSLT and extract data using XPATH and Xquery

CO3: Describe web services and its infrastructure for various standards available for developing web services

CO4: Design and implement REST Based web services

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M			M
CO2	M	M		M	M
CO3	M				M
CO4	M	M		S	M

18ZC23 SEMANTIC WEB TECHNOLOGY

2 2 0 3

Course Objective:

- 1.To understand how the current web evolves into semantic web
2. To Learn about XML,RDF and OWL
3. To explain Inference rules,tools and applications

Course Outcome:

CO1:Understand the current scenario in the field of World Wide Web related to semantic representation and processing of information.

CO2: Query ontologies using SPARQL by using the concepts of graph-based RDF model and RDF Schema

CO3: Model ontologies using Web Ontology Language (OWL) using the principles of Ontology Engineering

CO4: Generate inferences using inference rules and understand semantic web tools and applications.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M			
CO2	M	M		M	M
CO3	M	M		S	M
CO4	M	M		M	M

18ZC24/18ZS22 AGILE SOFTWARE DEVELOPMENT

2 2 0 3

Course Objective:

1. Learn the practices and values of Agile methods and compare them with other methodologies
2. Learn extreme programming methodology
3. Learn the practices in Scrum and apply them for IoT and bigdata projects using tools

Course Outcome:

CO1:Understand values and practices in Agile Methodology and compare agile method with traditional methods.

CO2: Understand extreme programming process model and apply it for a case study

CO3: Understand Scrum process model and apply it for a case study of IoT Projects and Big data Projects

CO4: Know and compare other agile methods like FDD, DSDM etc

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	W		S	M	M
CO2	W		S	M	S
CO3	W		S	M	S
CO4	W		S	M	S

18ZC25/18ZS23 INTERNET OF THINGS

2 2 0 3

Course Objective:

1. To expose the students to the different functional elements of IoT based systems
2. To make the students learn the techniques to develop an end to end IoT application

Course Outcome:

CO1: Understand the architecture of IoT and the challenges in IoT based system design

CO2: Analyze the different networking standards available in the context of IoT

CO3: Analyze the different networking standards available in the context of IoT

CO4: Understand the design challenges of different IoT use cases and perform the required data analytics using appropriate techniques

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S	S	S	S	
CO2	W		S	S	
CO3	S	S	S	S	M

CO4	S	M	S	S	M
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18ZC26 COMPILER DESIGN

2 2 0 3

Course Objective:

1. Working ability in theory and application of finite state machines
2. Working ability in theory and application of recursive descent, production rules & LALR parsing
3. Appreciation of optimization strategies in compilers

Course Outcome:

- CO1: Develop automaton for lexical analysis and use associated tools.
 CO2: Design and develop top down and bottom up parsers for a given grammar.
 CO3: Write syntax directed translation routines for different types of statements
 CO4: Illustrate intermediate code generation, code optimization and code generation techniques

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			M	M	M
CO2			M	M	M
CO3			M	M	M
CO4			M	M	M

18ZC27/18ZS33 EVOLUTIONARY COMPUTING TECHNIQUES

3 0 0 3

Course Objective:

1. Comprehend the fundamental theories and approaches of Evolutionary Computing Techniques
2. Understand and use heuristic and meta-heuristics approaches for solving complex optimization problems and multi-objective optimization problems

Course Outcome:

- CO1: Illustrate evolutionary computing techniques and heuristics search approaches for solving problems
 CO2: Select and apply appropriate representation and variant of GA or DE to solve a given optimization problem

CO3: Select and apply appropriate representation and variant of PSO or ACO to solve a given optimization problem
 CO4: Describe and apply NSGA for solving multi-objective optimization problems

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			M	S	S
CO2			M	S	S
CO3			M	S	S
CO4			M	S	S

18ZC28 INFORMATION RETRIEVAL

3 0 0 3

Course Objective:

1. Understand the theoretical basis behind the standard models of IR
2. Understand the standard methods for Web indexing and retrieval
3. Understand how to evaluate IR systems

Course Outcome:

CO1: Analyze the characteristics of IR models, document collections and evaluation models
 CO2: Analyze and apply index construction and index compression methods to IR problems
 CO3: Analyze and apply vector space, probabilistic IR models and scores for IR problems
 CO4: Analyze and apply text classification and web search models for IR problems

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1				S	
CO2				S	
CO3				S	

CO4				S	
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18ZC29 NATURAL LANGUAGE PROCESSING

3 0 0 3

Course Objective:

1. Work with words, syntax, and semantics of natural languages
2. Understand the pragmatics related to natural language processing
3. Understand processing of language for common applications

Course Outcome:

CO1: Describe and apply the concepts, needs and techniques of mathematical and linguistic foundations and solutions to process words to solve problems in NLP

CO2: Describe and apply the need of using Formal grammars of English, Syntactic Parsing and Statistical Parsing to perform syntactical tasks to solve problems in NLP

CO3: Describe and apply concepts, need and applications of semantics to solve problems in NLP

CO4: Describe and apply concepts of discourse coherence, machine translation, summarization and question answering to solve problems in NLP

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1				S	
CO2				S	
CO3				S	
CO4				S	

18ZC30 VIRTUALIZATION

3 0 0 3

Course Objective:

1. Understand the basic mechanisms and techniques involved in virtualization

2. Comprehend the theory and demonstrate the aspects of virtualization
3. Realize the key concepts of Multiprocessor Virtual Machines

Course Outcome:

- CO1: Outline the different virtualization architectures and its emulation
- CO2: Recall various virtual machine types
- CO3: Apply key concepts of system virtual machines
- CO4: Apply the techniques for multiprocessor virtualization

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1		S	M	S	
CO2		S	M	S	
CO3		S	M	S	
CO4		S	M	S	

18ZC31 PROGRAMMING PARADIGMS

3 0 0 3

Course Objective:

1. Learn Imperative and Object Oriented Programming
2. Learn Functional Programming
3. Learn Concurrent Programming

Course Outcome:

- CO1: Apply data structures and programming paradigms
- CO2: Program using object oriented constructs
- CO3: Program using Lambda Terms
- CO4: Solve problems using concurrent programming

CO - PO MAPPING

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S		M	S	S

CO2	S		M	S	S
CO3	S		S	S	S
CO4	S		S	S	S

18ZC32 CRYPTOGRAPHY AND NETWORK SECURITY

3 0 0 3

Course Objective:

1. To understand the fundamentals of Cryptography
2. To acquire knowledge on standard algorithms used to provide confidentiality, integrity and authenticity
3. To understand various protocols for network security to protect against the threats in the networks.

Course Outcome:

CO1: Describe security threats, services, mechanisms and Techniques and illustrate the working of classical, symmetric ciphers

CO2: Apply number theory concepts for solving asymmetric cryptographic techniques.

CO3: Illustrate the working of cryptographic hash functions and digital signatures.

CO4: Explain key management, public key infrastructure, internet security protocols

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M			S	M
CO2	S			S	M
CO3	S			S	M
CO4			M		

18ZC33 CELLULAR NETWORK ENGINEERING

3 0 0 3

Course Objective:

1. To impart knowledge of Network,MAC and Transport Layer
2. To learn the basics of Wide Area Network
3. Learn 4G networks and its applications

Course Outcome:

- CO1: Describe Cellular Network and MAC Layer
 CO2: Describe Cellular Transport Layer
 CO3: Analyse Cellular Wide Area Network
 CO4: Analyse various techniques and applications of 4G

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M	M	M		M
CO2	S	M			
CO3	M			M	M
CO4	M		M	M	

18ZC34 ADHOC AND SENSOR NETWORKS**3 0 0 3****Course Objective:**

1. Understand the Adhoc and Sensor Networks.
2. Analyze existing protocols of Adhoc and Sensor Networks

Course Outcome:

- CO1: Describe the characteristics of Adhoc network and classification of MAC protocols
 CO2: Analyze the existing routing and transport protocols of Adnoc Network
 CO3: Describe the characteristics of Sensor Networks.
 CO4: Analyze the existing MAC and routing protocols of Sensor Network

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M		M	M	M

CO2			M	S	M
CO3	M		M	M	M
CO4			M	S	M

18ZC35 MEMETIC ALGORITHM

3 0 0 3

Course Objective:

1. Understand the fundamental theories and approaches of Memetic Algorithm
2. Understand and use Memetic Algorithm for solving complex optimization problems and multi-objective optimization problems

Course Outcome:

- CO1: Explain the Evolutionary and Local search Concepts
CO2: Describe the design issues in Memetic Algorithm
CO3: Apply Self-adaptive and coevolving MA for problem solving
CO4: Apply Multi-objective Memetic Algorithms for problem solving

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			M	M	M
CO2			M	M	M
CO3			M	M	M
CO4			M	M	M

18ZC36 COMPUTER VISION

3 0 0 3

Course Objective:

1. Learn the various concepts related to Images and apply various data structures for image representation.
2. Learn various techniques for object recognition and Motion analysis.
3. Learn various concepts related to 3D vision.

Course Outcome:

- CO1: Describe the various concepts related to images.
CO2: Demonstrate the various data structures used for image representation.
CO3: Illustrate the various Object recognition, optimization techniques and Explain the 3D Vision.
CO4: Analyse various motion analysis methods and choose one to aid in motion tracking.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	M		M	M	M
CO2	S		S	S	S
CO3	S		S	S	S
CO4	S		S	S	S

18ZC37 COGNITIVE COMPUTING

3 0 0 3

Course Objective:

- 1.To learn about cognitive computing inference with Decision support system and machine learning.
- 2.To acquire knowledge about various tools in cognitive computing

Course Outcome:

- CO1: Understand the cognitive architectures and discuss the role of specialized AI hardware in cognitive computing.
CO2: Summarize the role of fuzzy cognitive maps in intelligent decision support systems.
CO3: Explain Machine learning, NLP and Ontology with cognitive impact.
CO4: Study of cognitive research in the health care sector using state-of-art cognitive computing tools.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			s	s	m
CO2			s	m	m
CO3			s	m	m
CO4	s	s	s	s	m

18ZC38 THEORETICAL COMPUTER SCIENCE

3 0 0 3

Course Objective:

- 1.Learn about automata theory
- 2.Apply Turing machines in decision making
- 3.Decide solvability of a problem

Course Outcome:

- CO1:** Design and analyze finite automata
CO2: Classification of problems using Turing Machines
CO3: Design computable functions and analyze solvability of a problem
CO4: Analyze time and space complexity of tractable problems

CO - PO MAPPING

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	S		M	S	S
CO2	S		M	S	S
CO3	S		M	S	S
CO4	S		M	S	S

18ZC39 ADVANCED ALGORITHMS

3 0 0 3

Course Objective:

- 1.To gain a good understanding on a wide range of advanced algorithmic problems, their relations and variants, and application to real-world problems.
- 2.To determine the most suitable algorithm for any given task and then apply it to the problem.

Course Outcome:

CO1: To understand and analyze the approximation ratio of approximation algorithms and the probability of randomized algorithms.

CO2: To analyze multithreaded algorithms with practical applications

CO3: To describe online algorithms and apply them for solving problems

CO4: To understand the notations in string matching and analyze the various string matching algorithms

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	S		S	S	
CO2	S		S	S	
CO3	S		S	S	
CO4	S		S	S	

18ZC40 SOFTWARE DEFINED NETWORKS

3 0 0 3

Course Objective:

- 1.To learn network virtualization and tools
- 2.To learn the interface between networking devices and the software controlling them
- 3.To understand SDN and implement it for different use cases

Course Outcome:

CO1: Describe the evolution of software defined networking and Understand network function virtualization.

CO2: Understand the customization of control plane and data plane.

CO3: Understand the challenges and advantages of SDN in the context of IoT .

CO4: Apply NFV and SDN for different use cases.

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1	s		s	m	s
CO2	s		s	m	s
CO3	s		s	m	s
CO4	s		s	s	s

18ZC41/18ZS37 MACHINE LEARNING

3 0 0 3

Course Objective:

- 1.Understand computational learning theory basics for different learning systems
- 2.Understand and design various linear and non-linear models for real world problems

Course Outcome:

CO1:Understand, Design a learning system and evaluate hypotheses based on computational learning theory

CO2:Comprehend linear models for regression and classification problems

CO3:Understand and design neural networks for non-linear problems

CO4:Understand and design kernel and graphical models for real world problems

CO - PO MAPPING

PO CO	P O1	P O2	P O3	PO 4	PO 5
CO1			S	S	
CO2			S	S	
CO3			S	S	

CO4			S	S	
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