Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation

Academic Program Specification Form for the Academic

University: Gilgamesh Ahliya University
College: Faculty of engineering
Department: Computer Engineering
Date of Form Completion: 08/11/2023

جامعة كلكامش الأهلية
GAU
GILGAMESH AHLIYA UNIVERSITY

The Dean	*Dean's Assistant for Scientific Affairs*	*Head of Department*
Date: / 11 /2023	*Date: / 11 /2023*	*Date: / 11 / 2023*
Signature	*Signature*	*Signature*

Quality Assurance and University Performance Manager
Date: / 11 / 2023
Signature

Programme Specification

The educational program description provides a brief description of the program characteristics and expected program outcomes achieved by the students upon graduation. The program outcomes will be based on course learning outcomes, which will be described also.

1. Teaching Institute	Gilgamesh Ahliya University
2. University Department / Center	Computer Engineering
3. Program Title	B. Sc. in Computer Engineering
4. Title of Final Award	B. Sc. in Computer Engineering
5. Models of Attendance Offered	Curriculum system
6. Accreditation	ABET
7. Other External Influences	None
8. Date of production/ revision of this specification	25-09-2023
9. Aims of the program	
i- Use technical, teamwork, and communication skills, along with leadership	
ii- Pursue graduate degrees in computer engineering and otherfields.	
iii- Function ethically in their professional computer engineeringroles.	

iv- Pursue professional licensure.

v- Engage in life-long learning through independent study and by participating in professional conferences, workshops, seminars, or continuing education.

10.Learning Outcomes, Teaching and Learning and Assessment methods.(The same as ABET Student Outcomes from a to k)

A-Program Outcomes – Knowledge

A1- An ability to apply knowledge of mathematics, science and engineering *(a in ABET Student Outcomes)*.

A2- An ability to design and conduct experiments, as well as to analyze and interpret data *(b in ABET Student Outcomes)*.

A3- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability *(c in ABET Student Outcomes)*.

A4- An ability to identify, formulate, and solve engineering problems *(e in ABET Student Outcomes)*.

A5- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context *(h in ABET Student Outcomes)*.

A6- A knowledge of contemporary issues *(j in ABET Student Outcomes)*.

B-Subject-specific skills

B1- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice *(k in ABET Student Outcomes)*.

C-Thinking skills

C1- An understanding of professional and ethical responsibility *(f in ABET Student Outcomes)*.

C2- A recognition of the need for, and an ability to engage in life-long learning *(i in ABET Student Outcomes)*.

D- Program Outcomes – General and transferable skills (other skills relevant to employability and Personal development)

D1- An ability to function on multidisciplinary teams *(d in ABET Student Outcomes)*.

D2- An ability to communicate effectively using written, oral and visual methods of communication *(g in ABET Student Outcomes)*.

Teaching and Learning Methods

Mentioned in Course Portfolios
Assessment Methods
Mentioned in Course Portfolios in addition to surveys done to senior students and employers.

11. Program Structure

No.	Level/ year	Course or Module Code	Course or Module Title	Credit rating	Hours		
					Contact	Prac	Tutorial
1	Second/ First	COE202	Mathematics III	2	2	0	0
2		COE204	Electronic Circuits Design	3	2	2	0
3		COE206	Logic Circuits design	3	2	2	0
4		COE201	Operating Systems	3	2	2	0
5		COE203	Computer Architecture1	2	2	0	0
6		COE205	Object Oriented Programming	2	2	0	0
7		COE207	Information Theory	2	2	0	0
8		COE208	Communications 1	3	2	2	0
9		COE209	Crimes of the Defunct Baath Party	2	2	0	0
1	Second/ Second	COE212	Mathematics 4	2	2	0	0
2		COE215	Digital Electronics	3	2	2	0
3		COE213	Computer Architecture 2	2	2	0	0
4		COE211	Data Structures and Algorithms	3	2	2	0
5		COE214	Data Base Systems	3	2	2	0
6		EEN212	English 2	2	2	0	0
7		COE218	Communications 2	3	2	2	0
8		COE216	Digital Systems Design	2	2	0	0
1	Third/First	COE302	Advanced Mathmatics1	2	2	0	0
2		COE303	Microprocessors	3	2	2	0
3		COE304	Signals and Systems	2	2	0	0
4		COE305	Computer Graphics	2	2	0	0
5		COE306	Computer Networks	3	2	2	0
6		COE307	Information Systems	2	2	0	0
7		COE301	Engineering Management	2	2	0	0
1	Third/ Second	COE312	Advanced Mathmatics2	2	2	0	0
2		COE313	Microprocessor Applications	3	2	2	0
3		COE314	Digital Signal Design	3	2	2	0
4		COE311	Information Security	2	1	2	0
5		COE316	Software Engineering	2	2	0	0

6		COE318	Image Processing	2	2	0	0
7		COE317	Management of Information Systems	2	2	0	0
8		COE311	Engineering Ethics	2	2	0	0

1	Fourth/ First	COE407	Soft Computing 1	2	2	0	0
2		COE404	Digital Multimedia Processing	2	2	0	0
3		COE404	Parallel Processing	2	2	0	0
4		COE408	Biometric	2	2	0	0
5		COE405	Internet Programming	3	2	2	0
6		COE406	Data Mining and Warehousing	2	2	0	0
7		COE401	Graduation Project	3	2	3	0
1	Fourth/ Second	COE417	Soft Computing 2	2	2	0	0
2		COE412	Digital Communications	3	2	3	0
3		COE413	Distributed Systems	2	2	0	0
4		COE414	Internet Engineering	3	2	2	0
5		COE415	Cloud Computing	2	2	0	0
6		COE416	Control Theory	3	2	2	0
7		COE401	Graduation Project	3	2	2	0

Credit units

For 2nd stage = 43

1. Admission
   Minimum number of students = 15
   Maximum number of students=150

2. Planning for Personal Development
   There is the training of faculty members in writing of program learning outcomes

3. Admission criteria:
   The submission to the program and acceptance of students are central from ministry of Higher Education and Scientific Research.

Curriculum Skills Map														
Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed														
Courses				**Program Learning Outcomes (ABET Student Outcomes)**										
Year/ Level	**Course Code**	**Course Title**	**Core (C)Title or Option (O)**	**Knowledge and understanding**						**Subject - specific skills**	**Thinking skills**		General and transferable skills (or)other skills relevant to employability and Personal development	
				A1 (a)	**A2 (b)**	**A3 (c)**	**A4 (e)**	**A5 (h)**	**A6 (j)**	**B1 (k)**	**C1 (f)**	**C2 (i)**	**D1 (d)**	**D2 (g)**
second	COE202	Mathematics III	Core		✓	✓	✓		✓		✓	✓	✓	✓
	COE204	Electronic Circuits Design	Core	✓		✓		✓		✓	✓			✓
	COE206	Logic Circuits design	Core		✓			✓			✓	✓		
	COE201	Operating Systems	Core	✓				✓		✓		✓		✓
	COE203	Computer Architecture1	Basic	✓			✓		✓	✓		✓	✓	✓
	COE209	Crimes of the Defunct Baath Party	Supportive		✓		✓	✓		✓		✓		
	COE205	Object Oriented Programming	Core	✓	✓		✓	✓	✓	✓	✓	✓		✓
	COE207	Information Theory	Core		✓	✓			✓	✓	✓	✓	✓	
	COE208	Communications 1	Core	✓	✓		✓		✓	✓		✓		✓

Second	COE212	Mathematics 4	**Core**	✓		✓	✓			✓			✓	
	COE215	Digital Electronics	**Core**	✓		✓	✓		✓		✓	✓		
	COE213	Computer Architecture 2	**Core**	✓		✓				✓			✓	
	COE211	Data Structures and Algorithms	**Basic**		✓				✓				✓	✓
	COE214	Data Base Systems	**Core**	✓					✓	✓	✓			
	EEN212	English 2	**Basic**	✓		✓	✓						✓	
	COE218	Communications 2	**Core**	✓		✓	✓		✓		✓	✓		
	COE216	Digital Systems Design	**Core**	✓					✓	✓	✓			

MATHEMATICS III

COE 202

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Electronics & Communication Engineering Department
3. Course title/code	MATHEMATICS III
4. Programme(s) to which it contributes	B. Sc. in Electronics & Communication Engineering
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall2023
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	Nov. 2023
9. Aims of the Course	
By the end of the module, you will know how to differentiate and integrate functions of several variables. In single variable calculus the Fundamental Theorem of Calculus relates derivatives to integrals. We will see something similar in multivariable calculus and the capstone to the course will be the three theorems (Green's, Stokes' and Gauss') that do this.	

10· Learning Outcomes, Teaching, Learning and Assessment Method

A- After completing this module, students should have developed a clear understanding of the fundamental concepts of multivariable calculus and a range of skills allowing them to work effectively with the concepts.

The basic concepts are :

- Derivatives as rates of change, computed as a limit of ratios
- Integrals as a 'sum,' computed as a limit of Riemann sums

B. Subject-specific skills

1. Fluency with vector operations, including vector proofs and the ability to translate back and forth among the various ways to describe geometric properties, namely, in pictures, in words, in vector notation, and in coordinate notation.
2. Fluency with matrix algebra, including the ability to put systems of linear equation in matrix format and solve them using matrix multiplication and the matrix inverse .
3. An understanding of a parametric curve as a trajectory described by a position vector; the ability to find parametric equations of a curve and to compute its velocity and acceleration vectors .
4. A comprehensive understanding of the gradient, including its relationship to level curves (or surfaces), directional derivatives, and linear approximation.
5. The ability to compute derivatives using the chain rule or total differentials.
6. The ability to set up and solve optimization problems involving several variables, with or without constraints.

Teaching and Learning Methods

This module will be taught through classroom lectures (5hrs/week). The lecture material will be reinforced and expanded on through recitation sessions (3hrs/week) and homework.

Assessment methods

Quizzes (2) and Home-works (1 per month) = 10% Exams (2 per semester) = 40% Final Exam = 50% Total = 100%

C. Thinking Skills

To value hard-work to reach excellence and serve people using modern science

D. General and Transferable Skills (other skills relevant to employability and personal development)

:In order to develop the thinking skills of the student

To know that it is only through knowledge we can develop our country and society towards a better life

To know that we need life-long learning to keep up-to-date with scientific developments

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2	6	Understanding Parametric Curves	Parametric Equations for Curves	Lecture	Quiz/ Exam
3,4,5	9	Thorough Comprehension of 3-D surfaces	Functions of Two Variables, Tangent Approximation and Optimization	Lecture	Quiz/ Exam
7,7	6	Understanding of Gradient	Chain Rule, Gradient and Directional Derivatives main	Lecture	Quiz/ Exam
8,9	6	Set up of Constrained Optimization Problems	Lagrange Multipliers and Constrained Differentials	Lecture	Quiz/ Exam
10,11	6	Ability to set up and compute double integral	Double Integrals	Lecture	Quiz/ Exam
12,13	6	understanding of line integrals for work and flux	Vector Fields and Line Integrals	Lecture	Quiz/ Exam
14,15	6	Ability to set up and compute triple integral	Triple Integrals	Lecture	Quiz/ Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS	Edwards, Henry C., and David E. Penney. Multivariable Calculus. 6th ed. Lebanon, IN: Prentice Hall, 2002. ISBN: 9780130339676
13. Admissions	
Pre-requisites	MATH II
Minimum number of students	15
Maximum number of students	50

Information Theory

COE 207

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer engineering
3. Course title/code	Information Theory/ COE207
4. Programme(s) to which itcontributes	ABET
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall /2023
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	November /2023

9. Aims of the Course

1- To teach students how to measure, represent, and communicate information effectively: This includes understanding the fundamental concepts of information theory, such as entropy and mutual information.
2- provide students with analytical tools to quantify information, perform inference, and study the relationship of information and learning
3- To teach students the fundamental backbone of reliable communications, reliable data storage, and data compression

10· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Knowledge and Understanding
A1.. Observation
A2- Comprehension
A3-Application
A4.Analysis
A5.Synthesis
A6.Evaluation

B. Subject-specific skills

Analyze and quantify information using concepts like entropy and mutual information.

Design efficient data compression and error-correcting codes.

Apply information theory principles to real-world communication systems.

Evaluate the impact of noise and channel capacity on data transmission.

Formulate solutions for data security and encryption based on information theory.

Demonstrate critical thinking in solving complex information-related problems.

Teaching and Learning Methods

1- Individual and group specialized laboratory experiments
2- Various exploratory techniques.
3- Overlap between old and modern methods of teaching

Assessment methods

Assessment methods for the Information Theory course may include quizzes, assignments, coding projects, exams, and a final project where students design and analyze information systems, evaluating their comprehension and application of course concepts.

C. Thinking Skills

C1- Critical thinking: Students learn to analyze and evaluate information, identify patterns, and draw conclusions based on evidence
C2- Problem-solving: Students learn to apply information theory concepts to solve problems related to data representation, communication, and inference
C3- Mathematical reasoning: Students learn to use mathematical tools and techniques to quantify information, perform inference, and study the relationship of information and learning

Teaching and Learning Methods

Teaching and Learning Methods for part

Teaching Methods & Learning Activities for an Information Theory course may include lectures, hands-on coding exercises, case studies on real-world communication systems, group discussions, and projects designing compression and error-correcting codes. These methods promote both theoretical understanding and practical application of information theory concepts.

Testing through discussion (singular or plural)

1- n-class tests: Some courses may have in-class tests that assess students' understanding of the fundamental concepts of information theory
2- Homework and projects: Students may be assigned homework and projects that require them to apply information theory concepts to solve problems related to data representation, communication, and inference
3- Quizzes and assessments: Online courses on information theory may have quizzes and assessments that test students' knowledge and understanding of the course material
4- Discussions and presentations: Students may be required to participate in discussions and give presentations on topics related to information theory, which can help them develop their critical thinking and communication skills

Assessment methods

-Lecturing by using the board
-Showing short ethical films
-Open a discussion on a certain topic
All this is associated with :

1- Written examination
2- Short questions
3- Multiple choice questions
4- Problem solving
5- Essays
6- Oral examination
7- Practical examination
8- Quizzes
9- Oral semesters

D. General and Transferable Skills (other skills relevant to employability and personaldevelopment)

.In order to develop the thinking skills of the students:

D1(
D2- ,

11. Course Structure					
Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1	2	**Concept of Information: *info source, memory and memoryless source, probability of event, measure of info.***		Theoretical lecture	
2	2	***Entropy: average of info, maximum entropy***		Theoretical lecture	Quiz
3	2	**Rate of Information**		Theoretical lecture	homework
4	2	**Discrete Memoryless Channel: *conditional probability, joint probability, channel matrix.***		Theoretical lecture	Assessment
5	2	**Joint Entropy and Conditional Entropy**		Theoretical lecture	Quiz
6	2	**Relations between the different entropies**		Theoretical lecture	exam
7	2	**Mutual Information**		Theoretical lecture	homework
8	2	**Channel Types: *lossless, deterministic, noiseless, BSC***		Theoretical lecture	Quiz
9	2	**Channel Capacity**		Theoretical lecture	homework
10	2	**Additive White Gaussian Noise Channel**		Theoretical lecture	Assessment

11	2	**Code length, code efficiency and redundancy**		Theoretical lecture	Assessment
12	2	**Kraft Inequality**		Theoretical lecture	Quiz
13	2	**Source coding theorem: *Prefix coding, Shannon-Fano coding, Huffmann coding***		Theoretical lecture	Assessment
14	2	**Error detection and correction: *single parity check, hamming code, block coding***		Theoretical lecture	Assessment
15	2	Final exam		Theoretical lecture	exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	**Information Coding Techniques", J.S. Chitode, 1st edition, 2008** **Essentials of error-control coding", J.C. Moreira, 2006**
Special requirements (include for example workshops, periodicals, IT software, websites)	https://www.ferrovial.com/en/stem/information-theory
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	no
Minimum number of students	15
Maximum number of students	50

Object Oriented Programming

COE 205

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer engineering
3. Course title/code	Object Oriented Programming / COE205
4. Programme(s) to which itcontributes	APET
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall /2023
7. Number of hours tuition (total)	30
8. Date of production/revision of this specification	November /2023
9. Aims of the Course	
1- To teach students the fundamental concepts of C++ programming language 2- To provide students with an in-depth knowledge of OOPs concepts: This includes understanding how C++ improves C with object-oriented features 3- To teach students how to write efficient and performant code: This includes learning how to write inline functions, overload functions and operators, and implement copy constructors and class member functions	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1.. Observation A2- Comprehension A3-Application A4.Analysis A5.Synthesis A6.Evaluation

B. Subject-specific skills

Understanding of OOPs concepts: Students learn the fundamental concepts of OOPs, such as inheritance, polymorphism, encapsulation, and abstraction, and how they are implemented in C++ and Proficiency in C++ programming language: Students learn the syntax and semantics of the C++ programming language, including data types, arrays, strings, pointers, functions, classes, objects, and templates

C. Thinking Skills

C1- Critical thinking: Students learn to analyze and evaluate information, identify patterns, and draw conclusions based on evidence
C2- Problem-solving: Students learn to apply OOP concepts and C++ programming language to solve problems related to software development, game development, graphic designs, and other fields
C3- Mathematical reasoning: Students learn to use mathematical tools and techniques to design and implement efficient and performant code, such as inline functions, overloaded functions and operators, and copy constructors

Teaching and Learning Methods

Interactive online courses: Some courses may be offered online and use interactive platforms that allow students to learn at their own pace and practice coding in real-time , Lectures and demonstrations: In-person courses may include lectures and demonstrations by the instructor to introduce new concepts and demonstrate how to apply them in practice, Hands-on coding exercises: Students may be assigned coding exercises that require them to apply OOP concepts and C++ programming language to solve problems related to software development, game development, graphic designs, and other fields.

Testing through discussion (singular or plural)
1- n-class tests: Some courses may have in-class tests that assess students' understanding of the fundamental concepts of information theory
2- Homework and projects: Students may be assigned homework and projects that require them to apply information theory concepts to solve problems related to data representation, communication, and inference
3- Quizzes and assessments: Online courses on information theory may have quizzes and assessments that test students' knowledge and understanding of the course material
4- Discussions and presentations: Students may be required to participate in discussions and give presentations on topics related to information theory, which can help them develop their critical thinking and communication skills

Assessment methods

-Lecturing by using the board
-Showing short ethical films
-Open a discussion on a certain topic

All this is associated with :

1- Written examination
2- Short questions
3- Multiple choice questions
4- Problem solving
5- Essays
6- Oral examination
7- Practical examination
8- Quizzes
9- Oral semesters

D. General and Transferable Skills (other skills relevant to employability and personaldevelopment)

.In order to develop the thinking skills of the students:

D1(Problem-solving: Students learn to apply OOP concepts and C++ programming language to solve problems related to software development, game development, graphic designs, and other fields

D2- Analytical thinking: Students learn to break down complex problems into smaller components, identify key variables, and develop models to represent and analyze data ,

D3- Attention to detail: Students learn to write efficient and performant code, which requires attention to detail and a focus on accuracy

D4- Communication skills: Students may be required to work in groups to develop software projects, which can help them develop their communication and collaboration skills

11. Course Structure					
Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1	5	Program ming of C++	C++ Language (Quick review)	Theoretical lecture	
2	5	C++ Language (Quick review)	Functions, classes, and objects	Theoretical lecture	Quiz
3	5	Function in C++ (Deep Look)	previous topics	Theoretical lecture	homework
4	5	Array Function Interaction .	previous topics	Theoretical lecture	Assessment
5	5	Structures and Array of Structures	previous topics	Theoretical lecture	Quiz
6	5	Introduction to Class Fundamentals	previous topics	Theoretical lecture	exam
7	5	Closer Look at Class Member Access	Functions, classes, and objects	Theoretical lecture	homework
8	5	Constructors and Destructors	genetics	Theoretical lecture	Quiz
9	5	Creating Inline Functions Inside a Clas	Creating Inline Functions Inside a Clas	Theoretical lecture	homework
10	5	Arrays of Objects (Classes)	Arrays of Objects (Classes)	Theoretical lecture	Assessment
11	5	Pointers to Objects (Classes)	Pointers to Objects (Classes)	Theoretical lecture	Assessment
12	5	Friend Functions	Friend Functions	Theoretical lecture	Quiz
13	5	Overloading Constructors	Overloading Constructors	Theoretical lecture	Assessment
14	5	Passing Objects (Classes) to Functions	Passing Objects (Classes) to Functions	Theoretical lecture	Assessment
15	5	Final exam		Theoretical lecture	exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	- C++ from the Ground Up, Herbert Scheldt, Third Edition , McGraw-Hill/Osborne,2013.
Special requirements (include for example workshops, periodicals, IT software, websites)	https://www.programiz.com/cpp-programming/oop
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	no
Minimum number of students	15
Maximum number of students	50

Electronic Circuits

COE 204

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer engineering
3. Course title/code	Electronic Circuits
4. Programme(s) to which it contributes	Electronic Engineering
5. Modes of Attendance offered	Full time/actual attendance
6. Semester/Year	Full/2023-2024
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	September /2023

9. Aims of the Course

The course or subject “Electronic Circuits” aims to introduce students to the study of the basic devices and configurations of electronic systems. The specific aim is to familiarize students with the operation, analysis and design of electronic circuits (diode, transistor, and amplifier circuits). The electronic circuits including: diode circuit applications, bipolar junction transistor (BJT) circuits, field-effect transistor (FET) circuits, multistage (compound) amplifiers, and feedback amplifiers.

10. Learning Outcomes, Teaching, Learning and Assessment Method

A. Knowledge and understanding

A1. Understand the operations of diode circuits and applicationsA2. Analyze and design different diode circuits.

A3. Knowledge the operations of transistor devices: BJT and MOSFET.

A4. Analyze and design DC bias circuits for BJTs/FETs for the basiccategories (CE/CS, CC/CD, and CB/CD).

A5. Perform analysis at AC of amplifiers based on BJTs and FETs usingsmall-signal models.

A6. Study, analyze, and design multistage and compound amplifiers.A7. Knowledge and analyze feedback amplifiers and its topologies. A8. Understand and analyze frequency responses of amplifiers.

B. Subject-specific skills

B1. Knowledge of the fundamentals of electronic circuits, properties ofelectronic devices, applicable models and operating margins.

B2. Correct application of the theory and resolution techniques in theanalysis of electronic circuits.

B3. Ability to solve simple exercises of electronic circuit design from agiven set of specifications.

Teaching and Learning Methods

- Lectures (theoretical explanation supporting by examples)
- Tutorials (solving problems and exercises)

Assessment methods

- Daily test, Quiz, Homework, Report, Other (5% + 5% = 10%)
- 1st term exam (20%)
- 2nd term exam (20%)
- Final exam (50%)

C. Thinking Skills

C1. Knowledge to reasonably justify the steps followed when solving aproblem of electronic circuit analysis and design.

C2. Ability to solve problems with initiative, decision making, creativity, critical reasoning

D. General and Transferable Skills (other skills relevant to employabilityand personal development)

D1. Ability to communicate with others through scientific discussionsduring lectures

D2. Knowledge to perform measurements, calculations, assessments,valuations, surveys, studies, reports, work plans and similar work.

11. Course Stricture					
First Term					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-10	30	A1 A2	The P-N Junction Diode Circuits and Applications Diode operation regions (forward, reverse, and zener), diode resistance levels (dc/static, ac/dynamic, and average ac), diode modeling (piecewise-linear, simplified, and ideal), diode notation and specification sheets, load-line analysis, diode switching circuits (logic gates), rectification and capacitor filters, clippers, clampers, voltage multipliers, zener diode characteristics and applications (ac regulation, dc referencing, and dc regulation).	Lectures and Tutorials	Daily test, Quiz, Homework, Report, Other (10%) 1st term exam(40%)

11-15	15	A3 A4	Bipolar Junction Transistor(BJT) Circuits	=	=
			Construction, operation, configurations and characteristics, operating regions, load-lines, limits of operation (power dissipation and breakdown voltage), specification sheets, casing and terminal identifications, BJT as an amplifier, dc biasing circuits (design, analysis, and stability), the BJT inverter (transistor switch).		
			The general feedback structure, some properties of negative feedback, the four basic feedback topologies (voltage-series, voltage-shunt, current series, and current- shunt), gain, impedance, bandwidth, and Stability.		

12. Infrastructure	
Required reading: • Core Texts • Course Materials • Other	• T. Floyd, ***Electronic Devices***, Pearson Prentice Hall, Inc., 7th Edition 2005. • R. L. Boylestad and L. Nashelelsky, ***Electronic Devices and Circuit theory***, Pearson Prentice Hall, Inc., 8th Edition, 2002. • T. F. Bogart, ***Electronic Devices and Circuits***, Merrill Publishing Company, 1986. • Lectures
Community-based fa`cilities (include for example, guest Lectures , internship , field studies)	
13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

Computer Architecture

COE 203

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering
3. Course title/code	Computer Architecture / COE203
4. Programme(s) to which it contributes	B. Sc. in Computer Engineering
5. Modes of Attendance offered	curriculum system
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	November 2023

9. Aims of the Course

1. Discuss the basic concepts and structure of computers.
2. Understand concepts of register transfer logic and arithmetic operations.
3. Explain different types of addressing modes and memory organization.
4. Learn the different types of serial communication techniques.
5. Summarize the Instruction execution stages.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- Know instruction set architecture (ISA) and hardware design of a specific CPU (MIPS)

A2- Know and be able to use the principles of ISA design

A3-Develop Laplace Transformed network for steady state and transient analysis.

A4-Analyses electrical network parameter for different application.

A5-Determine the elements required to network synthesis method

B. Subject-specific skills

B1- Be able to make and defined design decisions regarding (ISA, Pipelining, and Multiprocessors)
B2- Be able to determine the performance of a computer system and computer performance measures an information to make decisions about choice of computer to be used for specific purpose
B3- Be able to make decisions about computer architecture design and defined those decisions
B4- Be able to continue to learn necessary principles of computer architecture
B5- Be able to work more effectively in teams (groups)

Teaching and Learning Methods

1- Through the presentation of a theoretical explanation with the aid of white board and 'Data Show', to illustrate syllabus (examples and exercises) and using text books.

Assessment methods

For the purpose of evaluation is used
1. Method of rapid tests and snap
2. Identify some homework
3. quarterly exams

C. Thinking Skills

C.1. Modeling the problem step by step.
C.2.Solving the problem with the aid of known methods

Teaching and Learning Methods

Teaching and Learning Methods for part
1. explain the required terms
2. to discuss ideas and share knowledge
3. methodology and use of text books

Testing through discussion (singular or plural)
1- Writing Testing
2- Oral discussion

Assessment methods

-Lecturing by using the board
-Showing short ethical films
-Open a discussion on a certain topic
All this is associated with :

1- Written examination
2- Short questions
3- Multiple choice questions
4- Problem solving
5- Essays
6- Oral examination
7- Practical examination
8- Quizzes,
9- Oral semesters

D. General and Transferable Skills (other skills relevant to employability and personaldevelopment)

.In order to develop the thinking skills of the students:

D1(
D2- ,
D3-
D4-

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	B.1, B.2, C.1	Introduction to Computer Architecture	Lectures (power point)	Quiz
2	3	B.1, B.2, C.1	Register Transfer Language (RTL)	Lectures (power point)	Quiz
3	3	B.1, B.2, C.1	Data movement Arithmetic and logic Micro-operations	Lectures (power point	Assignments and Quiz
4	3	B.1, B.2, C.1	Concept of bus and timing in register transfer	Lectures (power point	Assignments and Quiz
5	3	B.1, B.2, C.1	Basic Computer Organization	Lectures (power point)	Quiz
6	3	B.1, B.2, C.1	Timing and . Control, Execution of Instructions	Lectures (power point	Homework and Quiz
7	3	B.1, B.2, C.1	Design of Basic Computer	Lectures (power point	Assignments and Quiz
8	3	B.1, B.2, C.1	Micro-programmed Control Unit	Lectures (power point)	Quiz
9	3	B.1, B.2, C.1	Microinstruction formats, Address sequencer	Lectures (power point	Assignments and Quiz
10	3	B.1, B.2, C.1	CPU Organization	Lectures (power point	Assignments and Quiz
11	3	B.1, B.2, C.1	Addressing Modes, Instruction Format	Lectures (power point)	Quiz
12	3	B.1, B.2, C.1	CPU organization with large registers, stacks and handling of interrupts & subroutines	Lectures (power point	Assignments and Quiz
13	3	B.1, B.2, C.1	Arithmetic Processor Design	Lectures (power point	Assignments and Quiz
14	3	B.1, B.2, C.1	Pipelining Parallel Processing, Principle of pipelining	Lectures (power point	Assignments and Quiz
15	3	B.1, B.2, C.1	Instruction and arithmetic pipelines, Hazards of pipelining	Lectures (power point	Assignments and Quiz

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

Operating Systems

COE 201

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering Department
3. Course title/code	Operating Systems/
4. Programme(s) to which it contributes	ABET
5. Modes of Attendance offered	Curriculum System
6. Semester/Year	Fall /2023
7. Number of hours tuition (total)	60
8. Date of production/revision of this specification	November 2023
9. Aims of the Course	
1- It familiarizes the student with the notion of operating systems, presents a history of operating systems, and discusses hardware and software 2- It introduces various process concepts and discusses storage management through various forms of partitioned multiprogramming systems 3- impart a detailed understanding of the algorithms and techniques used within operating systems	

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1. Develop an understanding of the principles of operating systems

A2- Understanding of system security and access control

A3- Develop insight into process management and scheduling issues. Understand memory management operation.

A4. Develop an understanding of file system implementation and of multiple levels of hardware support and management.

A5. Understand the concept of cooperating processes, including

B. Subject-specific skills

B 1. Proficiency in managing processes, memory, and file systems
B 2- Ability to analyze and optimize system performance
B3. Design and implementation of basic OS components
B4. Problem solving in OS-related scenarios
B5. Effective communication and collaboration in team-based OS projects

Teaching and Learning Methods

1- Individual and group specialized laboratory experiments
2- Various exploratory techniques.
3- Overlap between old and modern methods of teaching

Assessment methods

Assessment methods for an Operating Systems course may comprise exams, quizzes, Lecturing by using the board, Open discussion on a certain topic, Written examination, Short questions, Problem solving

C. Thinking Skills

C1- Critical thinking: Students learn to analyze and evaluate information, identify patterns, and draw conclusions based on evidence
C2- Problem-solving: Students learn to apply Operating Systems concepts to solve problems related to data representation, communication, and inference
C3- Mathematical reasoning: Students learn to use mathematical tools and techniques to quantify information, perform inference, and study the relationship between information and learning

D. General and Transferable Skills (other skills relevant to employability and personal development)

.In order to develop the thinking skills of the students:

D1- Personal Motivation, Organisation and Time Management, Manage and prioritise your workload and time effectively
D2- Information Technology, Effectively use computers and technology.
D3- Continuous Improvement, Facilitated employee training in the Chrysler Operating System through workshop applications of disciplined continuous improvement.
D4- Field Logistics, Customer Service, All Design/Floor Plans/Engineering, Permitting, Code Compliance, Forms creation.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1	2	Introduction and General Aspects. History of Operating Systems		Theoretical lecture	Lecturing by using the board
2	2	Operating System Structure Process Management Process Concept (the process, process state)		Theoretical lecture	Lecturing by using the board
3	2	Process Management Process Concept (Process Control Block)		Theoretical lecture	quizzes
4	2	CPU Scheduling: Scheduling Criteria		Theoretical lecture	
5	2	CPU Scheduling: Scheduling Algorithms		Theoretical lecture	Short questions
6	2	Process Synchronization: Critical section Problem Semaphores + monitors		Theoretical lecture	Lecturing by using the board
7	2	Deadlock: Definition, Necessary Condition and Resource Allocation. Deadlock-Prevention.		Theoretical lecture	Short questions
8	2	Deadlock: Deadlock Avoidance. Deadlock Detection. Recovery from Deadlock		Theoretical lecture	quizzes
9	2	Memory Management Storage Organization Variable Portion Multiprogramming. External & Internal Fragmentation. Storage Compaction		Theoretical lecture	Lecturing by using the board
10	2	Memory Management Storage Placement Strategies. Virtual Memory Paging (include page replacement). Segmentation		Theoretical lecture	Open discussion on a certain topic

11	2	File System Implementation Allocation Methods Contiguous		Theoretical lecture	Lecturing by using the board
12	2	File System Implementation Linked and Indexed Allocation		Theoretical lecture	quizzes
13	2	Secondary Storage Structure: Disk Scheduling: (FCFS, SSTF, SCAN, C-SCAN and Look Scheduling)		Theoretical lecture	Open discussion on a certain topic
14	2	Distributed System (Simple Definition) Protection &security Case study (Windows)		Theoretical lecture	Lecturing by using the board
15	2	Final Exam		Theoretical lecture	exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1- Avi Silberschatz, Peter Baer Galvin, Greg Gagne,"operating system concepts" 8th edition 2- Andrew S. Tanenbaum "Operating Systems Design and implementation," Third Edition
Special requirements (include for example workshops, periodicals, IT software, websites)	https://www.udacity.com/course/introduction-to-operating-systems--ud923
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	60

Course Specifications

COE 208

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Electronics & Communication Engineering Department
3. Course title/code	Engineering drawing by AUTOCAD
4. Programme(s) to which it contributes	B. Sc. in Electronics & Communication Engineering
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall2023
7. Number of hours tuition (total)	60 hours
8. Date of production/revision of this specification	Nov. 2023
9. Aims of the Course	
This module will provide students with an understanding of the scientific method sufficient to detect pseudoscience in its many guises: paranormal phenomena, free-energy devices, alternative medicine, intelligent design creationism/creation science, denial of human-induced climate change, propaganda, denial of science-based- medicine, misuse of data and statistics, and many others. Students will learn to think critically and creatively and to question outlandish claims, hype, propaganda, outright nonsense.	

10· Learning Outcomes, Teaching, Learning and Assessment Method

1- Understand research terminology.
2- To be aware of the ethical principles of research, ethical challenges and approval processes.
3- Describe quantitative, qualitative and mixed methods approaches to research.
4- Identify the components of a literature review process.
5- Critically analyze published research.
6- To locate, analyses and synthesize information about the diversity of research approaches.
7- Develop an ability to apply effective, creative and innovative solutions to research problems.
8- Develop teamwork, and interpersonal skills in negotiating research programs via use of problem solving and critical thinking exercises in research case studies.

B. Subject-specific skills

1. Information literacy and research skills:
   - Effective information retrieval from various sources
   - Assessing the reliability and credibility of information
   - Ethical considerations in research and information use

2. Data collection and analysis:
   - Qualitative data collection methods (interviews, surveys, observations)
   - Quantitative data analysis techniques (descriptive statistics, inferential statistics)
   - Data visualization and interpretation

3. Writing and presenting research findings:
   - Organizing research papers and reports
   - Academic writing conventions and citation styles
   - Effective oral presentation skills and visual aids usage

4. Collaboration and teamwork in research:
   - Team dynamics and effective communication
   - Collaborative research project management
   - Resolving conflicts and leveraging diverse perspectives

5. Ethical considerations in research:
   - Research ethics and integrity
   - Informed consent and participant protection
   - Addressing ethical challenges in research design and implementation

Teaching and Learning Methods
This module will be taught through classroom lectures (5hrs/week). The lecture material will be reinforced and expanded on through recitation sessions (3hrs/week) and homework.
Assessment methods
Quizzes (2) and Home-works (1 per month) = 10% Exams (2 per semester) = 40% Final Exam = 50% Total = 100%
C. Thinking Skills To value hard-work to reach excellence and serve people using modern science
D. General and Transferable Skills (other skills relevant to employability and personal development) :In order to develop the thinking skills of the student To know that it is only through knowledge we can develop our country and society towards a better life To know that we need life-long learning to keep up-to-date with scientific developments

11. Course Structure					
Week	Hours	ILOs	Course Overview: What is research?, The Scientific Method?, Critical & Creative Thinking?	Teaching Method	Assessment Method
1,2	6	Understanding Parametric Curves	Parametric Equations for Curves	Lecture	Quiz/ Exam
3,4,5	9	Thorough Comprehension of 3-D surfaces	Functions of Two Variables, Tangent Approximation and Optimization	Lecture	Quiz/ Exam
7,7	6	Understanding of Gradient	Chain Rule, Gradient and Directional Derivatives main	Lecture	Quiz/ Exam
8,9	6	Set up of Constrained Optimization Problems	Lagrange Multipliers and Constrained Differentials	Lecture	Quiz/ Exam
10,11	6	Ability to set up and compute double integral	Double Integrals	Lecture	Quiz/ Exam
12,13	6	understanding of line integrals for work and flux	Vector Fields and Line Integrals	Lecture	Quiz/ Exam
14,15	6	Ability to set up and compute triple integral	Triple Integrals	Lecture	Quiz/ Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS	Edwards, Henry C., and David E. Penney. Multivariable Calculus. 6th ed. Lebanon, IN: Prentice Hall, 2002. ISBN: 9780130339676
13. Admissions	
Pre-requisites	MATH II
Minimum number of students	15
Maximum number of students	50

Electromagnetic Field

ECE 210

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Electronics and Communication
3. Course title/code	Electromagnetic Field / ECE210
4. Programme(s) to which it contributes	B. Sc. in Electronics & Communication Engineering
5. Modes of Attendance offered	curriculum system
6. Semester/Year	Semester
7. Number of hours tuition (total)	45
8. Date of production/revision of this specification	November 2023

9. Aims of the Course

1. To introduce the basic mathematical concepts related to electromagnetic vector fields.
2. To impart knowledge on the concepts of electrostatics, electric potential, energy density and their applications.
3. To impart knowledge on the concepts of magnetostatics, magnetic flux density, scalar and vector potential and its applications.
4. To impart knowledge on the concepts of Faraday‘s law, induced emf and Maxwell‘s equations.
5. To impart knowledge on the concepts of Concepts of electromagnetic waves and Transmission lines.

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- Understand the basic mathematical concepts related to electromagnetic vector fields.

A2- Apply the principles of electrostatics to the solutions of problems relating to electric field and electric potential, boundary conditions and electric energy density.

A3- Apply the principles of magneto statics to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density.

A4- Understand the concepts related to Faraday‘s law, induced emf and Maxwell‘s equations.
A5. Apply Maxwell‘s equations to solutions of problems relating to transmission lines and uniform plane wave propagation.
A6- Be able to continue to learn necessary principles of electrical circuit analysis
A7- Be able to work more effectively in teams (groups)

B. Subject-specific skills
B.1. Solving the effect of electric field problems.
B.2. Solving the effect of magnetic field problems.

Teaching and Learning Methods

1- Through the presentation of a theoretical explanation with the aid of white board and ‘Data Show’, to illustrate syllabus (examples and exercises) and using text books.

Assessment methods

For the purpose of evaluation is used
1. Method of rapid tests and snap
2. Identify some homework
3. quarterly exams

C. Thinking Skills

C.1. Modeling the problem step by step.
C.2.Solving the problem with the aid of known methods

Teaching and Learning Methods

Teaching and Learning Methods for part
1. explain the required terms
2. to discuss ideas and share knowledge
3. methodology and use of text books

Testing through discussion (singular or plural)
1- Writing Testing
2- Oral discussion

Assessment methods

-Lecturing by using the board
-Showing short ethical films
-Open a discussion on a certain topic

All this is associated with :

1- Written examination
2- Short questions
3- Multiple choice questions
4- Problem solving
5- Essays
6- Oral examination
7- Practical examination
8- Quizzes,
9- Oral semesters

D. General and Transferable Skills (other skills relevant to employability and personaldevelopment)

.In order to develop the thinking skills of the students:

D1(
D2- ,
D3-
D4-

11. Course Structure					
Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1	3	B.1, B.2, C.1	Vector Algebra	Lectures (power point)	Quiz
2	3	B.1, B.2, C.1	Coordinate System	Lectures (power point)	Quiz
3	3	B.1, B.2, C.1	Coulombs Law	Lectures (power point	Assignments and Quiz
4	3	B.1, B.2, C.1	Electrical Flux Intensity	Lectures (power point	Assignments and Quiz
5	3	B.1, B.2, C.1	Coulombs Distribution	Lectures (power point)	Quiz
6	3	B.1, B.2, C.1	Point Charge	Lectures (power point	Homework and Quiz
7	3	B.1, B.2, C.1	Lettering and Dimensioning	Lectures (power point	Assignments and Quiz
8	3	B.1, B.2, C.1	Field of Line Charge	Lectures (power point)	Quiz
9	3	B.1, B.2, C.1	Volume Charge	Lectures (power point	Assignments and Quiz
10	3	B.1, B.2, C.1	Field of Sheet of Charge	Lectures (power point	Assignments and Quiz
11	3	B.1, B.2, C.1	Gauss Law	Lectures (power point)	Quiz
12	3	B.1, B.2, C.1	Electric Flux density	Lectures (power point	Assignments and Quiz
13	3	B.1, B.2, C.1	Maxwell's First equation	Lectures (power point	Assignments and Quiz
14	3	B.1, B.2, C.1	Application of Gauss Law	Lectures (power point	Assignments and Quiz
15					

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures ,internship,field studies)	

Crimes of the Defunct Baath Party

COE 209

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer engineering
3. Course title/code	COE209
4. Programme(s) to which itcontributes	B. Sc. In Computer engineering
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	1st semester 2023-2024
7. Number of hours tuition (total)	45 hrs
8. Date of production/revision of this specification	
9. Aims of the Course	
1- 2- 3- 4-	

10· Learning Outcomes, Teaching ,Learning and Assessment Methode
A- Knowledge and Understanding A1.. Observation A2- Comprehension A3-Application A4.Analysis A5.Synthesis A6.Evaluation

B. Subject-specific skills

B1-
B2 -
B3-
B4-
B5-
B6-
B7-
B8-

Teaching and Learning Methods

1- Individual and group specialized laboratory experiments
2- Various exploratory techniques.
3- Overlap between old and modern methods of teaching

Assessment methods

C. Thinking Skills

C1-
C2-
C3-

Teaching and Learning Methods

Teaching and Learning Methods for part
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Testing through discussion (singular or plural)
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Assessment methods

-Lecturing by using the board
-Showing short ethical films
-Open a discussion on a certain topic

All this is associated with :
(١ Written examination
(٢ Short questions
(٣ Multiple choice questions
(٤ Problem solving
(٥ Essays
(٦ Oral examination
(٧ Practical examination
(٨ Quizzes,
(٩ Oral semesters

11. Course Structure

Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1					
2					
3					
4					
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6					
7					
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9					
10					
11					
12					
13					
14					
15					

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	
Minimum number of students	
Maximum number of students	

Logic Circuit Design

COE 206

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering
3. Course title/code	Logic Circuit Design / COE206
4. Programme(s) to which it contributes	B. Sc. in Computer Engineering
5. Modes of Attendance offered	curriculum system
6. Semester/Year	Fall semester 2023-2024
7. Number of hours tuition (total)	60
8. Date of production/revision of this specification	November 2023

9. Aims of the Course

1. Explain digital system concept (express analog to digital conversion, use binary number system, and realize conversion between various number systems).
2. Design fundamental digital systems (recognize logic gates, apply Boolean algebra, employ Karnaugh map for digital system optimization, develop combinational logic circuits such as adder, subtracter, encoder, decoder, multiplexer and demultiplexer, recognize types of Flip-flops, and design sequential logic circuits).
3. Analyze fundamental digital systems (calculate input - ouput relationship in digital systems, recognize state diagrams and tables, and analysis sequential logic circuits).

10· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Knowledge and Understanding

A1- Know instruction set architecture (ISA) and hardware design of a specific CPU (MIPS)

A2- Know and be able to use the principles of ISA design

A3-Develop Laplace Transformed network for steady state and transient analysis.

A4-Analyses electrical network parameter for different application.

A5-Determine the elements required to network synthesis method

B. Subject-specific skills

B1- Be able to design and analyze sequential logic circuits.
B2- Be able to determine all logic modules need to implement specific logic circuit
B3- Reinforce theory and techniques taught in the classroom through experiments and projects in the laboratory.
B4- Be able to continue to learn necessary principles of computer architecture
B5- Be able to work more effectively in teams (groups)

Teaching and Learning Methods

1- Through the presentation of a theoretical explanation with the aid of white board and 'Data Show', to illustrate syllabus (examples and exercises) and using text books.

Assessment methods

For the purpose of evaluation is used
1. Method of rapid tests and snap
2. Identify some homework
3. quarterly exams

C. Thinking Skills

C.1. Modeling the problem step by step.
C.2.Solving the problem with the aid of known methods

Teaching and Learning Methods

Teaching and Learning Methods for part
1. explain the required terms
2. to discuss ideas and share knowledge
3. methodology and use of text books

Testing through discussion (singular or plural)
1- Writing Testing
2- Oral discussion

Assessment methods
-Lecturing by using the board -Showing short ethical films -Open a discussion on a certain topic All this is associated with : 1- Written examination 2- Short questions 3- Multiple choice questions 4- Problem solving 5- Essays 6- Oral examination 7- Practical examination 8- Quizzes, 9- Oral semesters

D. General and Transferable Skills (other skills relevant to employability and personaldevelopment)
.In order to develop the thinking skills of the students: D1(D2- , D3- D4-

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	B.1, B.2, C.1	Course Overview	Lectures (power point)	Quiz
2	3	B.1, B.2, C.1	Introduction to Digital Systems . Number Systems and Conversions	Lectures (power point)	Quiz
3	3	B.1, B.2, C.1	Boolean Algebra and Logic Gates	Lectures (power point	Assignments and Quiz
4	3	B.1, B.2, C.1	Minimization Methods and Don't care conditions	Lectures (power point	Assignments and Quiz
5	3	B.1, B.2, C.1	Representation and implementation of Boolean circuits using other logic gates.	Lectures (power point)	Quiz
6	3	B.1, B.2, C.1	Tutorials, review and study guide of first exam material	Lectures (power point	Homework and Quiz
7	3	B.1, B.2, C.1	Analysis Procedure of combinational circuits	Lectures (power point	Assignments and Quiz
8	3	B.1, B.2, C.1	Combinational Circuits design, BCD Display	Lectures (power point)	Quiz
9	3	B.1, B.2, C.1	Adder and Subtractor, Magnitude comparators	Lectures (power point	Assignments and Quiz
10	3	B.1, B.2, C.1	Multiplexers, Encoders, and Decoders	Lectures (power point	Assignments and Quiz
11	3	B.1, B.2, C.1	Tutorials, review and study guide of second exam material	Lectures (power point)	Quiz
12	3	B.1, B.2, C.1	Sequential Circuits: Latches and Flip flops	Lectures (power point	Assignments and Quiz
13	3	B.1, B.2, C.1	Analyzing Sequential Circuits,	Lectures (power point	Assignments and Quiz

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	
Special requirements (include for example workshops, periodicals, IT software, websites)	
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	
Minimum number of students	15
Maximum number of students	50