## Department of Computer Science and Business Systems

## COURSE OUTCOMES

## 2022 – 2023 ODD SEMESTER

| Sl. No. | Semester | Course Code | Course Title |
|---|---|---|---|
| 1 | 3 | 20MA304 | Computational Statistics + Lab |
| 2 | 3 | 20CB301 | Formal Language and Automata Theory |
| 3 | 3 | 20CB302 | Computer Organization and Architecture |
| 4 | 3 | 20CB303 | Object Oriented Programming + Lab |
| 5 | 3 | 20CB304 | Software Engineering + Lab |
| 6 | 3 | 20CB305 | Financial Management |
| 7 | 3 | | Indian Constitution (Non-Credit) |
| 8 | 3 | | Aptitude and Coding Skills – I (Non-Credit) |
| 9 | 5 | 20CB501 | Design And Analysis of Algorithms |
| 10 | 5 | 20CB502 | Compiler Design + Lab |
| 11 | 5 | 20CB503 | Fundamentals of Management |
| 12 | 5 | 20CB504 | Business Strategy |
| 13 | 5 | 20CB505 | Design Thinking |
| 14 | 5 | 20CB903 | Professional Elective I - Machine Learning + Lab |
| 15 | 5 | 20CB906 | Professional Elective II – Industrial Psychology |
| 16 | 5 | 20CB511 | Mini Project |
| 17 | 5 | 20CS512 | Advanced Aptitude and Coding Skills – I |

## Department of Computer Science and Business Systems

## THIRD SEMESTER

### 20CB301 FORMAL LANGUAGE AND AUTOMATA THEORY

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Construct automata, regular expression for any pattern |
| CO2 | Write Context free grammar for any construct |
| CO3 | Design Turing machines for any language |
| CO4 | Propose computation solutions using Turing machines |
| CO5 | Derive whether a problem is decidable or not |

### 20CB302 COMPUTER ORGANIZATION AND ARCHITECTURE

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand the basic principles and operations of digital computers |
| CO2 | Design Arithmetic and Logic Unit |
| CO3 | Perform fixed- and floating-point operations |
| CO4 | Develop pipeline architectures for RISC Processors |
| CO5 | Understand Parallel Processor Architectures |
| CO6 | Understand Various Memory systems & I/O interfacings |

### 20CB303 OBJECT ORIENTED PROGRAMMING + LAB

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand basic Java language syntax |
| CO2 | Apply Object Oriented programming concepts like Data Abstraction, Encapsulation in Java |
| CO3 | Analyseand apply different types of inheritance and polymorphism |
| CO4 | Use collections for solving real-time problems |
| CO5 | Develop multi-threaded applications in Java |

## Department of Computer Science and Business Systems

### 20CB304 SOFTWARE ENGINEERING + LAB

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand engineering approach to software development, software quality and reliability |
| CO2 | Manage project schedule, estimate project cost and effort required |
| CO3 | Summarize the concepts of software requirement analysis and design |
| CO4 | Identify the need for software metrics and measure of code and design quality |
| CO5 | Compare and contrast various testing methodologies |
| CO6 | Identify the need and importance of Object-Oriented Analysis, Design and Construction |

### 20CB305 FINANCIAL MANAGEMENT

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand the fundamental concepts of financial management |
| CO2 | Apply valuation of securities and calculate the risk & return in portfolio management |
| CO3 | Analyse the cost structure of a company using operating and financial leverages |
| CO4 | Develop capital budgets and to estimate working capital |
| CO5 | Apply cash management in business |

### 20MA304 COMPUTATIONAL STATISTICS + LAB

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Analyse the multiple linear regression models |
| CO2 | Estimate the multivariate analysis of variance and covariance |
| CO3 | Distinguish discriminant and component analysis |
| CO4 | Apply the factor analysis techniques in data analysis |
| CO5 | Correlate the concepts of cluster analysis in data analytics |

## Department of Computer Science and Business Systems

### INDIAN CONSTITUTION (Non-Credit)

| CO | OUTCOME: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Have the knowledge on Indian Constitution |

### APTITUDE AND CODING SKILLS – I(Non-Credit)

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Develop vocabulary for effective communication and reading skills |
| CO2 | Build the logical reasoning and quantitative skills |
| CO3 | Develop error correction and debugging skills in programming |

### FIFTH SEMESTER

### 20CB501 DESIGN AND ANALYSIS OF ALGORITHMS

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Analyse the efficiency of recursive and non-recursive algorithms mathematically |
| CO2 | Analyse the efficiency of brute force, divide and conquer, decrease and conquer, Transform and conquer algorithmic techniques. |
| CO3 | Implement and analyse the problems using dynamic programming and greedy technique algorithmic techniques. |
| CO4 | Solve the problems using iterative improvement technique for optimization. |
| CO5 | Compute the limitations of algorithmic power and solve the problems using backtracking and branch and bound technique. |

### 20CB502 COMPILER DESIGN + LAB

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand about the regular expressions and finite automata |
| CO2 | Implement the different Phases of compiler using tools |
| CO3 | Analyze the control flow and data flow of a typical program. |
| CO4 | Optimize a given program. |
| CO5 | Generate an assembly language program equivalent to a source language program |

## Department of Computer Science and Business Systems

### 20CB503 FUNDAMENTALS OF MANAGEMENT

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand the theories, concept, and evolution of management. |
| CO2 | Demonstrate the ability to employ 'the management way of thinking'. |
| CO3 | Understand how organizations work and find it easier to grasp the intricacies of other management areas such as finance, marketing, strategy etc. |
| CO4 | Understand the qualities of a leader in the managerial aspect in future terms. |
| CO5 | Understand the managerial ethics and CSR and its importance. |

### 20CB504 BUSINESS STRATEGY

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Become familiar with both internal and external environment. They would also become familiar with corporate and growth strategies, appreciate implementation of such strategies. |
| CO2 | Learn the fundamental concepts of strategic management to analyse business situations and apply these concepts to solve business problems. |
| CO3 | Understand the fundamental principles of and interrelationships among business functions such as: R&D, production, marketing, finance, and HR and information technology. |
| CO4 | Apply the inter-relationships of business to individuals, other organizations, government and society. |
| CO5 | Analyze complex, unstructured qualitative and quantitative problems, using appropriate tools. |

### 20CB505 DESIGN THINKING

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Understand the phases of design thinking process. |
| CO2 | Conduct an immersion activity to create an empathy map. |
| CO3 | Define the key problems of the personas created. |
| CO4 | Apply the ideation phase steps to present the prototype ideas. |
| CO5 | Create a prototype with value propositions and test the prototype. |

## Department of Computer Science and Business Systems

### 20CB903 MACHINE LEARNING + LAB

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Distinguish between, supervised, unsupervised and semi-supervised learning. |
| CO2 | Modify existing machine learning algorithms to improve classification efficiency. |
| CO3 | Build a basic neural network for real-time data. |
| CO4 | Use unsupervised models for clustering data. |
| CO5 | Design a system that uses the information mining models of machine learning. |

### 20CB909 INDUSTRIAL PSYCHOLOGY

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Become conversant about the major content areas of Industrial Psychology. |
| CO2 | Gain further comfort with statistical concepts in the context of making personnel decisions. |
| CO3 | Gain practical experience by completing a series of hands-on projects involving job analysis, selection decisions, training programs, and employee well-being. |
| CO4 | Deepen your understanding of tests and measurements so that you can collect accurate information and make sound data-based decisions. |
| CO5 | Prepare for other focused seminar courses in Industrial/Organizational Psychology or Human Resource Management. |

### 20CS512 ADVANCED APTITUDE AND CODING SKILLS - I

| COs | OUTCOMES: Upon completion of the course, students will be able to |
|---|---|
| CO1 | Develop vocabulary for effective communication and reading skills. |
| CO2 | Build the logical reasoning and quantitative skills. |
| CO3 | Develop error correction and debugging skills in programming |