Department of Computer Science & IT

Bachelor of Computer Application

Program Outcomes

POs:

[PO.1]. Domain knowledge: Apply the knowledge of mathematics, science, computer fundamentals, and computer applications to the solution of complex problems. Identify and analyze software application problems in multiple aspects including coding, testing and implementation in industrial applications.

[PO.2]. Effective Communication: Speak, read, write and listen clearly in person and through electronic media in the context of language and literature that helps the students to learn and make accurate use of English in their respective field and communicate effectively.

[PO.3]. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern techniques and IT tools including prediction and modeling to complex activities with an understanding of the limitations.

[PO.4]. Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

[PO.5]. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

[PO.6]. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

[PO.7]. Problem analysis: Identify, formulate, review research literature, and analyze complex problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and computer sciences.

[PO.8]. Project management: Demonstrate knowledge and understanding of the software design 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.

[PO.9]. Individual & Team Work: Ability to work as a member or leader in diverse teams in multidisciplinary environment.

[PO.10]. Self-directed and Lifelong 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:

PROGRAM SPECIFIC OUTCOMES (COMMON ACROSS ALL SPECIALIZATIONS)

[PSO.1].Prepare professionally trained in the areas of programming, databases, software engineering, web designing and networking and other application areas to acquire knowledge in various domain-based prospects.

[PSO.2]. Encourage to communicate effectively and to improve their competency skills to solve real time problems.

[PSO.3]. Understand to employ modern computer languages and applications for their successful career, to create platforms to become an entrepreneur and a relish for higher studies.

PROGRAM SPECIFIC OUTCOMES (DATA SCIENCE)

[PSO.4]. Ability to apply the knowledge of computing tools and techniques in the field of Data science for solving real world problems encountered in the Software Industries.

[PSO.5]. Ability to identify the challenges in Data analytics with respect to IT Industry and pursue quality research in this field with social relevance.

PROGRAM SPECIFIC OUTCOMES (INTERNET OF THINGS)

[PSO.4]. An ability to apply pattern recognition, machine learning, and artificial intelligent techniques including statistical data analysis and quantitative modeling techniques to solve real world problems from various domains such as healthcare, social computing, economics, etc.

[PSO.5]. An ability to recognize and analyze problems related to AI and ML applications along with their ethical implications.

PROGRAM SPECIFIC OUTCOMES (ARTIFICIAL INTELLIGENCE)

[PSO.4]. An ability to recognize and analyze problems related to artificial intelligence and machine learning applications along with their ethical implications

[PSO.5]. An ability to apply intelligent computer systems to a variety of applications.

Semester I

Department of Computer Science & IT

Course Name: Introduction to Computer Science
Code: CSC21001
5 Credits | Semester 1

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Bridge the fundamental concepts of computers with the present level of knowledge of the students
[CO.2]. Get familiarize with Operating Systems, Programming languages, peripheral devices and internet.
[CO.3]. Assemble a PC
[CO.4]. Protect information and computers from basic abuses/attacks
[CO.5]. Connect it to external devices, write documents.
[CO.6]. Create worksheets, prepare presentations.

Course Name: Programming In C
Code: CSC21002
Credit - 5 | Semester 1

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Analyze the logic of a given problem

[CO.2]. Use branching control statements and iterative control statements

[CO.3]. Demonstrate the concepts of Reusability through the use of functions

[CO.4]. Analyze the problem statement and decide the logic to solve the problem using C Programming.

Course Name: Discrete Mathematics
Code: MTH21001
5 Credits | Semester 1

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Construct mathematical arguments using logical connectives and quantifiers
[CO.2]. Verify the correctness of an argument using propositional and predicate logic and truth tables
[CO.3]. Construct proofs using direct proof, proof by contraposition, proof by contradiction, proof by cases, and mathematical induction
[CO.4]. Perform operations on discrete structures such as sets, relations and functions and be familiar with concepts like Groups and Rings

Course Name: Business Communication
Code: MGT21001
5 Credits | Semester I

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Build confidence and enhance competitiveness by projecting a strong personality.
[CO.2]. Improve upon their listening & speaking abilities.
[CO.3]. Work on their ability to write error-free while improving upon their vocabulary & grammar.
[CO.4]. Deliver an effective oral business presentation.
[CO.5]. Demonstrate verbal and non-verbal communication ability through presentations.

Department of Computer Science & IT

Course Name: Computer Science Lab
Code: CSC21004
2 Credits | Semester I

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Bridge the fundamental concepts of computers with the present level of knowledge of the students
[CO.2]. Familiarize themselves with Operating Systems, Programming languages, peripheral devices and internet.
[CO.3]. Assemble a PC
[CO.4]. Protect information and computers from basic abuses/attacks
[CO.5]. Connect PC to external devices, write documents.
[CO.6]. Create worksheets, prepare presentations.

Course Name: Programming In C Lab
Code: CSC21005
2 Credits | Semester I

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the logic of a given problem
[CO.2]. Use branching control statements and iterative control statements
[CO.3]. Demonstrate the concepts of Reusability through the use of functions
[CO.4]. Analyze the problem statement and decide the logic to solve the problem using C Programming.

Semester II

Course Name: Data Structure through C
Code: CSC22006
5 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand how different operations can be implemented in data structure
[CO.2]. Comprehend how Prefix to postfix stack can be done on any given expression
[CO.3]. Insert or delete data using link list
[CO.4]. Analyze how any expression can be converted into tree structure
[CO.5]. Minimize the overuse of traversing

Course Name: Object Oriented Programming with C++
Code: CSC22007
5 Credits |Semester II

Course Outcomes: At the end of the course, the students will be able to

[CO.1]. Analyze the logic of a given problem
[CO.2]. Use branching control statements and iterative control statements using C++.
[CO.3]. Demonstrate the concepts of Reusability through the use of functions, Inheritance & Polymorphism
[CO.4]. Analyze the problem statement and decide the logic to solve the problem using C++ Programming.

Department of Computer Science & IT

Course Name: Operating System
Code: CSC22008
5 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Acquire the fundamental knowledge of the operating system architecture and components
[CO.2]. Know the various operations performed by the operating system
[CO.3]. Know about the Types of operating systems and differences among them
[CO.4]. Know about the Processes, threads, and the differences between them
[CO.5]. Know about the Interrupts, synchronization, waiting, and atomic behavior
[CO.6]. Know about the Virtual memory, paging, and memory allocation Caching principles and quantitative estimation of cache behavior

Course Name: Numerical & Statistical Methods
Code: MTH22002
5 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand and appreciate descriptive statistics
[CO.2]. Understand the concepts of probability and random variable
[CO.3]. Interpolation, approximation, and integration of Functions
[CO.4]. Comprehend initial values problems governed by ordinary differential equations

Department of Computer Science & IT

Course Name: Environmental Science
Code: MGT22010
5 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Clear concept about the components of environment and their inter-relatedness
[CO.2]. Understand about all the resources available and their origin and the ways to conserve them for sustainable future.
[CO.3]. Evaluate the environment and various species present as well as their importance and ways to conserve biodiversity.
[CO.4]. Construct and evaluate ways of managing solid waste and safe disposal techniques.
[CO.5]. Understand various measures undertaken by Government and laws related to protection of environment.

Course Name: Data Structure through C Lab
Code: CSC22010
2 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the logic of a given problem
[CO.2]. Use array to store same type of data
[CO.3]. Use structure to create nodes which can store different data types
[CO.4]. Learn best way to store, add, delete and retrieve data very in an expedite manner.

Course Name: Object Oriented Programming with C++ Lab
Code: CSC22011
2 Credits | Semester II

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the logic of a given problem
[CO.2]. Demonstrate the concepts of Reusability through the use of functions
[CO.3]. Understand the principles behind object oriented development process
[CO.4]. Understand the use of object oriented programming language in the development of small to medium sized application program

Course Name: Programming with Java
Code: CSC23013
5 Credits | Semester III

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Analyze the logic of a given problem
[CO.2]. Use branching control statements and iterative control statements
[CO.3]. Achieve Multiple inheritance using interface
[CO.4]. Applet and AWT to design application

Course Name: Design and Analysis of Algorithms
Code: CSC23014
5 Credits | Semester III

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Design algorithms for a given problem using standard algorithm design techniques.
[CO.2]. Define the concepts and mathematical foundation for analysis of algorithm.
[CO.3]. Analyze and compare the efficiency of various algorithms of a given problem
[CO.4]. Explain different standard algorithm design techniques, namely, divide & conquer, greedy, dynamic programming, backtracking and branch & bound.
[CO.5]. Demonstrate standard algorithms for fundamental problems in Computer

Course Name: Database Management System
Code: CSC23016
5 Credits | Semester III

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand and describe the fundamental elements of relational database management systems
[CO.2]. Understand and explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra, and SQL.
[CO.3]. Understand the Design ER-models to represent simple database application scenarios
[CO.4]. Understand and Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
[CO.5]. Understand and improve upon the database design by normalization.

Course Name: Data Communication & Networking
Code: CSC23017
5 Credits | Semester III

COURSE OUTCOMES: By the end of this course, students will be able to:

[CO.1]. Analyze the topologies and network models.
[CO.2]. Understand the various network protocols, algorithms. Multiplexing, Error Detention, and Data Link Control
[CO.3]. Analyze the Network Layer and Next Generation IP, Data-Link and Network-Layer Protocols
[CO.4]. Understand about the Wired Networks and Virtual LANs

Course Name: Python Programming
Code: CSC23018
4 Credits | Semester III

COURSE OUTCOMES: By the end of this course, students will be able to:

[CO.1]. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
[CO.2]. Express different Decision Making statements and Functions
[CO.3]. Interpret Object oriented programming in Python
[CO.4]. Understand and summarize different File handling operations
[CO.5]. Explain how to design GUI Applications in Python and evaluate different database operations
[CO.6]. Design and develop Client Server network applications using Python

Department of Computer Science & IT

Course Name: Programming with Java Lab
Code: CSC23019
2 Credits | Semester III

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Analyze the logic of Java Program.
[CO.2]. Use object to design complex logic
[CO.3]. Achieve Multiple inheritance using interface
[CO.4]. Applet and AWT to design application

Semester III

Course Name: Database Management System Lab

Code: CSC23020

2 Credits | Semester III

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Describe the fundamental elements of relational database management systems

[CO.2]. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra, and SQL.

[CO.3]. Design ER-models to represent simple database application scenarios

[CO.4]. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

[CO.5]. Improve the database design by normalization. Working with PL/SQL

Course Name: Python Programming Lab

Code: CSC23021

2 Credits | Semester III

COURSE OUTCOMES: By the end of this course, students will be able to:

[CO.1]. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python

[CO.2]. Express different Decision Making statements and Functions

[CO.3]. Interpret Object oriented programming in Python

[CO.4]. Understand and summarize different File handling operations

[CO.5]. Explain how to design GUI Applications in Python and evaluate different database operations

[CO.6]. Design and develop Client Server network applications using Python

Course Name: Introduction to Data Science
Code: CSC24120
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the data and carry out supervised, unsupervised learning processes.
[CO.2]. Develop relevant programming
[CO.3]. Demonstrate proficiency with statistical analysis of data.
[CO.4]. Develop the ability to build and assess Data based models.
[CO.5]. Design more complex algorithms involving more complex data structures, and can implement their solutions in multiple languages

Course Name: Internet of Things
Code: CSC24113
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the application areas of IoT
[CO.2]. Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
[CO.3]. Understand building blocks of Internet of Things and characteristics.
[CO.4]. Design some IoT based prototypes

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: R Programming Language
Code: CSC24121
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Use and program in the programming language R
[CO.2]. Use R to solve statistical problems
[CO.3]. Implement and describe Monte Carlo- the technology
[CO.4]. Minimize and maximize functions using R

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: Python for Data Science
Code: CSC24122
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Acquire data through web-scraping and data APIs.
[CO.2]. Clean and reshape messy datasets
[CO.3]. Use exploratory tools such as clustering and visualization tools to analyze data.
[CO.4]. Use methods such as logistic regression, nearest neighbors, decision trees, and support vector machines to build a classifier.
[CO.5]. Apply dimensionality reduction tools such as principle component analysis

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: Web Programming
Code: CSC24022
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Create static HTML pages.
[CO.2]. Create well-structured and easily maintained CSS code to present HTML pages in different ways.
[CO.3]. Use JavaScript to add dynamic content to pages.
[CO.4]. Create dynamic web pages using PHP and My SQL

Discipline Specific Elective (DSE) Course
Internet of Things (Select any TWO)

Course Name: Sensor Technologies
Code: CSC24114
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the concept behind working of measurement systems and different types of sensors and transducers.
[CO.2]. Comprehend sensor to measure various physical parameters used in Industry and normal measurement applications.
[CO.3]. Work on principles of resistive, inductive and capacitive transducers and their applications.
[CO.4]. Understand thermocouples, piezoelectric and pyro-electric transducers and their applications.
[CO.5]. Understand digital and proximity sensors and their applications.
[CO.6]. Understand about the basics of Nano Technology and materials used in fabrication of Sensors.

Department of Computer Science & IT

Discipline Specific Elective (DSE) Course
Internet of Things (Select any TWO)

Course Name: Embedded System
Code: CSC24115
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the Embedded concepts and embedded system Architecture.
[CO.2]. Learn the architecture and programming of Microcontroller.
[CO.3]. Select a proper Microcontroller for an application.
[CO.4]. Understand the usage of the development and debugging tools.
[CO.5]. Learn and apply the knowledge of Memory systems and Peripherals.

Discipline Specific Elective (DSE) Course
Internet of Things (Select any TWO)

Course Name: Web Programming
Code: CSC24022
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Create static HTML pages.
[CO.2]. Create well-structured and easily maintained CSS code to present HTML pages in different ways.
[CO.3]. Use JavaScript to add dynamic content to pages.
[CO.4]. Create dynamic web pages using PHP and My SQL.

Discipline Specific Elective (DSE) Course
Artificial Intelligence (Select any TWO)

Course Name: Introduction to RPA Tools
Code: CSC24140
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of RPA systems.
[CO.2]. Understand the application areas of RPA
[CO.3]. Use various techniques of automation and control in Robotics
[CO.4]. Understand building blocks of RPA and characteristics.

Introduction to Process Automation
Code: CSC24141
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of Process Automation.
[CO.2]. Understand the application areas of Process Automation.
[CO.3]. Use various techniques of automation and control of processes.
[CO.4]. Understand building blocks of Process Automation and its characteristics.

Course Name: Web Programming
Code: CSC24022
5 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Create static HTML pages.
[CO.2]. Create well-structured and easily maintained CSS code to present HTML pages in different ways.
[CO.3]. Use JavaScript to add dynamic content to pages.
[CO.4]. Create dynamic web pages using PHP and My SQL

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: R Programming Language Lab
Code: CSC24124
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Use and program in the programming language R
[CO.2]. Use R to solve statistical problems
[CO.3]. Implement and describe Monte Carlo-the technology
[CO.4]. Minimize and maximize functions using R

Department of Computer Science & IT

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: Python for Data Science Lab
Code: CSC24125
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Learn how to go about algorithms
[CO.2]. Improve programming skills
[CO.3]. Appreciate Python Programming Paradigm
[CO.4]. Illustrate Hands-on Regular Expression
[CO.5]. Develop ability to Text Processing scripts

Discipline Specific Elective (DSE) Course
Data Science (Select any TWO)

Course Name: Web Programming Lab
Code: CSC24026
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Create static HTML pages.
[CO.2]. Create well-structured and easily maintained CSS code to present HTML pages in different ways.
[CO.3]. Use JavaScript to add dynamic content to pages.
[CO.4]. Create dynamic web pages using PHP and My SQL.

Department of Computer Science & IT

Discipline Specific Elective (DSE) Course
Internet of Things (Select any TWO)

Course Name: Sensor Technologies Lab
Code: CSC24117
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Comprehend the concept behind working of measurement systems and different types of sensors and transducers.
[CO.2]. Understand the Sensors to measure various physical parameters used in Industry and normal measurement applications.
[CO.3]. Comprehend Working principles of resistive, inductive and capacitive transducers and their applications.
[CO.4]. Understand thermocouples, piezoelectric and pyro-electric transducers and their applications.
[CO.5]. Understand acoustic, optical sensors and other sensors and their applications.
[CO.6]. Understand digital and proximity sensors and their applications.

Discipline Specific Elective (DSE) Course
Internet of Things (Select any TWO)

Course Name: Embedded System Lab
Code: CSC24118
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the Embedded concepts and embedded system Architecture.
[CO.2]. Learn the architecture and programming of Microcontroller.
[CO.3]. Select a proper Microcontroller for an application.
[CO.4]. Understand the usage of the development and debugging tools.
[CO.5]. Learn and apply the knowledge of Memory systems and Peripherals

Department of Computer Science & IT

Discipline Specific Elective (DSE) Course
Artificial Intelligence (Select any TWO)

Course Name: Introduction to RPA Tools Lab
Code: CSC24142
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of RPA systems.
[CO.2]. Understand the application areas of RPA
[CO.3]. Use various techniques of automation and control in Robotics
[CO.4]. Understand building blocks of RPA and characteristics.

Discipline Specific Elective (DSE) Course
Artificial Intelligence (Select any TWO)

Course Name: Introduction to Process Automation Lab
Code: CSC24143
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of Process Automation.
[CO.2]. Understand the application areas of Process Automation.
[CO.3]. Use various techniques of automation and control of processes.
[CO.4]. Understand building blocks of Process Automation and its characteristics.

Course Name: Enterprise Java
Code: CSC25034
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Identify advance concepts of Java programming with database connectivity.
[CO.2]. Design and develop platform independent applications using a variety of component-based frameworks.
[CO.3]. Able to implement the concepts of JSP, JPA, JNDI, Hibernate, XML & EJB for building enterprise applications.
[CO.4]. Learn how to use Java APIs

Course Name: Machine Learning with R
Code: CSC25136
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the concepts related to Machine Learning.
[CO.2]. Learn various algorithms and programming of machine learning.
[CO.3]. Apply the knowledge related to the various concepts of machine learning.
[CO.4]. Understand the usage of R programming
[CO.5]. Implement different machine learning algorithm techniques using R.

Course Name: Mobile Application Development
Code: CSC25144
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand and demonstrate Android activities life cycle
[CO.2]. Build their own Android applications.
[CO.3]. Explain the differences between Android and other mobile development environments.
[CO.4]. Secure, tune, package and deploy Applications.

Course Name: Design and Analysis of Experiments
Code: CSC25132
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Describe how to design experiments, carry them out, and analyze the data they yield.
[CO.2]. Understand the process of designing an experiment including factorial and fractional factorial designs.
[CO.3]. Examine factorial design as to how it leads to cost reduction, increases efficiency of experimentation, and reveals the essential nature of a process.
[CO.4]. Investigate the logic of hypothesis testing, including analysis of variance and the detailed analysis of experimental data.

Course Name: Probabilistic Graphical Models
Code: CSC25131
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Model problems using graphical models
[CO.2]. Design inference algorithms
[CO.3]. Learn the structure of the graphical model from data.
[CO.4]. Understand the advances in inferences using graphical models

Course Name: Exploratory Data Analysis and Data Visualization Techniques
Code: CSC25129
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Choose and apply the most suitable techniques for exploratory data analysis
[CO.2]. Map out the hidden underlying structure of the data
[CO.3]. Detect anomalies and missing data
[CO.4]. Demonstrate strong skills in using visualization techniques for analysis and communication.

Department of Computer Science & IT

Course Name: Artificial Intelligence
Code: CSC25032
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand what Artificial Intelligence mean and the foundations of it.
[CO.2]. Understand those elements constituting problems and learn to solve them by various uninformed and informed (heuristics based) searching techniques
[CO.3]. Understand the formal method for representing the knowledge
[CO.3]. Understand the process of inference to derive representations of the knowledge to deduce what to do.

Course Name: Digital Image Processing
Code: CSC25145
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of digital image processing.
[CO.2]. Understand the application areas of digital image processing
[CO.3]. Realize the revolution of Image Processing in Digital era.
[CO.4]. Use various techniques of image processing.

Course Name: Cloud Computing
Code: CSC25139
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the fundamental principles of distributed computing.
[CO.2]. Understand the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing.
[CO.3]. Understand the business models that underlie Cloud Computing.
[CO.4]. Understand concepts of IAAS, SASS, PAAS.

Course Name: Six Sigma and Lean Methods
Code: CSC25146
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the Lean and Six Sigma approaches to quality and productivity improvement and master the skills need to contribute to the success of a Lean, Six Sigma or LSS initiative.
[CO.2]. Explain the project selection process and set goals for a Six Sigma or LSS project.
[CO.3]. Explain the goals of each phase of the Six Sigma DMAIC process and create a plan for managing and executing a Six Sigma improvement project.
[CO.4]. Clearly and concisely communicate project plans and results of studies to stakeholders and decision makers.

Course Name: Digital Image Processing
Code: CSC25145
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the various concepts, terminologies of digital image processing.
[CO.2]. Understand the application areas of digital image processing
[CO.3]. Realize the revolution of Image Processing in Digital era.
[CO.4]. Use various techniques of image processing.

Course Name: Business Intelligence
Code: CSC25147
5 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Explain the foundations, definitions, and capabilities of DSS, data analytics and BI.
[CO.2]. List the definitions, concepts, and architectures of data warehousing.
[CO.3]. Demonstrate the impact of business reporting, information visualization, and dashboards.
[CO.4]. Outline the definitions, concepts, and enabling technologies of Business Intelligence.

Course Name: Enterprise Java Lab
Code: CSC25148
2 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Identify advance concepts of Java programming with database connectivity.
[CO.2]. Design and develop platform independent applications using a variety of component-based frameworks.
[CO.3]. Implement the concepts of JSP, JPA, JNDI, Hibernate, XML & EJB for building enterprise applications.
[CO.4]. Learn how to use Java APIs

Course Name: Machine Learning with R Lab
Code: CSC25149
2 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the Machine Learning concepts.
[CO.2]. Learn various algorithm and programming of machine learning.
[CO.3]. Apply the knowledge various concepts of machine learning.
[CO.4]. Understand the usage of R programming
[CO.5]. Implement different machine learning algorithm techniques using R.

Course Name: Mobile Application Development Lab
Code: CSC25150
2 Credits | Semester V

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand and demonstrate Android activities life cycle
[CO.2]. Build their own Android applications.
[CO.3]. Explain the differences between Android and other mobile development environments.
[CO.4]. Secure, tune, package and deploy Applications.

Course Name: Software Engineering
Code: CSC26151
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the importance of the stages in the software development life cycle.
[CO.2]. Understand the various process model.
[CO.3]. Understand the UML notation.
[CO.4]. Design software by applying the software engineering principles.

Course Name: Big Data Analytics
Code: CSC26152
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the concept & characteristics of big data.
[CO.2]. Explore Hadoop framework and its components.
[CO.3]. Use HDFS and Map Reduce to analyze various industry usage cases of big data analytics.
[CO.4]. Understand the YARN Infrastructure.
[CO.5]. Learn different Sorting, shuffling algorithm of map reduce & understand the concept of big data streaming.

Course Name: NoSQL Databases
Code: CSC26153
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the Data model of storing and retrieving Data.
[CO.2]. Collect and Document various related databases
[CO.3]. Demonstrate the concepts Transactions Spanning different Operations
[CO.4]. Analyze the need of NoSQL Key/Value databases in Modern web development

Course Name: Time Series Analysis
Code: CSC26154
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the different elementary models related to time series analysis.
[CO.2]. Apply different model evaluation technique to identify better model to forecast.
[CO.3]. Understand the importance of stationarity in building time series models.
[CO.4]. Understand the use of Granger Causality and Johensen Cointegration method.
[CO.5]. Apply VAR model to the dynamic behaviour of financial time series conditions.
[CO.6]. Select the order of Vector Auto Regression model for better forecast of time series data.

Course Name: Embedded C with Arduino
Code: CSC26158
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand hardware and software design requirements of embedded systems.
[CO.2]. Analyze the embedded systems' specification and develop software programs.
[CO.3]. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.
[CO.4]. Specialize in Embedded system design using Arduino.

Course Name: Digital Signal Processing
Code: CSC26159
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze digital and analog signals and systems.
[**CO.2].** Change sampling rate of the signal.
[**CO.3].** Conceptualize the need of adaptive filters in communication applications.
[CO.4]. Understand the key Architectural features of Digital Signal Processor.
[CO.5]. Apply digital signal processing algorithms to various areas.

Course Name: Artificial Neural Networks
Code: CSC26160
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand basic concepts related to neural networks.
[CO.2]. Use neural networks to perform classification for single class and multiclass problems.
[CO.3]. Learn and apply the concept of self-organizing maps.
[CO.4]. Formalize the problem and to solve it by using a neural network

Course Name: Cloud Deployment and Management
Code: CSC26164
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the components of cloud computing showing how business agility in an organization can be created
[CO.2]. Evaluate the deployment of web services from cloud architecture
[CO.3]. Critique the consistency of services deployed from a cloud architecture
[CO.4]. Compare and contrast the economic benefits delivered by various cloud models based on application requirements, economic constraints, and business requirements.
[CO.5]. Critically analyze case studies to derive the best practice model to apply when developing and deploying cloud-based applications

Course Name: Natural Language Processing
Code: CSC26165
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Comprehend how key concepts from NLP are used to describe and analyze language
[CO.2]. Understand about POS tagging and context-free grammar for English language
[CO.3]. Understand semantics and pragmatics of English language for processing
[CO.4]. Write programs to carry out natural language processing

Course Name: Artificial Neural Networks
Code: CSC26160
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand basic concepts of neural networks.
[CO.2]. Use neural networks to perform classification for single class and multiclass problems.
[CO.3]. Learn and apply the concept of self-organizing maps.
[CO.4]. Formalize the problem, to solve it by using a neural network

Course Name: Big Data Analytics Lab
Code: CSC26155
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the concept & characteristics of big data.
[CO.2]. Explore Hadoop framework and its components.
[CO.3]. Use HDFS and MapReduce to analyze various industry use cases of big data analytics.
[CO.4]. Understand the YARN Infrastructure.
[CO.5]. Learn different Sorting, Shuffling algorithm of MapReduce & understand the concept of big data streaming.

Course Name: NoSQL Databases Lab
Code: CSC26156
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Implement the Data model of storing and retrieving Data.
[CO.2]. Collect and Document relevant databases
[CO.3]. Implement the concepts of Transactions Spanning Different Operations
[CO.4]. Analyze the need of NoSQL Key/Value databases in Modern web development

Course Name: Time Series Analysis Lab
Code: CSC26157
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand the different elementary models related to time series analysis.
[CO.2]. Apply different model evaluation technique to identify better model to forecast.
[CO.3]. Understand the importance of stationarity in building time series models.
[CO.4]. Understand the use of Granger Causality and Johensen Cointegration method.
[CO.5]. Apply VAR model to the dynamic behaviour of financial time series conditions.
[CO.6]. Select the order of Vector Auto Regression model for better forecast of time series data.

Course Name: Embedded C with Arduino Lab
Code: CSC26161
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand hardware and software design requirements of embedded systems.
[CO.2]. Analyze the embedded systems' specification and develop software programs.
[CO.3]. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.
[CO.4]. Be specialized in Embedded system design using Arduino.

Course Name: Digital Signal Processing Lab
Code: CSC26162
2 Credits | Semester IV

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze digital and analog signals and systems.
[**CO.2].** Change sampling rate of the signal.
[**CO.3].** Conceptualize the need of adaptive filters in communication applications.
[CO.4]. Understand the key Architectural features of Digital Signal Processor.
[CO.5]. Apply digital signal processing algorithms to various areas.

Course Name: Artificial Neural Networks Lab
Code: CSC26163
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand basic concepts of neural networks.
[CO.2]. Use neural networks to perform classification for single class and multiclass problems.
[CO.3]. Learn and apply the concept of self-organizing maps.
[CO.4]. Formalize the problem, to solve it by using a neural network

Course Name: Cloud Deployment and Management Lab
Code: CSC26166
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Analyze the components of cloud computing showing how business agility in an organization can be created
[CO.2]. Evaluate the deployment of web services from cloud architecture
[CO.3]. Critique the consistency of services deployed from a cloud architecture
[CO.4]. Compare and contrast the economic benefits delivered by various cloud models based on application requirements, economic constraints, and business requirements.
[CO.5]. Critically analyze case studies to derive the best practice model to apply when developing and deploying cloud based applications

Course Name: Natural Language Processing Lab
Code: CSC26167
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand how key concepts from NLP are used to describe and analyze language
[CO.2]. Comprehend POS tagging and context free grammar for English language
[CO.3]. Understand semantics and pragmatics of English language for processing
[CO.4]. Write programs to carry out natural language processing

Course Name: Artificial Neural Networks Lab
Code: CSC26163
2 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to

[CO.1]. Understand basic concepts of neural networks.
[CO.2]. Use neural networks to perform classification for single-class and multiclass problems.
[CO.3]. Learn and apply the concept of self-organizing maps.
[CO.4]. Formalize the problem, to solve it by using a neural network

Department of Computer Science & IT

Course Name: Project
Code: CSC26048
5 Credits | Semester VI

Course Outcomes: At the end of the course, students will be able to:

[CO.1]. Apply Software Development Cycle to develop a software module.
[CO.2]. Use the techniques, skills and modern engineering tools necessary for software development.
[CO.3]. Develop a software product along with its complete documentation.
[CO.3]. Put to use their learning with regard to practical implications in the context of a software project.