

BLDE Association's
Vachana Pitamaha Dr. P.G. Halakatti College of Engineering & Technology, Bijapur.
Department: **CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)**

List of Program Outcomes (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering 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

12. **Life-long 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.

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List of Program Specific Outcomes (PSOs)

By the time of graduation, CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING) students will be able to:

PSO1: Gain competence in hardware and software working principles to analyze and solve AI computing problems

PSO2: Design and Develop scientific and business applications using software engineering practices.

PSO3: Find ethically sound solutions to existing problems using cutting edge technologies.

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List of Course Outcomes (Cos)

SUBJECT NAME	COURSE OBJECTIVES:
2022 -Scheme	
SUBJECT : MATHEMATICS FOR CSE STREAM-I	
Subject code: 22MATS11	CO1 Apply the knowledge of calculus to solve problems related to polar curves
	CO2 Learn the notion of partial differentiation to compute rate of change of multivariate functions.
	CO3 Analyze the solution of linear and nonlinear ordinary differential equations.
	CO4 Get acquainted and to apply modular arithmetic to computer algorithms.
	CO5 Make use of matrix theory for solving the system of linear equations and compute Eigen values and Eigen vectors.

SUBJECT : INTRODUCTION TO PYTHON PROGRAMMING	
Subject code: 22PLC15B	Demonstrate proficiency in handling loops and creation of functions.
	Identify the methods to create and manipulate lists, tuples and dictionaries.
	Develop programs for string processing and file organization
	Interpret the concepts of Object-Oriented Programming as used in Python.
Subject : Communicative English	Understand and apply the Fundamentals of Communication Skills in their communication skills
Subject code: 22ENG16	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
	To impart basic English grammar and essentials of language skills as per present requirement.
	Understand and use all types of English vocabulary and language proficiency.
	Adopt the techniques of information transfer through presentation .
	Understand and apply the Fundamentals of Communication Skills in their communication skills
SUBJECT : CHEMISTRY FOR CSE STREAM	
Subject code: 22CHES12	CO1. Identify the terms and applications processes involved in scientific and engineering applications.
	CO2. Explain the phenomena of chemistry to describe the methods of engineering processes.
	CO3. Solve the problems in chemistry that are pertinent in engineering applications.
	CO4. Apply the basic concepts of chemistry to explain the chemical properties and processes
	CO5. Analyze properties and multi disciplinary situations.
SUBJECT : COMPUTER AIDED ENGINEERING DRAWING	
Subject code: 22CED13	CO 1 Use CAD tools for basic engineering drawing.
	CO 2 Draw different views of points, lines and planes in different orientations.
	CO 3 Draw the orthographic and isometric positions of right regular solids.
	CO 4 identify the cut position of the solids and draw the development of lateral surfaces.
	CO 1 Use CAD tools for basic engineering drawing.

SUBJECT : COMPUTER AIDED ENGINEERING DRAWING	
Subject code: 22CED13	CO1 Discuss the concept of Electronics circuits encompassing power supply, amplifiers
	CO2 Explain the concept of oscillator and applications of op-amp in electronic circuits
	CO3 Outline the concept of Boolean algebra and logic circuits, which forms the basis of digital electronics involving logic gates, adder circuits and combinational logic design
	CO4 Discuss the characteristics and technological advances of embedded systems
	CO5 Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved.
SUBJECT : SCIENTIFIC FOUNDATIONS FOR HEALTH	
Subject code: 22SFH18	CO1 : To acquire Good Health & It's balance for positive mindset
	CO2 : To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world
	CO3 : To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
	CO 4:To Prevent and fight against harmful diseases for good health through positive mindset
SUBJECT : MATHEMATICS FOR CSE STREAM-II	
Subject code: 22MATS11	CO1 Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
	CO2 Understand the applications of vector calculus refer to solenoidal, and irrotational vectors. Orthogonal curvilinear coordinates.
	CO3 Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation
	CO4 Analyze approximate solutions to solve Computer science engineering problems involving numerical data
	CO5 Apply the knowledge of numerical methods in solving physical and engineering phenomena.
SUBJECT : PHYSICS FOR CSE STREAM	
Subject code: BPHYS202	CO1 Describe the principles of LASERS and Optical fibers and their relevant applications.
	CO2 Discuss the basic principles of the

	Quantum Mechanics and its application in Quantum Computing.
	CO3 Summarize the essential properties of superconductors and its applications in qubits.
	CO4 Illustrate the application of physics in design and data analysis.
	CO5 Practice working in groups to conduct experiments in physics and perform precise and honest measurements.
SUBJECT : PRINCIPLES OF PROGRAMMING USING C	
Subject code: BPOPS203	CO1. Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
	CO 2. Apply programming constructs of C language to solve the real world problem
	CO 3.Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
	CO 4.Explore user-defined data structures like structures, unions and pointers in implementing solutions
	CO5.Design and Develop Solutions to problems using modular programming constructs using functions
SUBJECT : INTRODUCTION TO ELECTRICAL ENGINEERING	
Subject code: BESCK204B	Understand the concepts of various energy sources and electric circuits.
	Apply the basic electric laws to solve circuits.
	Discuss the construction and operations of various electric machines.
	Identify suitable machines for practical electric application
	Explain the concepts of electric power transmission and distribution, electricity billing, circuit protective devices and personal safety measures.
SUBJECT : INNOVATION AND DESIGN THINKING	
Subject code: BIDTK208	co1 Appreciate various design process procedure
	co2 Generate and develop design ideas through different technology
	co3 Identify the significance of reverse engineering to understand products
	co4 Draw technical drawing for design ideas
SUBJECT : INTRODUCTION TO IOT	
Subject code: BETCK205H	CO1 Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.

	CO2 Classify various sensing devices and actuator types.
	CO3 Demonstrate the processing in IoT.
	CO4 Explain Associated IOT Technologies
	CO5 Illustrate architecture of IOT Applications
SUBJECT : PRINCIPLES OF PROGRAMMING USING C	
Subject code: BPOPS203	CO1. Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
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	CO 3.Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
	CO 4.Explore user-defined data structures like structures, unions and pointers in implementing solutions
	CO5.Design and Develop Solutions to problems using modular programming constructs
2021-Scheme	
SUBJECT: TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES	
Sub code: 21MAT31	CLO 1. To have an insight into solving ordinary differential equations by using Laplace transform techniques.
	CLO 2. Learn to use the Fourier series to represent periodical physical phenomena in engineering analysis.
	CLO 3. To enable the students to study Fourier Transforms and concepts of infinite Fourier Sine and Cosine transforms and to learn the method of solving difference equations by the z-transform method.
	CLO 4. To develop the proficiency in solving ordinary and partial differential equations arising in engineering applications, using numerical methods
SUBJECT: DATA STRUCTURES AND APPLICATIONS	
Sub code: 21CS32	CLO 1. Explain the fundamentals of data structures and their applications essential for implementing solutions to problems.
	CLO 2. Illustrate representation of data structures: Stack, Queues, Linked Lists, Trees and Graphs.
	CLO 3. Design and Develop Solutions to problems using Arrays, Structures, Stack, Queues, Linked Lists.

	CLO 4. Explore usage of Trees and Graph for application development.
	CLO 5. Apply the Hashing techniques in mapping key value pairs
SUBJECT: ANALOG AND DIGITAL ELECTRONICS	
Subject code: 21CS33	CLO 1. Explain the use of photo electronics devices, 555 timer IC, Regulator ICs and uA741.
	CLO 2. Make use of simplifying techniques in the design of combinational circuits.
	CLO 3. Illustrate combinational and sequential digital circuits.
	CLO 4. Demonstrate the use of flipflops and apply for registers.
	CLO 5. Design and test counters, Analog-to-Digital and Digital-to-Analog conversion techniques.
SUBJECT: COMPUTER ORGANIZATION AND ARCHITECTURE	
Subject code: 21CS34	CLO 1. Understand the organization and architecture of computer systems, their structure and operation
	CLO 2. Illustrate the concept of machine instructions and programs
	CLO 3. Demonstrate different ways of communicating with I/O devices
	CLO 4. Describe different type's memory devices and their functions
	CLO 5. Explain arithmetic and logical operations with different data types
	CLO 6. Demonstrate processing unit with parallel processing and pipeline architecture
SUBJECT: OBJECT ORIENTED PROGRAMMING WITH JAVA LABORATORY	
Subject code: 21CSL35	CLO 1. Demonstrate the use of Eclipse/Netbeans IDE to create Java Applications.
	CLO 2. Using java programming to develop programs for solving real-world problems.
	CLO 3. Reinforce the understanding of basic object-oriented programming concepts.
SUBJECT : PROGRAMMING IN C++	
Subject code: 21CS382	CLO 1. Understanding about object oriented programming and Gain knowledge about the capability to store information together in an object.
	CLO 2. Understand the capability of a class to rely upon another class and functions.
	CLO 3. Understand about constructors which are special type of functions.
	CLO 4. Create and process data in files using

	file I/O functions
	CLO 5. Use the generic programming features of C++ including Exception handling.
SUBJECT : DESIGN AND ANALYSIS OF ALGORITHMS	
Subject code: 21CS42	CLO 1. Explain the methods of analysing the algorithms and to analyze performance of algorithms.
	CLO 2. State algorithm's efficiencies using asymptotic notations.
	CLO 3. Solve problems using algorithm design methods such as the brute force method, greedy method, divide and conquer, decrease and conquer, transform and conquer, dynamic programming, backtracking and branch and bound
	CLO 4. Choose the appropriate data structure and algorithm design method for a specified application.
	CLO 5. Introduce P and NP classes.
SUBJECT: MICROCONTROLLER AND EMBEDDED SYSTEMS	
Subject code: 21CS43	CLO 1: Understand the fundamentals of ARM-based systems, including programming modules with registers and the CPSR.
	CLO 2: Use the various instructions to program the ARM controller.
	CLO 3: Program various embedded components using the embedded C program.
	CLO 4: Identify various components, their purpose, and their application to the embedded system's applicability.
	CLO 5: Understand the embedded system's real-time operating system and its application in IoT.
SUBJECT: OPERATING SYSTEMS	
Subject code: 21CS44	CLO 1. Demonstrate the need for OS and different types of OS.
	CLO 2. Apply suitable techniques for management of different resources
	CLO 3. Use processor, memory, storage and file system commands
	CLO 4. Realize the different concepts of OS in platform of usage through case studies.
SUBJECT : PYTHON PROGRAMMING LABORATORY	
Subject code: 21CSL46	CLO 1. Demonstrate the use of IDLE or PyCharm IDE to create Python Applications
	CLO 2. Using Python programming language to develop programs for solving real-world problems
	CLO 3. Implement the Object-Oriented

	Programming concepts in Python.
	CLO 4. Appraise the need for working with various documents like Excel, PDF, Word and Others
	CLO 5. Demonstrate regular expression using python programming.
SUBJECT : WEB PROGRAMMING (PRACTICAL BASED)	
Subject code: 21CSL481	CLO 1. Learn Web tool box and history of web browsers.
	CLO 2. Learn HTML, XHTML tags with utilizations.
	CLO 3. Know CSS with dynamic document utilizations.
	CLO 4. Learn JavaScript with Element access in JavaScript.
	CLO 5. Logically plan and develop web pages.
SUBJECT : UNIX SHELL PROGRAMMING	
Subject code: 21CS482	CLO 1. To help the students to understand effective use of Unix concepts, commands and terminology.
	CLO 2. Identify, access, and evaluate UNIX file system.
	CLO 3. Understand UNIX command syntax and semantics.
	CLO 4. Ability to read and understand specifications, scripts and programs.
	CLO 5. Analyze Facility with UNIX Process.
2018-Scheme	
SUBJECT : MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY	
Subject code: 18CS51	CO1. Define management, organization, entrepreneur, planning, staffing, ERP and outline their importance in entrepreneurship
	CO2. Utilize the resources available effectively through ERP
	CO3. Make use of IPRs and institutional support in entrepreneurship
SUBJECT : PYTHON PROGRAMMING	
Subject code: 18AI52	CO1. Demonstrate proficiency in handling of loops and creation 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.
	CO4. Interpret the concepts of Object-Oriented Programming as used in Python.
	CO5. Determine the need for scraping websites and working with CSV, JSON and other file formats.

SUBJECT : DATABASE MANAGEMENT SYSTEMS	
Subject code: 18CS53	CO1.Identify, analyze and define database objects, enforce integrity constraints on database usingRDBMS.
	CO2.Use Structured Query Language (SQL) for database manipulation.
	CO3.Design and build simple database systems
	CO4.Develop application to interact with databases.
SUBJECT : AUTOMATA THEORY AND COMPUTABILITY	
Subject code: 18CS54	CO1.Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation
	CO2.Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).
	CO3.Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and theirrelative powers.
	CO4.Develop skills in formal reasoning and reduction of a problem to a formal model, with anemphasis on semantic precision and conciseness.
	CO5.Classify a problem with respect to different models of Computation.
SUBJECT : PRINCIPLES OF ARTIFICIALINTELLIGENCE	
Subject code: 18AI55	CO1.Apply the knowledge of Artificial Intelligence to write simple algorithm for agents.
	CO2.Apply the AI knowledge to solve problem on search algorithm.
	CO3.Develop knowledge base sentences using propositional logic and first order logic.
	CO4.Apply first order logic to solve knowledge engineering process.
SUBJECT : MATHEMATICS FOR MACHINE LEARNING	
Subject code: 18AI56	CO1.Improve the skills and knowledge in linear algebra to get more out of machine learning.
	CO2.Understand the vector calculus required to build many common machine learning techniques.
	CO3.Learn the probability and distribution

	in statistics to build machine learning applications.
	CO4.Learn the basic theoretical properties of optimization problems, for applications in machine learning
SUBJECT : ARTIFICIAL INTELLIGENCE LABORATORY	
Subject code: 18AIL57	CO1.Implement and demonstrate AI algorithms.
	CO2.Evaluate different algorithms
SUBJECT : DBMS LABORATORY WITH MINIPROJECT	
Subject code: 18CSL58	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.
SUBJECT : ENVIRONMENTAL STUDIES	
Subject code: 18CSL59	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 questions related to the environment
	CO3: Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
	CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
SUBJECT : MACHINE LEARNING	
Subject code: 18AI61	CO1.Choose the learning techniques with this basic knowledge.
	CO2.Apply effectively ML algorithms for appropriate applications.
	CO3.Apply Bayesian techniques and derive effectively learning rules
SUBJECT : DIGITAL IMAGE PROCESSING	
Subject code: 18AI62	CO1.Understand, Ascertain and describe the basics of image processing concepts through mathematical interpretation.
	CO2.Apply image processing techniques in both the spatial and frequency (Fourier)domains.
	CO3.Demonstrate image restoration process and its respective filters required.
	CO4.Design image analysis techniques in the form of image segmentation and

	to evaluate the Methodologies for segmentation.
	CO5. Conduct independent study and analysis of Image Enhancement techniques.
SUBJECT : JAVA FOR MOBILE APPLICATIONS	
Subject code: 18AI63	CO1. Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs
	CO2. Understand various application components in android.
	CO3. Design efficient user interface using different layouts.
	CO4. Develop application with persistent data storage using SQLite

SUBJECT : WEB PROGRAMMING	
Subject code: 18AI643	CO1.Adapt HTML and CSS syntax and semantics to build web pages.
	CO2.Construct and visually format tables and forms using HTML and CSS
	CO3.Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
	CO4.Appraise the principles of object oriented development using PHP
	CO5.Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features
SUBJECT : INTRODUCTION TO OPERATING SYSTEM	
Subject code: 18CS654	CO1.Explain the fundamentals of operating system
	CO2.Comprehend process management, memory management and storage management.
	CO3.Familiar with various types of operating systems
SUBJECT : MACHINE LEARNING LABORATORY	
Subject code: 18AIL66	CO1.Implement and demonstration of ML algorithms.
	CO2.Evaluation of different algorithms.
SUBJECT : DIGITAL IMAGE PROCESSING LABORATORY WITH MINI PROJECT	
Subject code: 18AIL67	CO1.Image Segmentation algorithm development
	CO2.Image filtering in spatial and frequency domain.
	CO3.Morphological operations in analyzing image structures
SUBJECT : MOBILE APPLICATION DEVELOPMENT LABORATORY	
Subject code: 18AIMP68	CO1.Create, test and debug Android application by setting up Android development environment.
	CO2.Implement adaptive, responsive user interfaces that work across a wide range of devices.
	CO3.Infer long running tasks and background work in Android applications.
	CO4.Demonstrate methods in storing, sharing and retrieving data in Android applications.