



## Vidya Academy of Science & Technology

(A unit of Vidya International Charitable Trust)

Thalakkottukara PO, Thrissur, Kerala, India, Pin- 680 501

Phone: +91-4885-287751, 287752, Fax: 288366

COURSE OUTCOMES				
Branch: DEPARTMENT OF AIML ENGINEERING				
2019 SCHEME				
After the completion of the course the Students will be able to				
S. No.	SEM	Subject	CO	CO statement
1	S1	MAT 101 LINEAR ALGEBRA AND CALCULUS	MAT101.1	solve systems of linear equations, diagonalize matrices and characterise quadratic forms
			MAT101.2	compute the partial and total derivatives and maxima and minima of multivariable functions
			MAT101.3	compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
			MAT101.4	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			MAT101.5	determine the Taylor and Fourier series expansion of functions and learn their applications.
2	S1	PHT 100 ENGINEERING PHYSICS	PHT100.1	compute the quantitative aspects of waves and oscillations in engineering systems.
			PHT100.2	apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			PHT100.3	analyze the behaviour of matter in the atomic and subatomic level through the



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				principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			PHT100.4	classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problem
			PHT100.5	analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
3	S1	EST 100 ENGINEERING MECHANICS	EST100.1	recall principles and theorems related to rigid body mechanics
			EST100.2	identify and describe the components of system of forces acting on the rigid body
			EST100.3	apply the conditions of equilibrium to various practical problems involving different force system.
			EST100.4	choose appropriate theorems, principles or formulae to solve problems of mechanics.
			EST100.5	solve problems involving rigid bodies, applying the properties of distributed areas and masses
4	S1	EST 120 BASICS OF CIVIL AND MECHANICAL ENGINEERING	EST120.1	recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering with special focus on Building construction and basics of Surveying
			EST120.2	summarize the basic infrastructure services MEP, HVAC, elevators, escalators and ramps and discuss the



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				Materials, energy systems, water management and environment for green buildings.
			EST120.3	analyse thermodynamic cycles and their efficiency for illustrating working of IC Engines.
			EST120.4	explain the basic principles of refrigeration, air conditioning, hydraulic turbines and power transmission elements.
			EST120.5	describe the basic manufacturing, metal joining and machining processes.
5	S1	HUN 101 LIFE SKILLS	HUN101.1	define and identify different life skills required in personal and professional life
			HUN101.2	develop an awareness of the self and apply well-defined techniques to cope with emotions and stress
			HUN101.3	explain the basic mechanics of effective communication and demonstrate these through presentations and use appropriate thinking and problem solving techniques to solve new problems
			HUN101.4	take part in group discussions
			HUN101.5	understand the basics of teamwork and leadership
6	S1	PHL 120 ENGINEERING PHYSICS LAB	PHL120.1	develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			PHL120.2	understand the need for precise measurement practices for data recording
			PHL120.3	understand the principle, concept, working and applications of relevant

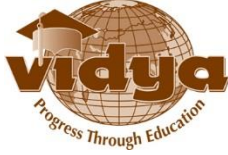


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				technologies and comparison of results with theoretical calculations
			PHL120.4	analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
			PHL120.5	develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
7	S1	ESL 120 CIVIL AND MECHANICAL WORKSHOP	ESL120.1	name different devices and tools used for civil engineering measurements and Explain the use of various tools and devices for various field measurements
			ESL120.2	demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			ESL120.3	choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing and Compare different techniques and devices used in civil engineering measurements
			ESL120.4	identify Basic Mechanical workshop operations with appropriate Tools and Instruments with respect to the mechanical workshop trades in accordance with the material and Objects.
			ESL120.5	apply appropriate safety measures with respect to the mechanical workshop trades.

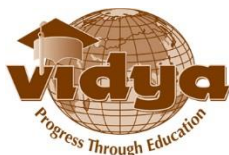


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8	S2	MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORM	MAT102.1	compute the derivatives and line integrals of vector functions and learn their applications
			MAT102.2	evaluate surface and volume integrals and learn their inter-relations and applications.
			MAT102.3	solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			MAT102.4	compute Laplace transform and apply them to solve ODEs arising in engineering
			MAT102.5	determine the Fourier transforms of functions and apply them to solve problems arising in engineering
9	S2	CYT 100 ENGINEERING CHEMISTRY	CYT100.1	apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
			CYT100.2	understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
			CYT100.3	apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
			CYT100.4	learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
			CYT100.5	study various types of water treatment methods to develop skills for treating wastewater.

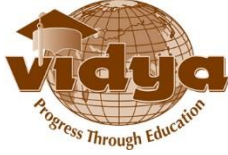


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10	S2	EST 110 ENGINEERING GRAPHICS	EST110.1	draw the projection of points and lines located in different quadrants
			EST110.2	prepare multi-view orthographic projections of objects by visualizing them in different positions
			EST110.3	draw sectional views and develop surfaces of a given object
			EST110.4	prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions
			EST110.5	convert 3D views to orthographic views and vice versa using CAD tools
11	S2	EST 130 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	EST130.1	apply fundamental concepts and circuit laws to solve simple DC electric circuits.
			EST130.2	develop and solve models of magnetic circuits.
			EST130.3	apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state.
			EST130.4	describe the working of a voltage amplifier and to outline the principle of an electronic instrumentation system.
			EST130.5	explain the principle of radio and cellular communication.
12	S2	HUN 102 PROFESSIONAL COMMUNICATION	HUN102.1	develop vocabulary and language skills relevant to engineering as a profession.
			HUN102.2	get the capability to analyze, interpret and effectively summarize a variety of textual content.
			HUN102.3	create effective technical presentations.
			HUN102.4	discuss a topic in a group setting and arrive at generalizations/ conclusions.

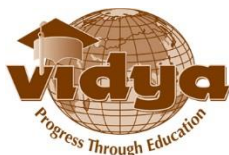


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			HUN102.5	create professional and technical documents with required relevance and clarity.
13	S2	EST 102 PROGRAMING IN C	EST102.1	analyze a computational problem and develop an algorithm/flowchart to find its solution.
			EST102.2	develop readable C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			EST102.3	write readable C programs with arrays,structure or union for storing the data to be processed.
			EST102.4	divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem.
			EST102.5	write readable C programs which use pointers for array processing and parameter passing. Develop readable C programs with files for reading input and storing output.
14	S2	CYL 120 ENGINEERING CHEMISTRY LAB	CYL120.1	understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			CYL120.2	develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			CYL120.3	develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting

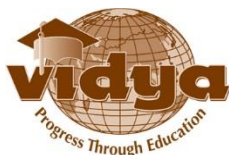


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				the IR spectra and NMR spectra of some organic compounds
			CYL120.4	acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CYL120.5	learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
15	S2	ESL 130 ELECTRICAL AND ELECTRONICS WORKSHOP	ESL130.1	demonstrate safety measures against electric shocks.
			ESL130.2	identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
			ESL130.3	develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings
			ESL130.4	identify and test various electronic components
			ESL130.5	make use of BIS/IEEE symbols to draw circuit schematics and experiment with and test electronic circuits on board
16	S3	MAT 203 DISCRETE MATHEMATICAL STRUCTURES	MAT203.1	check the validity of predicates in Propositional and Quantified Propositional Logic using truth tables, deductive reasoning and inference theory on Propositional Logic
			MAT203.2	solve counting problems by applying the elementary counting techniques - Rule of Sum, Rule of Product, Permutation, Combination, Binomial Theorem, Pigeonhole Principle and Principle of Inclusion and Exclusion



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			MAT203.3	classify binary relations into various types and illustrate an application for each type of binary relation, in Computer Science Illustrate an application for Partially Ordered Sets and Complete Lattices, in Computer Science
			MAT203.4	explain Generating Functions and solve First Order and Second Order Linear Recurrence Relations with Constant Coefficients
			MAT203.5	illustrate the abstract algebraic systems – Semigroups , Monoids, Groups, Homomorphism and Isomorphism of Monoids and Groups
17	S3	CST 201 DATA STRUCTURES	CST201.1	design an algorithm for a computational task and calculate the time/space complexities of that algorithm
			CST201.2	produce algorithms for given computational problems like searching, scheduling and expression conversions by understanding basic data structures such as array, stack and queue.
			CST201.3	identify the suitable data structure (array or linked list) to represent a data item required to be processed and write an algorithm to solve a given computational problem by understanding the basic concepts of memory allocation and deallocation.
			CST201.4	write an algorithm to find the solution of a computational problem by selecting an appropriate data structure (binary tree/graph) to represent a data item to be processed.

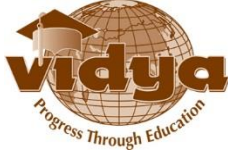


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			CST201.5	store a given dataset using an appropriate hash function to enable efficient access of data in the given set. Understand various sorting algorithms, select appropriate sorting algorithms to be used in specific circumstances
18	S3	CST 203 LOGIC SYSTEM DESIGN	CST203.1	illustrate decimal, binary, octal, hexadecimal and BCD number systems, perform conversions among them and do the operations - complementation, addition, subtraction, multiplication and division on binary numbers
			CST203.2	simplify a given Boolean Function and design a combinational circuit to implement the simplified function using Digital Logic Gates
			CST203.3	design combinational circuits - Adders, Code Convertors, Decoders, Magnitude Comparators, Parity Generator/Checker and design the Programmable Logic Devices - ROM and PLA.
			CST203.4	design sequential circuits - Registers, Counters and Shift Registers
			CST203.5	dse algorithms to perform addition and subtraction on binary, BCD and floating point numbers
			19	S3
CST205.2	utilise datatypes, operators, control statements, built in packages & interfaces, Input/ Output Streams and Files in Java to develop programs			



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			CST205.3	illustrate how robust programs can be written in Java using exception handling mechanism
			CST205.4	write application programs in Java using multithreading and database connectivity
			CST205.5	Write Graphical User Interface based application programs by utilising event handling features and Swing in Java
20	S3	EST 200 DESIGN AND ENGINEERING	EST200.1	explain different concepts and principles involved in design engineering.
			EST200.2	discuss and demonstrate the workability of solutions for design problems and Apply design thinking while learning and practicing engineering.
			EST200.3	compare designs covering function, cost, environmental sensitivity, safety factors along with engineering analysis.
			EST200.4	develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.
			EST200.5	judge the optimal solution from the available choice.
21	S3	MCN 201 SUSTAINABLE ENGINEERING	MCN201.1	understand the relevance and the concept of sustainability and the global initiatives in this direction
			MCN201.2	explain the different types of environmental pollution problems and their sustainable solutions
			MCN201.3	discuss the environmental regulations and standards
			MCN201.4	outline the concepts related to conventional and non-conventional energy

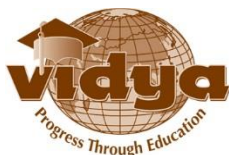


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			MCN201.5	demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
22	S3	CSL 201 DATA STRUCTURES LAB	CSL201.1	write a time/space efficient program using arrays to provide necessary functionalities meeting a given set of user requirements
			CSL201.2	write a time/space efficient program using linked lists to provide necessary functionalities meeting a given set of user requirements
			CSL201.3	write a time/space efficient program graphs to provide necessary functionalities meeting a given set of user requirements
			CSL201.4	write a time/space efficient program to sort a list of records based on a given key in the record
			CSL201.5	design and implement an efficient data structure to represent given data
23	S3	CSL203 OBJECT ORIENTED PROGRAMMING LAB	CSL203.1	implement the Object Oriented concepts - constructors, inheritance, method overloading & overriding and polymorphism in Java
			CSL203.2	implement programs in Java which use datatypes, operators, control statements, built in packages & interfaces, Input/Output streams and Files
			CSL203.3	implement robust application programs in Java using exception handling
			CSL203.4	implement application programs in Java using multithreading and database connectivity
			CSL203.5	implement Graphical User Interface based application programs by utilizing

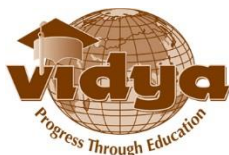


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				event handling features and Swing in Java
24	S4	MAT 216 MATHEMATICAL FOUNDATIONS FOR MACHINE LEARNING	MAT206.1	make use of the concepts, rules and results about linear equations, matrix algebra and vector spaces to solve computational problems
			MAT206.2	make use of the concepts of eigenvalues & eigenvectors and orthogonality & diagonalization to solve computational problems
			MAT206.3	perform calculus operations on functions of several variables and matrices, including partial derivatives and gradients
			MAT206.4	utilize the concepts, rules and results about probability, random variables, additive & multiplicative rules, conditional probability, probability distributions and Bayes' theorem to find solutions of computational problems
			MAT206.5	Train Machine Learning Models using unconstrained and constrained optimization methods
25	S4	CST 202 COMPUTER ORGANIZATION AND ARCHITECTURE	CST202.1	identify the basic structure and roles of various functional units of a computer and analyze the effect of addressing modes during the execution time of a program.
			CST202.2	explore the complete steps in an instruction execution and demonstrate computer arithmetic operations on integer and real numbers
			CST202.3	select appropriate interfacing standards for I/O devices.

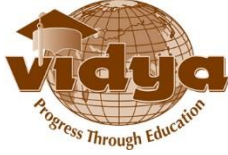


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			CST202.4	understand memory hierarchy and its impact on computer cost/performance
			CST202.5	build simple arithmetic and logical units. Identify and analyze pros and cons of different types of control logic design in processors.
26	S4	CST 204 DATABASE MANAGEMENT SYSTEMS	CST204.1	summarize and exemplify fundamental nature and characteristics of database systems
			CST204.2	model real word scenarios given as informal descriptions, using Entity Relationship diagrams.
			CST204.3	model and design solutions for efficiently representing and querying data using relational model
			CST204.4	demonstrate the features of indexing and hashing in database applications
			CST204.5	discuss and compare the aspects of Concurrency Control and Recovery in Database Systems and Explain various types of NoSQL databases
27	S4	CST 206 OPERATING SYSTEMS	CST206.1	explain the relevance, structure and functions of Operating Systems in computing devices.
			CST206.2	illustrate the concepts of process management and process scheduling mechanisms employed in Operating Systems.
			CST206.3	explain process synchronization in Operating Systems and illustrate process synchronization mechanisms using Mutex Locks, Semaphores and Monitors
			CST206.4	explain any one method for detection, prevention, avoidance and recovery for

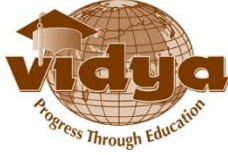


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				managing deadlocks in Operating Systems.
			CST206.5	After the completion of the course the students will be able to Explain the memory management algorithms, security aspects and algorithms for file and storage management in Operating Systems.
28	S4	HUT 200 PROFESSIONAL ETHICS	HUT200.1	understand the core values that shape the ethical behaviour of a professional.
			HUT200.2	adopt a good character and follow an ethical life.
			HUT200.3	explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
			HUT200.4	solve moral and ethical problems through exploration and assessment by established experiments.
			HUT200.5	apply the knowledge of human values and social values to contemporary ethical values and global issues.
29	S4	MCN 202 CONSTITUTION OF INDIA	MCN202.1	explain the background of the present constitution of India and features.
			MCN202.2	utilize the fundamental rights and duties.
			MCN202.3	understand the working of the union executive, parliament and judiciary.
			MCN202.4	understand the working of the state executive, legislature and judiciary.
			MCN202.5	utilize the special provisions and statutory institutions.
30	S4	CSL 202 DIGITAL LAB	CSL202.1	design and implement combinational logic circuits using Logic Gates
			CSL202.2	design and implement sequential logic circuits using Integrated Circuits

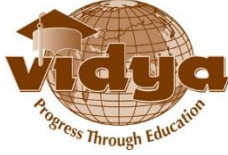


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			CSL202.3	simulate functioning of digital circuits using programs written in a Hardware Description Language
			CSL202.4	function effectively as an individual and in a team to accomplish a given task of designing and implementing digital circuits.
			CSL202.5	familiarize with different logic gates and IC's
31	S4	CSL 204 OPERATING SYSTEMS LAB	CSL204.1	illustrate the use of systems calls in Operating Systems
			CSL204.2	implement Process Creation and Inter Process Communication in Operating Systems.
			CSL204.3	implement First Come First Served, Shortest Job First, Round Robin and Priority- based CPU Scheduling Algorithms
			CSL204.4	illustrate the performance of First In First Out, Least Recently Used and Least Frequently Used Page Replacement Algorithms
			CSL204.5	implement modules for Deadlock Detection and Deadlock Avoidance in Operating Systems, implement storage management and disk scheduling algorithms



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