

SHRI MADHWA VADIRAJA INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(A Unit of Shri Sode Vadiraja Mutt Education Trust (R), Udupi)

Accredited by NBA / Accredited by NAAC with 'A' grade | Affiliated to VTU, Belagavi

Approved by AICTE, New Delhi & Recognized by Government of Karnataka,

Vishwothamanagar, Bantakal - 574 115, Udupi, Karnataka, India



DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcome Statements of 2021 Scheme

The below table represents the 2021 Scheme Course Outcome Statements of the courses offered from 3rd to 5th semester of Artificial Intelligence & Data Science..

Course Name		Transform Calculus, Fourier Series and Numerical Techniques
Course Code		21MAT31
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.	
CO2	Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.	
CO3	Use Fourier transform and Z-transform in discrete/continuous function arising in wave and heat propagation, signals and systems.	
CO4	To solve mathematical models represented by initial or boundary value problems involving partial differential equations.	
CO5	Use single step and multistep numerical methods to solve second order ordinary differential equations arising in engineering problems and to determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.	

Course Name		Data Structures and Applications
Course Code		21CS32
Course Outcomes(Cos): At the end of the course the student will be able to :		
CO1	Demonstrate the knowledge of Non-Primitive Linear Data Structures -(Arrays , structures , union) to solve the Problems.	
CO2	Apply stack and queues in solving problems.	
CO3	Illustrate the various types of linked list structures with their applications including representations and operations.	
CO4	Explore the applications of trees to model and solve the real-world problem.	
CO5	Make use of Graphs and Hashing techniques to solve certain problems.	
CO6	Implement the basic data structures like stack, queue, list, tree and graph	

Course Name		Analog and Digital Electronics
Course Code		21CS33
Course Outcomes(Cos): At the end of the course the student will be able to :		
CO1	Examine the operations of various analog electronic circuits	
CO2	Apply the concepts of Karnaugh Map and Quine-McClusky methods to simplify the digital electronics circuits.	
CO3	Design combinational circuits using the digital logic gates.	
CO4	Experiment the working of various flip flops and Asynchronous sequential circuits using VHDL	
CO5	Design data processing circuits using registers and counters	

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Course Name	Computer Organization and Architecture
Course Code	21CS34
Course Outcomes(Cos): At the end of the course the student will be able to :	
CO1	Explain the basic organization, machine instruction and basic programs of a computer system.
CO2	Demonstrate the different ways of communicating with input/output devices and introduction about Interrupt.
CO3	Describe the different types of memory devices and its function.
CO4	Apply the knowledge of arithmetic and logical operations for different data types.
CO5	Demonstrate processing unit with parallel processing and pipeline architecture

Course Name	Object Oriented Programming with JAVA Laboratory
Course Code	21CSL35
Course Outcomes(Cos): At the end of the course the student will be able to :	
CO1	Build java applications by setting up Java Runtime Environment.
CO2	Develop java programs in order to demonstrate object oriented programming features like multi-threading, interfaces, exception handling, file I/O and GUI concepts.

Course Name	Social Connect and Responsibility
Course Code	21SCR36
Course Outcomes(Cos): At the end of the course the student will be able to :	
CO1	Understand social responsibility
CO2	Practice sustainability and creativity
CO3	Showcase planning and organizational skills

Course Name	Constitution of India and Professional Ethics
Course Code	21CIP37
Course Outcomes(Cos): At the end of the course the student will be able to :	
CO1	To know about the basic structure of Indian Constitution
CO2	To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution
CO3	To know about our Union Government, political structure & codes, procedures.
CO4	To know the State Executive & Elections system of India
CO5	To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Course Name	Programming in C++
Course Code	21CS382
Course Outcomes(Cos): At the end of the course the student will be able to :	
CO1	Design the solution to a problem by using object oriented programming concepts.
CO2	Demonstrate code reusability and extensibility by means of inheritance and polymorphism
CO3	Explore features of C++ such as IO streams, templates and exception handling so as to design solution to complex problems

Course Name	Mathematical Foundations for Computing
Course Code	21MATS41
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Apply the concepts of logic for effective computation and relating problems in the engineering domain
CO2	Analyze the concept of functions and relations to various fields of engineering. Comprehend the concepts of Graph theory for various applications of Computational sciences.
CO3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.

CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

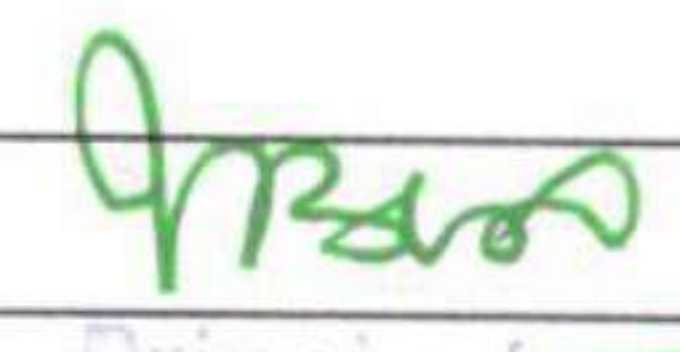
Course Name		Design and Analysis of Algorithms (DAA)
Course Code		21CS42
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Understand the asymptotic performance of algorithms	
CO2	Apply divide and conquer approaches and decrease and conquer approaches in solving the problems analyze the same	
CO3	Apply the appropriate algorithmic design technique like greedy method, transform and conquer approaches and compare the efficiency of algorithms to solve the given problem.	
CO4	Analyze efficiencies of various algorithms by applying dynamic programming technique	
CO5	Design and apply backtracking technique for problem solving	

Course Name		Microcontroller and Embedded Systems (MCES)
Course Code		21CS43
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Explain C-Compilers and optimization	
CO2	Describe the ARM microcontroller's architectural features and program module.	
CO3	Apply the knowledge gained from programming on ARM to different applications.	
CO4	Program the basic hardware components and their application selection method.	
CO5	Demonstrate the need for a real-time operating system for embedded system applications.	

Course Name		Operating Systems (OS)
Course Code		21CS44
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Identify the structure of an operating system and its scheduling mechanism	
CO2	Demonstrate the allocation of resources for a process using scheduling algorithm	
CO3	Identify root causes of deadlock and provide the solution for deadlock elimination	
CO4	Explore about the storage structures and learn about the Linux Operating system.	
CO5	Analyze Storage Structures and Implement Customized Case study	

Course Name		Biology for Engineers
Course Code		21BE45
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Elucidate the basic biological concepts via relevant industrial applications and case studies.	
CO2	Evaluate the principles of design and development, for exploring novel bioengineering projects.	
CO3	Corroborate the concepts of biomimetics for specific requirements.	
CO4	Corroborate the concepts of biomimetics for specific requirements.	
CO5	Think critically towards exploring innovative biobased solutions for socially relevant problems.	

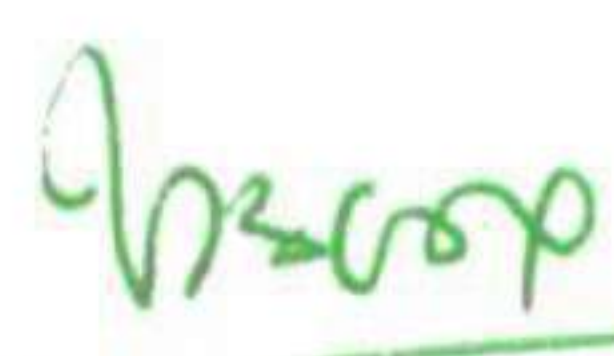
Course Name		Python Programming Laboratory
Course Code		21CSL46
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Demonstrate proficiency in handling of loops and creations of functions.	
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.	
CO3	Discover the commonly used operations involving regular expressions and file system.	


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CO4	Interpret the concepts of Object-Oriented Programming as used in Python.
CO5	Determined the need for scraping websites and working with PDF, JSON and other file formats.

Course Name		Unix Shell Programming (USP)
Course Code		21CS482
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Know the basics of Unix concepts and commands	
CO2	Evaluate the UNIX file system	
CO3	Apply Changes in file system	
CO4	Understand scripts and programs	
CO5	Analyze Facility with UNIX system process	

Course Name		Universal Human Values (UHV)
Course Code		21UH49
Course Outcomes(COs): At the end of the course the student will be able to :		
CO1	Understand the importance of value based education, right understanding, meaning of continuous happiness and differentiation between wealth and prosperity.	
CO2	Understand the concepts like Co-existence of the Self and the Body, Difference between the Needs of the Self and the Body, Harmony in the Self and Harmony of the Self with the Body.	
CO3	Understand the meaning of Harmony in the Family, Justice in Human-to-Human Relationship, Understanding Harmony in the Society and Vision for the Universal Human Order.	
CO4	Understand the concepts like Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the four orders of Nature, Realizing Existence as Co-existence at all Levels, The holistic perception of harmony in Existence	
CO5	Understand the Natural Acceptance of Human Values, Definitiveness of Human Conduct, Humanistic Education, Humanistic Constitution and Universal Human Order.	


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Course Code	21CS51
Course Name	Automata Theory and Compiler Design
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Apply the fundamental concepts in automata theory to design the finite automata. Also Explain the Compiler Design and phases of it.
CO2	Apply the Regular Expressions for Regular Languages and Develop Lexical analyzers with specification & Recognition of Tokens.
CO3	Model Context Free Grammars for different language classes and analyze the role of parsing techniques with top-down parsing.
CO4	Build push down Automata for different formal languages and design bottom-up parsing. Also Explain LR Parsing.
CO5	Design Turing machine its variants, concepts of undecidability problems. And construct Syntax direct tree and illustrate code generation.

Course Code	21CS52
Course Name	Computer Networks
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Acquire fundamental knowledge about communication system essentials and network hardware/software.
CO2	Decipher the challenges in communication and propose corresponding solutions
CO3	Recognize and structure the components of the communication system network using different set of algorithms
CO4	Discussion of different transport services with the help of transport layer protocols.
CO5	Learn and implement the application layer protocols of web, email and DNS

Course Code	21CS53
Course Name	Database Management Systems
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS
CO2	Use Structured Query Language (SQL) for database manipulation and also demonstrate the basic of query evaluation.
CO3	Design and build simple database systems and relate the concept of transaction, concurrency control and recovery in database
CO4	Develop application to interact with databases, relational algebra expression.
CO5	Develop applications using tuple and domain relation expression from queries

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Course Code	21AI54
Course Name	Principles of Artificial Intelligence
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Apply knowledge of agent architecture, searching and reasoning techniques for different applications.
CO2	Analyse Searching and Inferencing Techniques.
CO3	Develop knowledge base sentences using propositional logic and first order logic
CO4	Demonstrating agents, searching and inferencing
CO5	Illustrate the application of probability in uncertain reasoning.

Course Code	21CSL55
Course Name	Database Management Systems Lab with Mini project
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Create, Update and query on the database.
CO2	Demonstrate the working of different concepts of DBMS
CO3	Implement, analyze and evaluate the project developed for an application.

Course Code	21RMI56
Course Name	Research Methodology and Intellectual Property Rights
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	To know the meaning of engineering research.
CO2	To know the procedure of Literature Review and Technical Reading.
CO3	To know the fundamentals of patent laws and drafting procedure.
CO4	Understanding the copyright laws and subject matters of copyrights and designs CO5.
CO5	Understanding the basic principles of design rights.

Course Code	21CIV57
Course Name	Environmental Studies
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment
CO3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.

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CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
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Course Code	21CSL582
Course Name	C# Programming Lab
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Able to explain how C# fits into the .NET platform. CO 2.
CO2	Describe the utilization of variables and constants of C# CO 3.
CO3	Use the implementation of object-oriented aspects in applications.
CO4	Analyze and Set up Environment of .NET Core.
CO5	Evaluate and create a simple project application.


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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

Course Outcome Statements of 2022 Scheme

The below table represents the 2022 Scheme Course Outcome Statements of the courses offered for 3rd semester of Artificial Intelligence & Data Science.

Course Code	BCS301
Course Name	Mathematics for Computer Science
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Explain the basic concepts of probability, random variables, probability distribution
CO2	Apply suitable probability distribution models for the given scenario.
CO3	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem
CO4	Use statistical methodology and tools in the engineering problem-solving process.
CO5	Compute the confidence intervals for the mean of the population.
CO6	Apply the ANOVA test related to engineering problems.

Course Code	BCS302
Course Name	Digital Design and Computer Organization
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Apply the K-Map techniques to simplify various Boolean expressions.
CO2	Design different types of combinational and sequential circuits along with Verilog programs.
CO3	Describe the fundamentals of machine instructions, addressing modes and Processor performance.
CO4	Explain the approaches involved in achieving communication between processor and I/O devices.
CO5	Analyze internal Organization of Memory and Impact of cache/Pipelining on Processor Performance.

Course Code	BCS303
Course Name	Operating Systems
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Explain the structure and functionality of operating system
CO2	Apply appropriate CPU scheduling algorithms for the given problem
CO3	Demonstrate the various techniques for process synchronization and deadlock handling
CO4	Apply the various techniques for memory management
CO5	Explain file, secondary storage management strategies and need for information protection mechanisms

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Course Code	BCS304
Course Name	Data Structures and Applications
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Explain different data structures and their applications.
CO2	Apply Arrays, Stacks and Queue data structures to solve the given problems.
CO3	Use the concept of linked list in problem solving.
CO4	Develop solutions using trees and graphs to model the real-world problem
CO5	Explain the advanced Data Structures concepts such as Hashing Techniques and Optimal Binary Search Trees.

Course Code	BCSL305
Course Name	Data Structure Laboratory
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Analyze various linear and non-linear data structures
CO2	Demonstrate the working nature of different types of data structures and their applications
CO3	Use appropriate searching and sorting algorithms for the give scenario
CO4	Apply the appropriate data structure for solving real world problems

Course Code	BCS306A
Course Name	Object Oriented Programming with JAVA
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Demonstrate proficiency in writing simple programs involving branching and looping structures
CO2	Design a class involving data members and methods for the given scenario.
CO3	Apply the concepts of inheritance and interfaces in solving real world problems
CO4	Use the concept of packages and exception handling in solving complex problem
CO5	Apply concepts of multithreading, autoboxing and enumerations in program development


Course Code	BSCK307
Course Name	Social Connect and Responsibility
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Communicate and connect to the surrounding.
CO2	Create a responsible connection with the society.
CO3	Involve in the community in general in which they work.
CO4	Notice the needs and problems of the community and involve them in problem –solving.
CO5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
CO6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

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Course Code	BCS358A
Course Name	Data Analytics with Excel Lab
Course Outcomes(COs): At the end of the course the student will be able to :	
CO1	Use advanced functions and productivity tools to assist in developing worksheets.
CO2	Manipulate data lists using Outline and PivotTables.
CO3	Use Consolidation to summarise and report results from multiple worksheets.
CO4	Apply Macros and Autofilter to solve the given real world scenario.


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