



University of Diyala

College of Engineering

Department of Computer Engineering

Bachelor of Science (B.Sc.) Undergraduate Program

First Year





First Year

First Semester					Second Semester				
Course Title	Credit	Weekly Hours			Commo Title	Credit	Weekly Hours		
	Hours	The.	Lab.	Tut.	Course The	Hours	The.	Lab.	Tut.
Human Rights and Democracy	2	2	-	-	Computer Science	2	1	2	-
Engineering Drawing Using Computer	1	-	3	-	English Language	1	1	-	-
Physics	2	2	-	-	Arabic Language	1	1	-	-
Workshop Skills I	1	-	3	-	Workshop Skills II	1	-	3	-
Mathematics I	2	2	-	1	Mathematics II	2	2	-	1
Programming and Problem Solving Using C++ I	3	2	2	-	Programming and Problem Solving Using C++ II	3	2	2	-
Fundamentals of Logic Systems	2	2	-	-	Digital Logic Circuits I	3	2	2	-
Electrical Circuits I	3	2	2	1	Electrical Circuits II	3	2	2	1
Total	16	12	10	2	T-4-1	16	11	11	2
		24			Total	10	24		





• First Year Courses Details

Course Number: U 103

Course Name: English Language

Credit Hours: (2-2-0-0)

Prerequisites: None

Course Contents: This course is designed to enable the students to achieve academic oral and written communication to the standard required at university level. The course integrates all the language skills with emphasis on writing, and it stimulates students' imagination, and promotes personal expression. Students, in this course, are trained to apply critical thinking skills to a wide range of challenging subjects from diverse academic disciplines. Course activities include writing various types of academic essays, acquiring advanced academic vocabulary, and getting involved in group discussions and debates. In addition, the course also includes other skills to consolidate the main skills, such as further readings and use of the Blackboard Suite.

Course Number: E 101

Course Name: Mathematics I

Credit Hours: (2-2-1-0)

Prerequisites: None

Course Contents: Equation of a line sets, function and type of function, logarithm and expiation, limit and continue. Complex numbers: Introduction and definition of complex number, Addition and subtraction of complex number, multiplication and division of complex number, geometric representation of complex number, complex conjugate and absolute value, cervical addition and subtraction of complex number. Polar form of a complex numbers exponent form of complex number, logic number. Vectors: Introduction to scalar and vector quantities, Vector Algebra. Laws of vector algebra, a unit vector components of a vector, The dot product, the cross product, triple product, angle between two vectors direction rations ,Vector differentiation, velocity and acceleration, differentiation formulas, vector Integration. Matrices: Matrices properties, the equal matrices algebraic operations, multiplication by scalar, diagonal metric, determinates of two order, third order, evaluation of a third order determinant, elementary row operation, inverse matrices by elementary row operation, solution of systems of linear equations, systems of linear differential equations.





Course Number: E 103

Course Name: Physics

Credit Hours: (2-2-0-0)

Prerequisites: None

Course Contents: Introduction about Insulators, Conductors and Semiconductors, PN-Junction, Physical operation of Diode, DC analysis of Diode, Load Line and Q-point, Constant Voltage Drop Model, Piecewise Linear Diode Model, Small Signal Diode Model, other diode types, Diode applications; Half and Full Wave Rectifiers circuits, Clipper circuits, Clamper circuits, Logic Gate using Diode, power supply Construction, Zener diode; construction and operation.

Course Number: CPE 101

Course Name: Engineering Drawing Using Computer

Credit Hours: (1-0-0-3)

Prerequisites: None

Course Contents: The use of CAD in engineering drawing, description of menu Bar and toolbars, drawing Ellipse, Rectangle, line, Ray, Circle, point, Arc, ------ etc., CAD Electrical, Mechanical/ Special features The use of various layers, Drawing electrical symbols on simple architectural plans, editing commands: copy, cut, paste, erase, move, selecting objects, orthogonal projection, ISO drawing .

Course Number: E 106

Course Name: Workshop Skills I

Credit Hours: (1-0-0-3)

Prerequisites: None

Course Contents: The workshop training program is designed to satisfy the following objectives Teaching safety rules and regulations on-site in an industrial environment Proper use of working tools, instruments, and machines, Introducing basic workshop practices, production, labour, and time-requirements of workshop operations. The students are introduced to training programs in nine workshops: electrical wiring, welding, forging, fitting, turning and milling, carpentry, plumbing auto-mechanics, and casting. The student is to spend 6 hours of training in every workshop.





Number: CPE 102

Course Name: Programming and Problem Solving with C++ I

Credit Hours: (3-2-0-2)

Prerequisites: None

Course Content: Problem Solving Methodology: Problem Definition, Problem Analysis , Design Of a Solution, Algorithms, Flowcharts, Development Of Programs (Coding, testing, debugging), Introduction to C++ , History , Characteristics of C++ , C++ Character Set ,Tokens , Keywords , Identifiers , Literals ,Punctuators ,Operators, Arithmetic operators , Relational operators , Logical operators , Unary operators , Ternary operators , Shorthand operators, Bitwise operators , Special operators, Assignment operators, Precedence of operators, Type conversion (Implicit and Explicit), Structure of a C++ program (with example), Importance of iostream.h, Comments in C++, Data types, Fundamental data types, Modifiers, Derived data types, User defined data types, Input and Output operators, Input operator ">>", Output operator "<<", Simple programs, Control Statements, Introduction: Types of Control statements, Selection statement, if - else" statement , nested -if" statement, Switch" statement, Iteration statement, while" statement, do-while" statement, Comparison between "while" and "do-while", for" statement, Jump statements (go to, break, continue).

Number: CPE 104

Course Name: Fundamentals of Logic Systems

Credit Hours: (2-2-0-0)

Prerequisites: None

Course Content: Introduction to digital quantities ,Numbering systems, Decimal numbers , Binary numbers , Octal numbers , Hexadecimal , Conversions between numbering systems, Digital codes , Binary coded decimal , Excess-3 codes, Gray code , Error detection and correction codes ,Arithmetic operations , for numbering systems , logic gates, applications of logic gates, Boolean Algebra ,DE Morgan's Theorem, Simplification of Boolean Algebra, Simplification using Boolean Karnaugh Map.

Course Number: CPE 106

Course Name: Electrical Circuits I

Credit hours: (3-2-1-2)

Prerequisites: None

Course Content: Temperature effect of the resistance, Ohm's law, Resistor in series, Resistor in parallel, Kirchhoff's voltage law, Kirchhoff's current law, Delta connection. Star connection, Delta to Star Transformation. Star to Delta Transformation, Current and Voltage Sources, The principle of Superposition, The Thevenin equivalent circuit, The Norton equivalent circuit, Maximum power transfer, The Node Voltage Method, The Mesh Current Method.





Course Number: U 101

Course Name: Human Rights and Democracy

Credit hours: (2-2-0-0)

Prerequisites: None

Course Contents: Introduces students to the philosophic and political background of the concept of human rights, discusses important documents as part of the history of the development of human rights theories, examines important issues in current political and ethical debates about human rights, reviews core legal documents and the work of the most important governmental and nongovernmental institutions currently involved in human rights protection and promotion, examines at least one current problem area in human rights protection.

Course Number: U 102

Course Name: Computer Science

Credit Hours: (2-1-0-2)

Prerequisites: None

Course Contents: Computer Architecture, Computer Assembly and parts Characteristics, History of Computer, Generations of computer, Types of computer, Personal computer, major parts of the Computer (Hard Ware); Input Devices, Processor, Output Devices, Storage Devices, Internal Components, Software; Types of software, System software, Application software, Computer Languages and Scripting, Booting, Computer maintenance and troubleshooting, BIOS Setting, Open Source Software and Linux OS, Navigating Linux GUI, The Internet.

Course Number: U 104

Course Name: Arabic Language

Credit Hours: (1-1-0-0)

Prerequisites: None

Course Contents: Introduction, Arabic language origin, formal and slang, translations and usual mistakes, Basic Arabic writing skills and its major roles, Arabic dictionaries and how to use it. Sentences and their types in Arabic tongue, Arabic sentence structure and safe constructed sentence in Arabic language, How to write a paragraph, How to write a report using the wright Arabic sentences, Applications.

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Course Number: E 102 Course Name: Mathematics II Credit Hours: (2-2-1-0)

Prerequisites: None

Course Contents: Hyperbolic functions: Graphics of hyperbolic function, Evaluation of hyperbolic function, Inverse of hyperbolic function, Hyperbolic identities, Log form of the inverse-hyperbolic function, Trigonometric identities and hyperbolic identities, Relation between hyperbolic function and trigonometric, Further problem, Derivative: Lows of derivative, higher derivative, Implicit derivatives, chain Rule, Derivative of trigonometric function, Derivative of exponential function, Derivative of hyperbolic function, Derivative of inverse exponential function, Derivative of inverse hyperbolic function, Derivative of inverse hyperbolic function, Derivative of inverse exponential function, Derivative of inverse hyperbolic function, Derivatives, Integration: Low of integration, define integration, Integration of trigonometrically functions, Integration of products, Integration by parts, problems, Reduction formula, problems,

Course Number: E 107

Course Name: Workshop Skills II

Credit Hours: (1-0-0-3)

Prerequisites: None

Course Contents: The workshop training program is designed to satisfy the following objectives Teaching safety rules and regulations on-site in an industrial environment Proper use of working tools, instruments, and machines, Introducing basic workshop practices, production, labour, and time-requirements of workshop operations. The students are introduced to training programs in nine workshops: electrical wiring, welding, forging, fitting, turning and milling, carpentry, plumbing auto-mechanics, and casting. The student is to spend 6 hours of training in every workshop

Course Number: CPE 105

Course Name: Digital Logic Circuits I

Credit hours: (3-2-0-2)

Prerequisites: Fundamentals of Logic Systems (CPE 104)

Course Contents: Combinational logic analysis, Combinational logic circuit using NAND and NOR gates, implementation of Combinational logic circuit, functions of combinational logic circuit, Adders, series and Parallel binary adders, ripple Carry versus Look-Ahead Carry Adders, comparators, decoders, encoders, multiplexers, de multiplexer, latches, Flip-Flops, application of Flip-Flops, One – shots, 555 Timers.





Course Number: CPE 102

Course Name: Programming and Problem Solving with C++ II

Credit Hours: (3-2-0-2)

Prerequisites: Programming and Problem Solving with C++ I (CPE 102)

Course Contents : C++ review, Arrays Introduction to Arrays, Types of arrays, One Dimensional Arrays, Two Dimensional Arrays, Multi-Dimensional Arrays, One Dimensional Arrays, Declaration of 1-D Arrays, Initialization of 1-D arrays, Two Dimensional Arrays, Declaration of 2-D Arrays, Initialization of 2-D arrays, Functions, Introduction , Different Header files, Mathematical Library functions, Character and string functions, Other functions, User Defined Functions, Definition, Advantages of user defined function prototype, Types of arguments, Scope of variables, Types of functions, Call by value, Call by reference (using reference variables) ,Arrays as arguments, Structures, Introduction, Defining a structure, Declaring a structure, Initializing structure elements, Referencing structure elements, Nested structures, Array of structures, Advanced topics projects.

Course Number: CPE 107

Course Name: Electrical Circuits II

Credit hours: (3-2-1-2)

Prerequisites: Electrical Circuits I (CPE 106)

Course Contents: Alternating Quantities, Phasor representation of Alternating Quantities, Alternating Current Circuits, Resonance in series circuit, Resonance in parallel circuit, Complex representation of A.C, Power in Alternating Current, Transient in RL circuit, Transient in RC circuit, Measurement of Resistance, Measurement of Instrument.