Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110

Department of Information Technology

COURSE OUTCOMES (COs)

3rd SEMESTER

GE2201-Engineering Mathematics – III

1. know the techniques to find the missing terms in **discrete** data and numerical integrations for discrete value functions.
2. Identify with Laplace transform & inverse Laplace transforms of various types of functions, its properties and its application to solve differential equations and acquire an ability to use it in Engineering subjects like control system, Network analysis and digital signal processing
3. find the z-transform, inverse z-transform of a sequence, identify its region of convergence and develop an ability to explore and solve problems in various branches of Engineering. solve partial differential equations.
4. Recognize to determine the solution of linear systems of equations using matrices methods, find Eigen values and Eigen vectors and come across in solving applied problems. Fourier transform & series

IT2201-Digital Circuits & Microprocessors +IT2202Lab

1. Student will able to be to understand designing of basic circuits using logic gates and Boolean algebra, and designing of combinational logic circuits.
2. Student will able to understand designing of counters and registers.
3. Students will be able to understand the architecture and organization of microprocessor along with instruction coding formats,addressing modes, Instructions sets of 8086.
4. Students will be able to understand the interfacing of memory And I/O with 8086 and interfacing and working principle of 8255 PPI.

IT2203-Object Oriented Programming +IT2204Lab

1. Demonstrate the understanding of Object oriented concepts.
2. Apply the programming language JAVA efficiently in object oriented software development
3. Able to analyze problem statement and identify appropriate objects and methods
4. Design and implement a small programs using classes
5. Design, develop, test, and debug programs using object oriented principles of java

IT2205-Data Structures and Program Design-I +IT2206Lab

1. Comprehend programming constructs like function, array, string, pointer, structure, file and also understand basic data structures like list, stack, queue.
2. Apply appropriate data structures in problem solving.
3. Analyze the performance of operations performed on data structures.
4. Design application by using data structures for real world problems.

IT2207-Computer Architecture & Organization

1. Describe fundamentals of computer architecture and organization
2. Understand control unit operations and performances issues.

3. Apply mathematical techniques and perform computer arithmetic operations.

4. Design organization of memory and understand the concept of cache mapping techniques.

IT2208-Software Lab

1. Understand the basic data types, built in data structures, control statements and loops and write simple programs in Python
2. To understand the concepts of functions modules and packages and write complex programs using them.
3. To understand defining and handling Python objects and develop classes required for the given application
4. To develop a useful application in Python.

4TH SEMESTER

IT2251 Data Structures and Program Design-II+IT2252Lab

1. Understand data structures like Tree, Graph, Set, Hash table.
2. Apply appropriate data structures in problem solving.
3. Analyze the performance of operations performed on data structures.
4. Design application by using data structures for real world problems.

IT2253 Computer Networks +IT2254Lab

1. Students will able to explain and visualize the different aspects of networks, protocols and network design models.
2. Students will able to illustrate the different of hardware, software and types of transmission media used in computer networks.
3. Students will able to analyze various Data Link layer design issues and select appropriate routing algorithms for a network.
4. Students will able to analyze the important aspects and functions of transport layer, application layer and Cryptography in computer networking.

IT2255 Operating Systems + IT2256Lab

1. understand the fundamental concepts in Operating Systems (OS) and understand how various hardware features support OS functionality.
2. explain various OS mechanisms and policies for managing system resources.
3. analyze algorithms and techniques for managing various OS resources in a multiprogramming and other environments.
4. evaluate the performance of algorithms for managing various OS resources.

Department of Information Technology

IT2257 Theory of Computation

1. To apply basic properties of formal languages & to construct Finite automata, to write regular expression and Regular Grammar.
2. To analyze & design different types of Grammars.
3. To apply properties of CFL & design of Push Down Automata
4. To analyze & design Turing machine & demonstrate basic concept of Recursive Language, undeciadibility, post Correspondence problem & Recursive enumerable language

5TH SEMESTER

IT1303 Operating Systems + IT1304 Lab:

After completion of the course students will be able to

1. To review computer hardware and to understand the fundamental concepts in Operating Systems.
2. To apply and analyze algorithms and techniques for managing various OS resources
3. To evaluate the performance of algorithms for managing various OS resources using appropriate parameters
4. To simulate algorithms/techniques for managing various OS resources.

IT1305 Software Engineering + IT1306 Lab

After completion of the course students will be able to

1. Understand and apply the software testing techniques in a variety of ways to test the software.
2. Demonstrate an ability to use the techniques and tools necessary for software engineering practices
3. Analyze and evaluate the different software process model and appropriate architectural style while developing a software
4. Create and conduct UML based design and analysis with the help of various diagrams.

IT1316 Data Base Management Systems + IT1317 Lab

After completion of the course students will be able to

1 Understand the basic fundamentals of DBMS and use different data models.

2 Write Structured Query Language (SQL) for given problem.

3 Apply transaction strategies for concurrency and recovery of DBMS.

4 Design database using normalization and other techniques.

5 Design and build applications involving database.

Department of Information Technology

IT1307 PE I: Computer Graphics

After completion of the course students will be able to

1. Understand basics of computer graphics.
2. Apply basic algorithms for line, circle and to solve, apply geometric transformation matrices including rotation, translation, scaling and reflection to transform a 2D object.
3. Analyze and evaluate specified graphics techniques of raster graphics
4. Design composite transformation matrix for 2D and 3D objects and projections and plot curve, splines.

IT1309 PE I :Embedded System

After completion of the course students will be able to

1. The concepts and architecture of embedded systems.
2. Students have knowledge about the basic structure of embedded systems
3. The concepts of realtime operating system
4. To study microcontrollers and its application.

IT1326 PE I :Digital Signal Processing

Student will able to

1. Interpret, represent and process discrete/digital signals and systems
2. To apply the concept of frequency domain analysis of discrete time signals.
3. Ability to design & analyze DSP systems like FIR and IIR Filter etc.
4. Understanding of spectral analysis of the signals

IT1327 PE I :Web Programming

After completion of the course students will be able to

1. Understand the internet communication technologies & Web browser tools, XML application and ASP.NET.
2. Apply all the above concepts of web programming
3. Design & develop of web sites by using html and dynamic web sites by using DHTML and design JavaScript WebPages through HTML.
4. Design interactive websites & promote it online

IT1328 PE I: Data Analysis & Statistics

After completion of the course students will be able to

1. Understand fundamental concepts of data analysis using statistics.
2. Perform data analysis and Apply appropriate statistical methods in the analysis of simple datasets

3. Interpret and clearly present output from statistical analyses in a clearconcise and understandable manner
4. Define, formulate and solve problems in a systematicmanner.

IT1322 OE I: Web Technology

After completion of the course students will be able to

1. understand the internet communication technologies & Web browser tools, XML application and ASP.NET .
2. Apply all the above concepts of web programming
3. Design & develop of web sites by using html and dynamic web sites by using DHTML and design JavaScript Webpages through HTML.
4. Design interactive websites & promote it online

IT1325 OE I: Object oriented programming (Java)

After completion of the course students will be able to

1. Demonstrate the understanding of Object oriented concepts.
2. Apply the programming language JAVA efficiently in object oriented software development
3. Able to analyze problem statement and identify appropriate objects and methods
4. Design and implement a small programs using classes

6TH SEMESTER

IT1338 Computer Networks + IT1339 Lab

After completion of the course students will be able to

1. Understand the fundamental of Computer Network, data link layer issues, protocols, devices, and application level layer concepts.
2. Analyze different error detection mechanism in network layer.
3. Apply different routing algorithm for solving computer network Problem.
4. Analyze the performance of computer Networks and elements of transport protocol.
5. To simulate the different computer network mechanism

IT1330 Business Intelligence + IT1331 Lab

After completion of the course students will be able to

1. to understand :
   - BI as a Process, its application in various domains and functional area, its roles and responsibilities.

- BI ecosystem and basic building blocks along with their functions in N_tier BI system,
- Lifecycle of a BI project.

2. Apply SQL as a universal language for BI .
3. Model a business scenario, identify the metrics, indicators, various dimensions, and aggregation strategies. and make recommendations to achieve the business goal .
4. Recognize the different levels of abstraction in data warehouse, build schema objects, and generate different reports using BI tool
5. Obtain hands on experience with popular BI software for analysis, designing schema, reporting, visualization of results

IT1318 Design & Analysis of Algorithms + IT1332 Lab

After completion of the course students will be able to

1. Understand asymptotic analysis of iterative and recursive algorithms, complexity of algorithms
2. Apply important algorithmic design techniques for problem solving
3. Analyze the performance of algorithms
4. Synthesize and design efficient algorithms for real world problems

IT1311 PE II: Artificial Intelligence

After completion of the course students will be able to

1. understand basics of AI, apply and choose proper state space search algorithm for the given problem
2. solve problems with reasoning techniques in the presence of incomplete and/or uncertain information
3. know various knowledge representation techniques
4. understand various learning methods and apply it to build simple knowledge-based systems

IT1320 PE II: Digital Image Processing

After completion of the course students will be able to

1. understand the fundamental concepts in Digital Image Processing.
2. apply knowledge of image processing algorithms and techniques to perform image enhancement and other useful image operations
3. analyze images using spatial and frequency domain techniques
4. design filters for image processing

IT1308 PE II: Mobile Communication

After completion of the course students will be able to

1. Differentiate between wired and wireless communication and understand the basic issues related wireless & cellular communication.

2. Demonstrate Cellular system architecture and channels, based on different medium access mechanisms and to understand the basic modulation techniques to overcome the different fading effects.
3. Classify basic types of satellite communications and understand the current and proposed cellular technologies.
4. Analyze and design the traditional networks that can be extended for mobility support.

IT1333 PE II: Information Systems

After completion of the course students will be able to

1. Understand conceptual design and its functionality for MIS and ERP.
2. Apply the basic concept of MIS and ERP for implementing information system
3. Apply different planning strategies & role for implementing MIS.
4. Design MIS using Management organizational theory and different decisions.

IT1334 PE II: Internet of Things

After completion of the course students will be able to

1. Describe IoT as a Process, its architecture and Management, compare and contrast old and new challenges in IoT.
2. Apply various communication protocol and its building blocks in IoT applications.
3. Illustrate relevance of IoT with cloud and Web and analyze various security challenges and also evaluate various control strategies for the same.
4. Create, Design and Develop various applications based on IoT concepts.

IT1336 OE II: Introduction to E-Commerce

After completion of the course students will be able to

1. Understanding of contemporary ecommerce concepts and terminology, and the processes and management decisions that are involved in launching, operating and managing business activity on the World Wide Web.
2. Defining and analyzing the concept of electronic data interchange and its legal, social and technical aspects
3. Evaluate the key aspects of B2C e-commerce and discuss the trends in e-Commerce and the use of the Internet
4. Define and analyze the security issues over the web, the available solutions, future aspects of e-commerce security, concept of E-commerce and electronic payment system.

IT1337 OE II: Information Security

After completion of the course students will be able to

1. understand the concept of information security.
2. use mechanisms like authentication, encryption and digital signature to avoid security attacks.
3. analyze the threats in networks in various layers of networks.
4. identify the need for firewalls, intrusion detection and prevention system.

IT1324 Mini Project

After completion of the course students will be able to

1. Understand the knowledge gained from the various courses undergone in earlier years
2. Evaluate and analyze critically different sources of data available in the literature.
3. Plan complete project lifecycle, timeline and complete the design as per requirements.
4. Implement complete project in estimated time
5. Gain and apply the knowledge of tools learned and how to write Technical paper and Report in professional style, and to demonstrate the product/software to technical audience.

7TH SEMESTER

IT1403 Principle of Compiler Design + IT1404 Lab

After completion of the course students will be able to

1. Understand different phases of compilation process and lexical analyzer tool "Lex" OR "Flex"
2. Apply parsing techniques to design and implement parsers using YACC /Bison tool
3. Apply syntax directed translation scheme to programming language constructs and analyze errors in lexical and syntactic phase of compiler
4. Apply different optimization techniques in the design of compiler and generate target code

IT1417 Network Programming + IT1418 Lab

After completion of the course students will be able to

1. Understand the basics of TCP/IP model and IP Addressing scheme and design IP scheme for a given network and its packages and operation
2. Understand the working of network layer protocols and concept of Socket Programming and its functions.
3. Apply knowledge of socket programming to develop network based application.
4. Understand interprocess communication in Unix.

IT1427 Data Mining + IT1428 Lab

After completion of the course students will be able to

1. Understand basic concepts in data mining, Identify the scope and necessity of Data Mining for the society and for business applications.
2. Apply different data mining algorithms on given data set.
3. Analyze alternative data mining implementations and what might be most appropriate for a given data mining task.
4. Develop algorithm for mining application specific data.
5. Use popular data mining tool and apply the principle algorithms and techniques used in data mining, on different types of dataset, analyze their results, interpret the results using different visualization techniques.

IT1422 Network Security

After completion of the course students will be able to

1. Analyze the vulnerabilities in any computing system and hence be able to design a security solution.
2. Identify the security issues in the network and resolve it.
3. Evaluate security mechanisms using rigorous approaches,
4. Compare different standards and electronic mail security

IT1407 PE III: Real Time Systems

After completion of the course students will be able to

1. Enumerate the need and the challenges in the design of hard and soft real time systems.
2. Compare different scheduling algorithms and the schedulability criteria.
3. Determine schedulability of a set of periodic tasks given a scheduling algorithm.
4. Develop algorithms to decide the admission criterion of sporadic jobs and the schedule of aperiodic jobs.
5. Integrate resource access mechanisms with the scheduling techniques and develop integrated schedulibility criteria.

IT1423 PE III: Human Computer Interaction

After completion of the course students will be able to

1. Explain the human components functions regarding interaction with computer
2. Explain Computer components functions regarding interaction with human
3. Demonstrate Understanding of Interaction between the human and computer components.
4. Will be able to design a user interface with understanding & application of Designing rules.

IT1430 PE III: E-Commerce

After completion of the course students will be able to

5. Understanding of contemporary ecommerce concepts and terminology, and the processes and management decisions that are involved in launching, operating and managing business activity on the World Wide Web.
6. Defining and analyzing the concept of electronic data interchange and its legal, social and technical aspects
7. Evaluate the key aspects of B2C e-commerce and discuss the trends in e-Commerce and the use of the Internet
8. Define and analyze the security issues over the web, the available solutions, future aspects of e-commerce security, concept of E-commerce and electronic payment system.

IT1432 PE III: Cloud Computing

After completion of the course students will be able to

1. Understand the different computing paradigm, analyze and apply cloud computing services, deployment model for building cloud
2. Apply the concepts and techniques in cloud computing
3. Analyze the problems and apply design considerations for cloud application
4. Provide the appropriate cloud computing solutions for building cloud application

IT1436 PE III: Coding Standard and Technical Documentation

After completion of the course students will be able to

1. To be able to write standard codes for Java Programming Language in a manner that increases readability and understandability and Acquire the fine art of documenting Java code
2. Practice the unique qualities of professional writing style, including sentence conciseness, readability, clarity, accuracy, avoiding wordiness or ambiguity, previewing and objectivity.
3. Collect, analyze, document, and report research clearly, concisely, logically, and ethically.

IT1415 PE IV : Neural Networks & Fuzzy Logic + IT1416 Lab

After completion of the course students will be able to

1. understand the mathematical foundations and working of neural networks as pattern classifier
2. comprehend the neural networks as means for computational learning and to analyze the basic network architectures and algorithms for supervised and unsupervised learning
3. understand the basics of fuzzy sets, its operations and the need for fuzzy logic
4. Design fuzzy inference system and to design a fuzzy controller

IT1405 PE IV: Pattern Recognition + IT1439 Lab

After completion of the course students will be able to

1. Understand the fundamentals of pattern recognition, design cycle, application and Analyze classification problems probabilistically and estimate classifier performance.
2. Demonstrate the principles of Bayesian parameter estimation and apply them in relatively simple probabilistic models.

3. Illustrate and analyze methods of classification techniques, and choose a appropriate decision making technique to solve a problem.
4. Select and apply appropriate clustering method for solving the given problem, and design and develop Nets with & without Hidden Layers, Back-Propagation Algorithm, and Hopfield Nets.

IT1421 PE IV: Distributed Systems + IT1440 Lab

After completion of the course students will be able to

1. Identify the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection, agreement, etc.
2. Design and develop distributed programs using sockets and RPC/RMI.
3. Differentiate between different types of faults and fault handling techniques in order to implement fault tolerant systems.
4. Analyze different algorithms and techniques for the design and development of distributed systems subject to specific design and performance constrain

8TH SEMESTER

IT1424 Industrial Project (Industry Visit / Training / Seminar)

Internship

After completion of the course students will be able to

1. Acquire the any recent technological skills for his development.
2. Apply the technical knowledge in various real time problem and develop the application with industry support and write a report.
3. Have ability to represent his candidature for employment or become a future employers.

IT1425 Comprehensive Viva-Voce

After completion of the course students will be able to

1. Understanding of various courses
2. preparedness to tackle unknown problems
3. studentsability to think in time pressure
4. presentation skills