NORCO COLLEGE SLO to PLO MATRIX		PLOs	PLO 1 Write programs utilizing the following data structures: arrays, records, strings, linked lists, stacks, queues, and hash tables.	PLO 2 Write and execute programs in assembly language illustrating typical mathematical and business applications.	PLO 3 Demonstrate different traversal methods of trees and graphs.			
CERTIFICATE/PROGRAM:	**Computer Science AS-T**							
COURSE:	**CSC-5 Programming Concepts & Methodologies l: C++**							
SLO 1	Describe the software development life-cycle							
SLO 2	Describe the principles of structured programming and be able to design, implement and test structured programs.							
SLO 3	Explain what an algorithm is and its importance in computer programming.							
SLO 4	Summarize the evolution of programming languages illustrating how this history has led to the paradigms available today.							
SLO 5	Use pseudo code, flowcharts, and a programming language to implement, test, and debug algorithms for solving problems. Identify the information requirements, synthesize the algorithmic steps needed to transform the data input into the required output information, and organize the output format to facilitate user communication.							
SLO 6	Demonstrate different forms of binding, visibility, scoping, and lifetime management.							
SLO 7	Create computer programs using the principles of structured programming and demonstrate the use of an IDE with appropriate libraries. Design, implement, test, and debug programs that use fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, and functions.		x					
SLO 8	Apply the principles of logical and programming concepts to develop solutions for gaming, business, scientific and mathematical problems.		x					
COURSE:	**CSC-7 Discrete Structures**							
SLO 1	Describe how formal tools of symbolic logic are used to model real-life situations, including those arising in computing contexts such as program correctness, database queries, and algorithms.							
SLO 2	Relate the ideas of mathematical induction to recursion and recursively defined structures.							

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SLO 3	Analyze a problem to create relevant recurrence equations.							
SLO 4	Demonstrate different traversal methods of trees and graphs.		x					
SLO 5	Apply the binomial theorem to independent events and Bayes' theorem to dependent events.		x					
COURSE:	**CSC-11 Computer Architecture and Organization: Assembly**							
SLO 1	Analyze and interpret assembly language code and hexadecimal format. Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.							
SLO 2	Write and execute programs in assembly language (utilizing application programming interfaces) illustrating typical mathematic and business applications.			x				
COURSE:	**CSC-17a Programming Concepts & Methodologies II: C++**							
SLO 1	Write programs that use each of the following data structures: arrays, records, strings, linked lists, stacks, queues, and hash tables.		x		x			
SLO 2	Implement, test, and debug simple recursive functions and procedures.		x					
SLO 3	Evaluate tradeoffs in lifetime management (reference counting vs. garbage collection).							
SLO 4	Explain how abstraction mechanisms support the creation of reusable software components.							
SLO 5	Design, implement, test, and debug simple programs in an object-oriented programming language.							
SLO 6	Discuss the properties of good software design. Compare and contrast object-oriented analysis and design with structured analysis and design.							

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COURSE:	**MAT-1a Calculus I**							
SLO 1	Calculate the limit of a function.							
SLO 2	Determine the continuity of a function.							
SLO 3	Find the derivatives of algebraic and transcendental functions.							
SLO 4	Solve related rates problems.							
SLO 5	Apply the absolute and relative extrema to curve sketching and optimization problems.							
SLO 6	Use Newton's method to approximate the roots of a function.							
SLO 7	Evaluate a definite integral using Riemann sums.			x				
COURSE:	**MAT-1b Calculus II**							
SLO 1	Employ the basic concepts of convergence and divergence of infinite sequences and series.							
SLO 2	Derive Taylor Series and approximate polynomials of analytic functions.			x				
SLO 3	Graph, differentiate, and integrate functions in polar and parametric form.			x				
SLO 4	Evaluate definite, indefinite, and improper integrals using techniques of integration.							
SLO 5	Solve applications of integration problems, including those involving area, volume, work, arc length and force.							
COURSE:	**PHY-4a Mechanics**							
SLO 1	Explain the concepts of kinematics, such a as velocity, displacement and acceleration, and their relationships to each other.							
SLO 2	Determine the forces and torques acting on an object and determine the motion of an object through application of the Laws of Motion.			x				
SLO 3	Explain the concepts of conservation of energy and conservation of momentum, and use each to solve problems in mechanics.							

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SLO 4	Apply the definitions of oscillatory and wave motion to construct solutions to problems.							
SLO 5	Apply the methods of Newtionian mechanics to solve problems relating to extended objects in static equilibrium; and defines tress, strain and elastic modulus.							
SLO 6	Define Newton's Law of gravity and the related gravitational potential energy function and apply the methods of Newtonian mechanics to analyze systems in the context of Newton's law of gravitation.							
SLO 7	Perform simple physical experiments that relate to the subject matter of the course; and analyze and interpret data collected in such experiments.							
COURSE:	**PHY-4b Electricity Magnetism**							
SLO 1	Determine the magnitude and direction of the electric field and force due to a charge distribution using the principles of superposition and vector addition.							
SLO 2	Determine torque and potential energy of electric dipole systems.							
SLO 3	Utilize Gauss's Law to calculate electric flux and to determine electric fields for highly symmetrical geometries.							
SLO 4	Determine the scalar electric potential using the principles of superposition and Faraday's Law and apply this concept to conservation of energy.							
SLO 5	Define capacitance and it's properties. Analyze capacitive circuits to determine their charge, voltage, energy and electric fields.							
SLO 6	Define current, resistance and electromotive force. Utilize Kirchhoff's rules for DC circuits. Derive the RC circuit equations.							
SLO 7	Demonstrate proficiency in the use of multimeter, oscilloscope, waveform generator and power supply.							
SLO 8	Determine the magnitude and direction of the magnetic field using the principles of superposition and vector addition. Determine the Lorentz force on charges and current carrying wires in magnetic and electric fields. Analyze torque and potential energy of magnetic dipole systems.							

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SLO 9	Obtain expressions for the magnetic field utilizing Ampere's law.							
SLO 10	Utilize Farady's law to calculate induced and motional. Determine the direction of current using Lenz's law. Explain the electic motor and generator.							
SLO 11	Determine the inductance of a circuit element. Analyze inductive circuits.							
SLO 12	Define and determine the impedance of an AC circuit and determine the current voltage phase relationships.							
SLO 13	State Maxwell's equations and demonstrate that a light wave is a solution to Maxwell's equations.							
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