نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة .كلكامش

الكلية/ المعهد: كلية الهندسة

القسم العلمي: قسم هندسة الحاسوب

اسم البرنامج الأكاديمي او المهني: بكالوريوس

اسم الشهادة النهائية: بكالوريوس في هندسة الحاسوب

النظام الدراسي: مقررات

تاريخ اعداد الوصف:

التوقيع :

اسم رئيس القسم:

التاريخ :

التوقيع :

اسم المعاون العلمي:

التاريخ :

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ ٢٠٢٥/٨/١٤

التوقيع

مصادقة السيد العميد

TEMPLATE FOR COURSE SPECIFICATION

COMPUTER PROGRAMMING

HIGHEREDUCATION PERFORMANCERE VIEW: PROGRAMMERE VIEW

COURSE SPECIFICATION

A brief summary of the main features of this course and the learning outcomes that a typical student might reasonably expect to achieve and demonstrate if he/she utilizes the learning opportunities provided is contained in this Course Specification. This document should be cross referenced with the program specification.

1.Teaching Institution	College of Engineering Gilgamesh Ahliya University
2.University Department/Centre	Computer Engineering Department (COE)
3.Course title/code	Computer Programming / COE 109
4.Modes of Attendance offered	There is only one delivery mode, which is a "Day Program". On campus, the students are full-time students. The students attend a face-to-face program for the entire day. Regular subjects run for 30 weeks during the academic year.

5.Semester/Year	1st and 2nd Academic Semesters 2022 – 2023
6.Number of hours tuition(total)	60 hrs. /2 hrs. Per week Theory. 30 hrs. / 1 hrs. per week Lab.
7.Date of production/revision of this	November/2022

8.Aims of the Course
A1. This course aims to help students to learn how to use C++ programming language to solve real-life and scientific problems. The objective of the course is to provide students with confidence of their ability to write small useful programs.
A2 . Additionally, the course covers program debugging, testing, and algorithm development in detail.
A3 . Under supervision of our staff, students will test all their homework programs including some examples on a computer in the class laboratory or on their personal computers.
A4. At the end of each section, quizzes are given to students so lecturer can ensure they are on track.

9. Learning Outcomes, Teaching ,Learning and Assessment Method
A. Cognitive goals.
A1. Programming principles. A2. Algorithm. A3.C++ Programming.

A4. Variables in C++.

A.5 Unary Operators.

A6. Operational Operators.

A7. Selection Statements.

A8.If Statements.

A9.Switch Statements.

A10.Loop Statement.

A11.Do/while Statement.

A12.For statements.

A13.Nested Loop.

A14.Function

A15.Parameters.

A16.Pointers.

A17 Arrays.

A18.Initializing Array Elements .

A19.Accessing Array Elements.

A20.Read / Write / Process Array Elements.

A21.Array of Two Dimension: Declaration of 2D-Arrays

A22.Read / Write / Process Array Elements.

A23.Member Function of String stdlib Library.

A24.Structures. The Three Ways for Declare the Structure.

A25.Array of Structures.

A26.The Files.

B. The skills goals special to the course

Upon successful completion of the course, students should be able to

B1. Read given source code in C++ and understand its behavior.

B2. Extend existing source code for new features.

B3. Write original source code to solve an engineering problem.

B4. Organize source code in a modular form.

B5. Design and implement dynamic data structures using user-defined data types.

B6. Read and write C++ programs that use dynamic data structures.

B7. Read and write C++ programs that use structures.

Teaching and Learning Methods

1. Lectures.
2. Tutorials.
3. Homework and Assignments.
4. Tests and Exams.
5. In-Class Questions and Discussions.
6. Connection between Theory and Application.
7. In- and Out-Class oral conservations.

Assessment methods

1. Lab 2. Quizzes and exams 3. homework 4. assignments
C. Affective and value goals
C1. Ability to analyze. C2. Ability to program the idea. C3.Ability to execute.
Teaching and Learning Methods
1. Lectures 2. Homework 3. Lab. Experiments. 4. Discussions
Assessment methods
1. Quizzes and exams 2. homework 3. Lab 4. assignments

First year /First Semester

Course Structure					
Week	Hours	ILOs	Unit/ Moduleor Topic Title	Teaching Method	Assessment Method
1	2 theory 1 labs.	A1	Overview to Programming Language	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
2	2 theory 1labs.	A2	Algorithms	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
3	2 theory 1 labs.	A3	Character set Identifiers Getting Started with C++. Variables Declaration	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
4	2 theory 1 labs.	A4	Variables Constants Arithmetic Operations The “math.h” Library Unary Minus Increment and /decrement Operators.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
5	2 theory 1 labs.	A5	Unary Minus Increment and /decrement Operators.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

6	2 theory 1 labs.	A6	Operational Assignment Operators . Relational Operators. Logical operators. Bitwise Operator. Logical Operators. Bitwise Operator.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
7	2 theory 1 labs.	A7	Selection Statements the Single Selection. The Switch Selection Statements.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
8	2 theory 1 labs.	A8	Nested If and If/else Statements If Statement Structure Conditional Statement	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
9	Exam	To evaluate the students	Monthly exam		By Exam
10	2 theory 1 labs	A9	The Switch Selection Statement.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
11	2 theory 1 labs	A10	While Repetition Structure. Do/While Statement for Statement	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
12	2 theory 1 labs	A11	Do/While Statement	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

13	2 theory 1 labs	A12	For Statement	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
14	2 theory 1 labs	A13	Break and Continue Control Statements Nested Loops	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
15	Exam	To evaluate the students	Monthly Exam		By Exam

First year /Second Semester

16	2 theory 1 labs.	A14	Function	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
17	2 theory 1 labs.	A15	Passing Parameters. Passing by Value. Passing by Reference.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
18	2 theory 1 labs.	A16	Pointers	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
19	2 theory 1labs.	A17	Array of One Dimension: Declaration of Arrays.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
20	2 theory 1 labs	A18	Initializing Array Elements	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
21	2 theory 1 labs	A19	Accessing Array Elements.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
22	2 theory 1 labs.	A20	Read / Write / Process Array Elements.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

23	2 theory 1 labs.	A21	Array of Two Dimension: Declaration of 2D-Arrays.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
24		To evaluate the students	Monthly Exam		By Exam
25	2 theory 1 labs.	A22	Read / Write / Process Array Elements.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
26	2 theory 1 labs.	A23	Member Function of String stdlib Library.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
27	2 theory 1 labs.	A24	Structures. The Three Ways for Declare the Structure.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
28	2 theory 1 labs.	A25	Array of Structures.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

29	2 theory 1 labs.	A26	The Files	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
30		To evaluate the students	Monthly Exam		By Exam

TEMPLATE FOR COURSE SPECIFICATION

INFORMATION TECHNOLOGY

HIGHEREDUCATION PERFORMANCERE VIEW: PROGRAMMERE VIEW

COURSE SPECIFICATION

A brief summary of the main features of this course and the learning outcomes that a typical student might reasonably expect to achieve and demonstrate if he/she utilizes the learning opportunities provided is contained in this Course Specification. This document should be cross referenced with the program specification.

1.Teaching Institution	College of Engineering Gilgamesh Ahliya University
2.University Department/Centre	Computer Engineering Department (COE)
3.Course title/code	INFORMATION TECHNOLOGY / COE 110
4.Modes of Attendance offered	There is only one delivery mode, which is a "Day Program". On campus, the students are full-time students. The students attend a face-to-face program for the entire day. Regular subjects run for 2 Semesters each 15 weeks during the academic year.
5.Semester/Year	1st and 2nd Academic Semesters 2022 – 2023
6.Number of hours tuition(total)	60 hrs. /2 hrs. Per week Theory. 30 hrs. / 1 hrs. per week Lab.
7.Date of production/revision of this	November/2022

8.Aims of the Course
A1. This course aims to help students to learn how to use C++ programming language to solve real-life and scientific problems. The objective of the course is to provide students with confidence of their ability to write small useful programs.

A2 . Additionally, the course covers program debugging, testing, and algorithm development in detail.
A3 . Under supervision of our staff, students will test all their homework programs including some examples on a computer in the class laboratory or on their personal computers.
A4. At the end of each section, quizzes are given to students so lecturer can ensure they are on track.

9. Learning Outcomes, Teaching ,Learning and Assessment Method
C. Cognitive goals.
A1. Information Technology. A2. Hardware/Software/Operating Systems/Networks. A3. Numeral Systems. A4. Data Storage. A.5 Data Manipulation. A6. Essentials of the Internet and the Worldwide Web. A7. Electronic Mail and Messaging. A8. Introduction to Communications and Networks. Definitions. A9. Protocols and layering. A10. Introduction to Networks and Internets. A11.Routing and Switching in Networking. A12. Transmission and Bandwidth. A13. Long Distance Communication. A14. Packets, Frames and Error detection. A15. Service paradigm, performance .

D. The skills goals special to the course

When a student successfully completes the course requirements, they will have demonstrated:

B1.Learning about the Communications.

B2. Organization .

B3. Analytical Abilities .

B4. Creativity.

B5 Project Management .

B6. Perseverance .

B7. Problem Solving.

B8. Resourcefulness.

B9. Curiosity.

B10. Interest in Helping Others.

Teaching and Learning Methods

8. Lectures.
9. Tutorials.
10. Homework and Assignments.
11. Tests and Exams.
12. In-Class Questions and Discussions.
13. Connection between Theory and Application.
14. In- and Out-Class oral conservations.

Assessment methods

1. Lab 2. Quizzes and exams 3. homework 4. assignments
C. Affective and value goals
C1. Ability to access to information resources in all forms . C2. Ability to access through a reliable and robust infrastructure. C3.Ability to help to build and grow the commerce and business sector and generate the maximum possible output. C4. To improve efficiency, productivity, and how tools and platforms work together.
Teaching and Learning Methods
5. Lectures 6. Homework 7. Lab. Experiments. 8. Discussions
Assessment methods

1. Quizzes and exams
2. homework
3. Lab
4. assignments

First year /First Semester

Course Structure					
Week	Hours	ILOs	Unit/ Moduleor Topic Title	Teaching Method	Assessment Method
1-2	2 theory 1 labs.	A1	**Information Technology:** Principles, Practices, and Opportunities.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
3-4	2 theory 1labs.	A2	**Hardware/Software/Operating Systems/Networks.**	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
5-6	2 theory 1 labs.	A3	**Numeral Systems:** Binary, Decimal ,Octal and Hexadecimal	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
7-8	2 theory 1 labs.	A4	**Data Storage:** Storage and Input/Output Devices.	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
9-10	2 theory 1 labs.	A5	**Data Manipulation:** computer architecture, machine language, program execution, arithmetic/logic	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

11-12	2 theory 1labs.	A6	**Essentials of the Internet and the Worldwide Web**	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
13-14	2 theory 1 labs.	A7	**Electronic Mail and Messaging, WWW/HTTP, FTP, DNS.**	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
15	**Exam**	**To evaluate the students**	**Semester Exam**		**By Exam**

First year /Second Semester

16-17	2 theory 1labs	A8	**Introduction to Communications and Networks. Definitions**	From 1 to7 of Teaching and Learning Methods	By Exam
18-19	2 theory 1labs	A9	**Protocols and layering:** Protocols suites TCP and UDP, OSI - The seven layers	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
20-21	2 theory 1 labs	A10	**Introduction to Networks and Internets** Physical and Logical Addressing, Resolution and Bindings, ARP and ARP Caching	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
22-23	2 theory 1 labs	A11	**Routing and Switching in Networking –** Intro to Routing Concepts and Protocols	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
24-25	2 theory 1 labs	A12	**Transmission and Bandwidth**: Local Asynchronous Communication	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
26-27	2 theory 1 labs	A13	**Long Distance Communication**: Mode hardware, Leased analog, Optical, Radio frequency	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
28	2 theory 1 labs.	A14	**Packets, Frames and Error detection**: Hardware frame, Byte stuffing, Transmission error,	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method

29	2 theory 1 labs.	A15	**Service paradigm, performance** : Virtual private network, Network performance characteristics	From 1 to7 of Teaching and Learning Methods	From 1 to3 of Assessment Method
30	**Exam**	**To evaluate the students**	**Semester Exam**		**By Exam**

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided.

1. Teaching Institution	Gilgamesh Ahliya University
2. University Department/Centre	College of Engineering/ Computer Engineering Department (COE)

3. Course title/code	Mathematics I/ COE 101
4. Modes of Attendance offered	In class face-to-face mode.The academic year runs from 30 weeks..
5. Semester/Year	1st and 2nd Academic Semesters 2022-2023
6. Number of hours tuition (total)	2 hrs per week/ 60hrs total
7. Date of production/revision of this specification	November2022
8. Aims of the Course	
Provide the opportunity to understand the methods of mathematics in solving problems that are necessary for his academic study of the various subjects.	

9· Learning Outcomes, Teaching ,Learning and Assessment Method
A A1- Domain and range A2- Trigonometric funxtion A3- Definitions A4- Algebra of function A5- Invers function and limits and continuity function A6- Differentiation A7- Application of the derivative A8- anscendental Functions A9- INTEGRATIONS A10- Hyperbolic functions A11- Methods of integration A12- Improper integral A13- numerical integration A14- Applications Of The Definite Integral A15- detrminants A16- MATRICES AND DETERMINANTS A17- Complex numbers B- Subject-specific skills B1. Graph of Functions B2. Limits and Continuity B3. Differentiation B4. Integration
Teaching and Learning Methods

1- Lectures. 2- Tutorials. 3- Homework and Assignments. 4- Tests and Exams. 5- In-Class Questions and Discussions.
Assessment methods
1- Quizzes 2- 1st exam 3- 2nd exam 4- Homework 5- Assignments

First year/ First Semester

Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	A1	Domain and range, simple functions (the absolute value, signum function, greatest integer), inqualities	Lectures	
2	2	A2	Trigonometric funxtion(sine, cosine, tangent, cotangent, secant, and cosecant), identitie	Lectures	
3	2	A3	Definitions(odd function, even function, increasing function, decreasing function, one-one function, on to function, convcaving upward, and concaving down ward)	Lectures	
4	2	A4	Algebra of function and symmetry(about x-axis , y- axis, and origin axis	Lectures	
5	2	A5	nvers function and limits and continuity function(left and right limit)	Lectures	
6	exam	To evaluate the students	First exam		exam
7	2	A6	Differentiation: Techniques of differentiation, Chain rule, implicit differentiation, Higher order differentiation, Applications of differentiation, maxima and minima	Lectures	
8	2	A6	Differentiation: Curve plotting, Differentiation of trigonometric functions	Lectures	
9	2	A7	Application of the derivative(plotting a curve, velocity and acceleration)	Lectures	
10	2	A8	anscendental Functions: (Inverse trigonometric; Natural logarithmic; Exponential and power	Lectures	
11,12	4	A9	INTEGRATIONS	Lectures	
13	exam	To evaluate the students	Second exam		Exam
14	2	A10	Hyperbolic functions(sinh, cosh,tanh, coth) , and invers hyperbolic functions	Lectures	
15	2	A11	Methods of integration: Trigonometric substitutions, completing the squares, and integration by parts.	Lectures	

First year/ Second Semester

Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	A11	Methods of integrations: Partial fractions, integrals involve sin nx, cosmx, and the assumption.	Lectures	
2	2	A12	Improper integral: Definite intergral(proper, improper(convergent, divergent)).	Lectures	
3	2	A13	numerical integration (trapezoidal rule, and simpso's rule).	Lectures	
4,5	4	A14	Applications Of The Definite Integral: Areas between curves, Volumes of revolution.	Lectures	
6,7	4	A14	Applications Of The Definite Integral: length of the curve, and Surface area of revolution	Lectures	
8	exam	To evaluate the students	First exam		exam
9,10	4	A15	detrminants	Lectures	
11,12	4	A16	MATRICES AND DETERMINANTS:defintions, properties, invers of a matrix, and solution of equations.	Lectures	
13, 14	4	A17	Complex numbers: Invented numper system, the argand diagram, addition, subtraction, product, quotient, power and roots	Lectures	
15	exam	To evaluate the students	Second exam		Exam

TEMPLATEFORCOURSESPECIFICATION

DC CIRCUITS ANALYSIS

HIGHEREDUCATION
PERFORMANCEREVIEW:PROGRAMMEREVIEW

COURSE SPECIFICATION

ThisCourseSpecificationprovidesaconcisesummaryofthemainfeaturesofthe

course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1.TeachingInstitution	College of Engineering Gilgamesh Ahliya University
2.UniversityDepartment/Centre	Computer Engineering Department (COE)
3.Course title/code	DC Circuits Analysis / COE105
4.Modesof Attendance offered	There is only one delivery mode, which is a "Day Program". On campus, the students are full-time students. The students attend a face-to-face program for the entire day. Regular subjects run for 15 weeks during the academic semester.
5.Semester/Year	1st and 2nd Academic Semesters 2022 – 2023
6.Number of hourstuition(total)	60 hrs. / 4 hrs., per week 30 hrs. /2 hrs. per week Theory. 30 hrs. / 2 hrs. per week Lab.

7.Dateof production/revision of this specification	November/ 2022

8.Aimsofthe Course
A1. Explain and analyze the voltage/current relationships and operational characteristics of resistors, inductors, capacitors, and voltage and current sources.

A2. Explain and analyze different electrical circuit morphologies. In particular; series and parallel circuit structures, equivalent circuit configurations arrived at by the combination of series and parallel circuit elements such as resistors, inductors, capacitors, current and voltage sources, equivalent circuit configurations arrived at using network theorems such as; Thevenin and Norton equivalent circuits, superposition, and source transformations.
A3. Explain and analyze power and energy dissipation and distribution for DC circuits composed of the elements listed in the first objective.
A4. Design simple electrical circuits, with DC sources, that satisfy specific functional requirements.
A5. Explain and analyze the voltage/current relationships and operational characteristics of resistors, inductors, capacitors, and voltage and current sources.
A6. Explain and analyze different electrical circuit morphologies. In particular; series and parallel circuit structures, equivalent circuit configurations arrived at by the combination of series and parallel circuit elements such as resistors, inductors, capacitors, current and voltage sources, equivalent circuit configurations arrived at using
A7. Explain and analyze power and energy dissipation and distribution for circuits composed of the elements listed in the first objective.
A8. Design simple electrical circuits, that satisfy specific functional requirements.

9. Learning Outcomes, Teaching, Learning and Assessment Method
A. Cognitive goals.
A1. Electricity and Magnetism A2. Solution of linear algebraic equations A3. Matrix operations and inverse of a matrix A4. Complex variables A5. Differential calculus A6. Integral calculus
B. The skills goals special to the course.
A student who successfully fulfills the course requirements will have demonstrated: B1. An ability to define and explain the meaning/function of charge, current, voltage, power, energy, R, L, C, the op-amp, and the fundamental principles of Ohm's law, KVL and KCL including an understanding of electrical safety and the effect of current on humans. B2. An ability to write the equilibrium equations for a given network and solve them analytically, for the steady state solution. B3. An ability to state and apply the principles of superposition, linearity, source transformations, and Thevenin/Norton

equivalent circuits to simplify the analysis of circuits and/or the computation of responses.

B4. An in depth understanding of the behavior of inductances and capacitances, and differentiating

A5. An ability to qualitatively and quantitatively predict and compute the steady state responses of basic circuits using the phasor method.

B6. An ability to compute effective and average values of periodic signals and compute the instantaneous and average powers delivered to a circuit element.

B7. An ability to compute the complex power associated with a circuit element and design a circuit to improve the power factor in an AC circuit.

B8. An ability to determine the conditions for maximum power transfer to any circuit element.

Teaching and Learning Methods

1. Lectures.
2. Tutorials.
3. Homework and Assignments.
4. Lab. Experiments.
5. Tests and Exams.
6. In-Class Questions and Discussions.
7. Connection between Theory and Application.
8. Field Trips.
9. Extracurricular Activities.
10. Seminars.
11. In- and Out-Class oral conservations.
12. Reports, Presentations, and Posters.

Assessment methods

1. Lab
2. Quizzes and exams
3. homework
4. assignments

C. Affective andvaluegoals

C1. Ability to analyze.
C2. Ability to solve problems.
C3. Ability to calculate the results.

Teaching and Learning Methods
1. Lectures 2. Homework 3. Lab. Experiments. 4. Discussions
Assessment methods
1. Quizzes and exams 2. homework 3. Lab 4. assignments
D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)
D1. Ability to carry out independent study to take notes, to carry out background reading. D2. Problem Solving based on understanding. D3. Ability to learn and remember key facts. D4. Self-discipline and self-motivation.

10.Course Structure

Week	Hours	ILOs	Unit/Moduleor TopicTitle	Teaching Method	Assessment Method
1	2 the. 2 exp.	items 1,2,3 of section 6	Introduction and color coding, temperature effect	From 1 to12 of section 11	Quiz
2	2 the. 2 exp.	items 1,2,3 of section 6	Introduction and color coding, temperature effect	From 1 to12 of section 11	Quiz
3	2 the. 2 exp.	items 1,2,3 of section 6	Sources and source transformation	From 1 to12 of section 11	Quiz
4	2 the. 2 exp.	items 1,2,3 of section 6	Ohm's law, equivalent resistance	From 1 to12 of section 11	Quiz
5	2 the. 2 exp.	items 1,2,3 of section 6	Ohm's law, equivalent resistance	From 1 to12 of section 11	Quiz
6	2 the. 2 exp.	items 1,2,3 of section 6	DC circuit analysis methods	From 1 to12 of section 11	Mid Term Exam
7	2 the. 2 exp.	items 1,2,3,4of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz
8	2 the. 2 exp.	items 1,2,3,4of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz
9	2 the. 2 exp.	items 1,2,3,4,5 of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz
10	2 the. 2 exp.	items 1,2,3,4,5 of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz

11	2 the 2 exp.	items 1,2,3,4,5,6 of section 6	DC circuit analysis methods	From 1 to12 of section 11	Mid Term Exam
12	2 the 2 exp.	items 1,2,3,4,5,6of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz
13	2 the 2 exp.	items 1,2,3,4,5,6, of section 6	DC circuit analysis methods	From 1 to12 of section 11	Quiz
14	2 the. 2 exp.	items 1,2,3,4,5,6of section 6	Star Delta transformation	From 1 to12 of section 11	Quiz
15	2 the 2 exp.	items 1,2,3,4,5,6of section 6	Power calculation	From 1 to12 of section 11	Final Exam

11.Infrastructure	
1. BooksRequiredreading:	• Electrical Circuits, 2nd edition, Nilson, 1986. • Fundamentals of Electric Circuits", C.K. Alexander and M.N.O. Sadiku, McGraw Hill, 4th edition, 2009.2. • "Basic Engineering Circuit Analysis", J. D. Irwin, Fourth edition, Macmillan, most recent edition. • Electrical Devices and Circuit theory, 9thedition ,Boylestad,

2. Mainreferences(sources)	
A- Recommendedbooksand references(scientificjournals, reports…).	• Electrical Circuit theory and Technology, 4th edition, Bird, 2010. • Engineering Circuit Analysis, 7th edition, Hayt and Kemmerly,2007. • Introductory Circuit Analysis, 5th edition, Bolyestad, • A Textbook of Electical Technology, Thiraja, 2009. • Introduction to Electric Circuits (9th Edition) by Dorf and Svoboda, John Wiley & Sons (2013). • ASEECircuitAnalysis_in_MATLAB_and_Simulink • Matlab - Electronics and Circuit Analysis using Matlab • The_Analysis_and_Design_of_Linear, 8th edition (2016)
B-Electronic references, Internet sites…	Laboratory experiments in the Measurements Lab of the department. Available websites related to the subject. Extracurricular activities.

12.Thedevelopmentof the curriculum plan
Maintaining Continuous development of academic curricula in line with the scientific development.

TEMPLATEFORCOURSESPECIFICATION

Electronic Physics

HIGHEREDUCATION
PERFORMANCEREVIEW:PROGRAMMEREVIEW

COURSE SPECIFICATION

ThisCourseSpecificationprovidesaconcisesummaryofthemainfeaturesofthe course andthelearningoutcomesthatatypical student might reasonably be expectedtoachieveand demonstrateifhe/shetakesfulladvantageofthelearning opportunitiesthatareprovided.Itshouldbecross-referencedwiththeprogrammespecification.

1.TeachingInstitution	College of Engineering Gilgamesh Ahliya University
2.UniversityDepartment/Centre	Computer Engineering Department
3.Course title/code	Electronic Physics / COE(103)

4.Modesof Attendance offered	There is only one delivery mode, which is a "Day Program". On campus, the students are full-time students. The students attend a face-to-face program for the entire day. Regular subjects run for 15 weeks during the academic semester.
5.Semester/Year	1st Academic Semesters 2022 – 2023
6.Number of hourstuition(total)	45 hrs. / 3 hrs., per week
7.Dateof production/revision of this specification	November/ 2022

8.Aimsofthe Course

A1. This is an introductory course on electronic physics, focusing on basicconcepts, principles, and applications. The course introduces basic physicalconcepts of atomic structure, energy levels, crystal structure, conduction inmetals, semiconductors, characteristics of p-n junction, and other types ofsemiconductor diodes. In addition, it deals with electron ballistics and diodecircuits. Topics covered in this course include: atomic structure fundamentals, electronicballistics, electrical conduction in metals and semiconductors, p-n junctioncharacteristics, other types of semiconductor diodes, and diode circuitapplications. This course also highlights the different disciplines in electronicphysics to be studied by the students during their undergraduate study.

9. Learning Outcomes, Teaching, Learning and Assessment Method

D. Cognitive goals.

A- Knowledge and Understanding

A1- Knowing the course objectives.

A2- Understanding the main principles of Electronic Physics. A3- Comprehension of the main theories related to the course.

A4- Understanding the mathematical interpretation of engineering problems.

E. The skills goals special to the course.

B1- Ability to describe the concepts of atomic structure, crystal structure, and electron ballistics.

B2- Ability to explain the conduction in metals and describesemiconductors.

B3- Ability to interact with the analysis of diode configurations andcircuits.

B4- Ability to describe the principles of various other types of diodes.

Teaching and Learning Methods

13.Lectures

14. Tutorials.

15. Homework and Assignments.

16.Tests and Exams.

17. In-Class Questions and Discussions.

18.Field Trips.

19. Extracurricular Activities.

20. Seminars.

21. In- and Out-Class oral conservations.

22.Reports, Presentations, and Posters.

Assessment methods

1. Quizzes and exams
2. homework
3. assignments

F. Affective andvaluegoals

C1. Ability to analyze.

C2. Ability to solve problems.

C3.Ability to calculate the results.

D. General and rehabilitative transferred skills (other skills relevant to employability and personal development)

D1. Ability to carry out independent study to take notes, to carry out background reading.

D2. Problem Solving based on understanding.

D3. Ability to learn and remember key facts.

D4. Self-discipline and self-motivation.

10.Course Structure

Week	Hours	ILOs	Unit/Module or TopicTitle	Teaching Method	Assessment Method
1	3	The student mustunderstandRutherford model of the atomandthe derivation of total .energy ofan electronin hydrogen atom	Atomic Structure	White BoardAidedLecture. Tutorial Method.Problem solvingmodel	Quizzes Discussions
2	3	Thestudent must understandphoton nature of light,model forhydrogen atom, and .Bohr'spostulates	Thephotonnatureof light Bohr's model.	White BoardAidedLecture. Tutorial Method.Proble	Quizzes Discussions
3	3	The studentmustcomprehendthe ionization potential, collision ofelectronand photonwith atomandthe dual nature of .matter	Atomic excitationde-Broglie postulate.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel	Quizzes Discussions
4	3	The student mustcomprehendhow to describe the electrons inan atom,knowthe principle ofPauli exclusion, and write theelectron configuration.Also, hemust understandbinding energy,describeelectronic energy levelsin a crystal,andbe able torecognize between .metal,semiconductor, and insulator	Atoms with manyelectrons Quantum numbers. Theenergy–andtheory of crystals.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
5	3	Thestudentmustcomprehendthecrystalline material, unit cell,crystal systems, and Bravaislattices.Also, he must understandthe principle metallicand body-centered cubiccrystal structure.	The space latticeand unit cells.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions Midterm Exam

6	3	In this part, the student must beabletoknowatom positions anddirections in cubic unit cells. Hemustknow the procedure fordeterminingMiller indices forcubiccrystal plane and draw the	Atom positionsandMiller indices.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
7	3	This part ofthe curriculumleadsto understandingtheelectronmovement in a uniform electricfield with zero initial velocity andwith initial velocityin the directionof field.	Electron ballistics	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
8	3	In this section, thestudent mustbe able to know the parabolicpath movement in region betweentwo plates and the characteristicsof motion when the electronenters at a certain angle to theelectric field between two plates.	Electronballistics;initialvelocityperpendicular tothe field	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
9	3	This part concernsthe conductivityof metal. The student must beable to understand drift velocity,mobility, current density, electricalresistivity, and conductivity. Also,he must know what is meant bymean free path and relaxationtime.	Electricalconductionmetals.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
10	3	This part is the most essentialforthe students to comprehendtheenergy band model, allowedstates, and density of states in aconductor. Fermi-Dirac probabilityfunction must also bewellunderstood.	Energy band model.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions Midterm Exam

11	3	Semiconductors is the mostimportant in understanding thesemiconductor devices. Thestudent must comprehend therelationship between conductivityand temperature, movement ofholes in the valence band, andintrinsic semiconductor.	Semiconductors Groupsemiconductormaterials Band diagram The concept of holeCharge carriers.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
12	3	In this section, the student mustbe able to comprehend therelation between Fermi level andelectron and hole concentrations,effective density of states, andderive the position of Fermi level.Also, probability of occupancy of astate and intrinsic carrierconcentration must bewellunderstood.	Intrinsicsemiconductors Electron and holeconcentrationsProbability ofoccupancy.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
13	3	The student mustunderstand thephysical meaning of dopedsemiconductor and be able todistinguish between n-type and p-type. He must also know themass action law, compensatedsemiconductor and conductivityofextrinsic semiconductors.	Extrinsicsemiconductors Majority andminority carriersCompensatedsemiconductor.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
14	3	The students must knowdrift anddiffusion current density, relationbetween mobility and diffusioncoefficient,and recombination.He mustalsobe able tounderstand the Hall effectas well.	Total currentdensity Einstein relationHall effect.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions
15	3	Theimportance of thep-n junctionin modern electronic applicationsand in understanding othersemiconductor toteach this subject to students inorder to be familiar with and havean ability tounderstand thebehavior of junction depletionregion.	he p-n junctionDoping profileApplications Space chargeregion.	White BoardAidedLecture. Tutorial Method.Problem solvingmodel.	Quizzes Discussions Final Exam

11.Infrastructure

1. BooksRequiredreading:	• • Robert L. Boylestad and Louis Nashelsky, “Electronic Devices andCircuitTheory,” Ninth Edition, Pearson Prentice Hall. 2006. • Donald A. Neamen, “Semiconductor Physics and Devices: BasicPrinciples,” McGraw-Hill International Edition, Fourth Edition, 2012. • B.L. Theraja, “Basic Electronics: Solid State,” S. Chand & CompanyLtd, 2005.
2. Mainreferences(sources)	
A- Recommendedbooksand references(scientificjournals, reports…).	
B-Electronic references, Internet sites…	Lectures on university website in PDF form

.Thedevelopmentof the curriculum plan21
Maintaining Continuous development of academic curricula in line with the scientific development.

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programmer.

1. Teaching Institution	Gilgamesh private university/ College of Engineering
2. University Department/Centre	Computer Engineering Department
3. Programme Title	B. Sc. in Computer Engineering
4. Title of Final Award	B. Sc. in Computer Engineering
5. Modes of Attendance offered	Curriculum system
6. Accreditation	ABET
7. Other external influences	None
8. Date of production/revision of this specification	Nov. 2023
9. Aims of the Programmer	
9-i- Use technical, teamwork, and communication skills, along with leadership principles, to pursue computer engineering careers in areas such as Microelectronics , Optical communication, Mobil, Interface, Computer architecture , and Artificial Intelligent.	
9-ii- Pursue graduate degrees in Computer engineering and other fields.	
9-iii- Function ethically in their professional Computer engineering roles.	
9-iv- Pursue professional licensure.	

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

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Knowledge and Understanding

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

In order to develop the thinking skills of the students:

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. 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, In general:

• Modules will be taught through classroom lectures

The lecture material will be reinforced and expanded on through tutorials via examples and solved problems.

• lab sessions comprising mixes of drawing, designing, fabrication, electronics, programming, experimentation, peer group meetings, and oral reports.

• Students are expected to spend an additional hour per week in self-study and submit their assignments in time.

Assessment Methods

Mentioned in Course Portfolios in addition to surveys done to senior students and employers, In general:

• Answer direct questions during lectures

• Quizzes and Home-works

• Mid Exams (Theory, Lab)

• Final Exam (Theory or Theory and Lab.)

11. Programme Structure

Level/Year	Course Code	Course Title	Theoretical Hours	Practical Hours	Credits Units
Level 2/ Fall Semester	**COE202**	Mathematics 3	2	0	2
Level 2/ Fall Semester	**COE206**	Logic Circuits Design	2	2	3
Level 2/ Fall Semester	**COE204**	Electronic Circuits Design	2	2	3
Level 2/ Fall Semester	**COE201**	Operating Systems	2	2	3
Level 2/ Fall Semester	**COE203**	Computer Architecture 1	2	0	2
Level 2/ Fall Semester	**COE025**	Object Oriented Programming	2	2	3
Level 2/ Fall Semester	**COE207**	Information Theory	2	0	2
Level 2/ Fall Semester	**COE208**	Communications 1	2	2	3
Level 2/ Fall Semester	**COE209**	Crimes of the Defunct Baath Party	2	0	2

12. Awards and Credits

Technical degree diploma requires (1800) credit hours

13. Personal Development Planning
1- Keeping informed via the internet of the latest developments related to the subject 2- Encouraging students to use the Internet and participate in every development within the major 3- Trying to benefit from modern evaluation methods that include: Concept Maps, Creative Calendar, Written Reports, Oral Interviews, Achievement Files, Practical Calendar, Self-Assessment.
14. Admission criteria .
- follow the criteria as in higher education ministry
15. Key sources of information about the programme
- internet , scientific sources from library

Curriculum Skills Map															
please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed															
				Programme Learning 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	**A2**	**A3**	**A4**	**A5**	**A6**	**B1**	**C1**	**C2**	**D1**	**D2**	
Level 2/ Fall Semester	COE202	Mathematics 3	**B**											√	
Level 2/ Fall Semester	COE206	Logic Circuits Design	**C**	√											
Level 2/ Fall Semester	COE204	Electronic Circuits Design	**C**							√					
Level 2/ Fall Semester	COE201	Operating Systems	**B**							√					
Level 2/ Fall Semester	COE203	Computer Architecture 1	**B**	√	√	√	√								

Level 1/ Fall Semester	COE025	Object Oriented Programming	**C**	√	√	√	√							
Level 2/ Fall Semester	COE207	Information Theory	**C**											√
Level 2/ Fall Semester	COE208	Communications 1	**C**											√
Level 2/ Fall Semester	COE209	Crimes of the Defunct Baath Party	**C**	√		√			√	√				√

Communications 1

COE 208

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering Department
3. Course title/code	Communictions1/ COE208
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	
To understand the following 1. Communication System Elements 2. Modulation and Demodulation such as (AM, DSB-SC, SSB, FM, PM)	

10· Learning Outcomes, Teaching, Learning and Assessment Methods
A- Cognitive goals: A1- develop a solid understanding of the fundamental concepts, principles, and technologies that underpin the field of communications A2- Analyze a complete analog communication system.

B. Subject-specific skills

Students will obtain knowledge and understanding of:
B1- Mathematical tools relevant to communications and electronics systems.
B2- Fundamental technological concepts, principles, and techniques associated with electronics and communications systems.
B3- The structure of different communication systems.

Teaching and Learning Methods

Lectures, tutorials, and problem-solving.

Assessment methods

1. Examinations, Tests, and Quizzes.

2. Extracurricular Activities.

3. Student Engagement during Lectures.

4. Responses Obtained from Students, Questionnaire about Curriculum and Faculty Member (Instructor).

C. Thinking Skills

The students will acquire and develop the thinking skills that should enable them to:
C1- Develop a strong grounding in the fundamentals and how to apply them
C2- Understanding, designing and developing different communication and electronic systems for processing signals and data.

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

Students will acquire and develop the key transferable skills that will enable them to:
D1- Manage tasks, and solve problems.
D2- Negotiate learning contracts.
D3- Think logically and critically.
D4- Use a range of technological equipment and systems.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 Theo. 2 Lab.	Explain the principles of a communication systems	• Components of communication system • Need for Modulation	Presentations, Board Handwriting	Oral Questions Quiz Exam
2	2 Theo. 2 Lab.	Explain the principles of amplitude modulation technique	Amplitude modulation	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
3	2 Theo. 2 Lab.	Explain the principles of amplitude modulation technique	Amplitude modulation	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
4	2 Theo. 2 Lab.	Methods of AM demodulations	Detection of Am waves	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
5	2 Theo. 2 Lab.	Learning the double side band large carrier modulation technique	DSB-SC modulation.	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
6	2 Theo. 2 Lab.	Knowledge of coherent detection and advantages	Coherent detection of DSB-SC.	Presentations, Board Handwriting	Oral Questions Quiz Exam
7	2 Theo. 2 Lab.	Explain the principles of single side band modulation technique	SSB modulation	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam

8	2 Theo. 2 Lab.	Explain the principles of VSB modulation and V-filters	Vestigial side band modulation	Presentations, Board Handwriting	Oral Questions Quiz Exam
9	2 Theo. 2 Lab.	Principals of FM techniques and advantages	Frequency modulation	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
10	2 Theo. 2 Lab.	Knowledge of types of FM types.	Narrow band FM, Wide band FM.	Presentations, Board Handwriting, and	Oral Questions Quiz Exam
11	2 Theo. 2 Lab.	Knowledge of types of FM types.	Transmission band width of FM wave.	Presentations, Board Handwriting	Oral Questions Quiz Exam
12	2 Theo. 2 Lab.	Learning how to generate FM signals	Generation of FM Waves.	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
13	2 Theo. 2 Lab.	Choosing the best modulation depending on needs	Comparison of AM & FM	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
14	2 Theo. 2 Lab.	Knowledge of pulse modulation techniques	Generation and Demodulation of PWM.	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam
15	2 Theo. 2 Lab.	Knowledge of pulse modulation techniques	Generation and Demodulation of PPM.	Presentations, Board Handwriting, and Experimental work	Oral Questions Quiz Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	1. Communication systems, 4th edition, Simon Haykin. 2. Data communications and networking, 4th edition, Behrouz A. Forouzan
Special requirements (include for example workshops, periodicals, IT software, websites)	None
Community-based facilities (include for example, guest Lectures ,internship,field studies)	None
13. Admissions	
Pre-requisites	None
Minimum number of students	15
Maximum number of students	30

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	Fall semester 2023
7. Number of hours tuition (total)	30
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- Problem solving
4- Oral examination
5- Quizzes,

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

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

D1- Problem-Solving: The ability to analyze complex architectural challenges and develop innovative solutions is crucial for computer architects.

D2- Attention to Detail: Given the intricate nature of computer architecture, attention to detail is essential for ensuring accuracy and reliability in designing and implementing systems. ,

D3- Data Analysis: Proficiency in data analysis is important for interpreting system performance metrics and identifying areas for improvement.

D4- Technical Skills: Skills such as coding, SQL, and application development are valuable for computer architects, enabling them to understand and work with various technologies and platforms.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	B.1, B.2, C.1	Introduction to Computer Architecture	Lectures (power point)	Quiz
2	2	B.1, B.2, C.1	Register Transfer Language (RTL)	Lectures (power point)	Quiz
3	2	B.1, B.2, C.1	Data movement Arithmetic and logic Micro-operations	Lectures (power point	Assignments and Quiz
4	2	B.1, B.2, C.1	Concept of bus and timing in register transfer	Lectures (power point	Assignments and Quiz
5	2	B.1, B.2, C.1	Basic Computer Organization	Lectures (power point)	Quiz
6	2	B.1, B.2, C.1	Timing and . Control, Execution of Instructions	Lectures (power point	Homework and Quiz
7	2	B.1, B.2, C.1	Design of Basic Computer	Lectures (power point	Assignments and Quiz
8	2	B.1, B.2, C.1	Micro-programmed Control Unit	Lectures (power point)	Quiz
9	2	B.1, B.2, C.1	Microinstruction formats, Address sequencer	Lectures (power point	Assignments and Quiz
10	2	B.1, B.2, C.1	CPU Organization	Lectures (power point	Assignments and Quiz
11	2	B.1, B.2, C.1	Addressing Modes, Instruction Format	Lectures (power point)	Quiz
12	2	B.1, B.2, C.1	CPU organization with large registers, stacks and handling of interrupts & subroutines	Lectures (power point	Assignments and Quiz
13	2	B.1, B.2, C.1	Arithmetic Processor Design	Lectures (power point	Assignments and Quiz
14	2	B.1, B.2, C.1	Pipelining Parallel Processing, Principle of pipelining	Lectures (power point	Assignments and Quiz
15	2	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	Jean-Loup Baer, Microprocessor Architecture: From Simple Pipelines to Chip .Multiprocessors, 1st edition
Special requirements (include for example workshops, periodicals, IT software, websites)	/http://www.cs.wisc.edu/~arch/www
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	None
Minimum number of students	15
Maximum number of students	30

MATHEMATICS III

COE 202

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering
3. Course title/code	Mathematics III
4. Programme(s) to which it contributes	ABET
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

As a mathematics student you will study each of the major subject areas of modern mathematics: algebra, analysis, geometry, statistics, and applied mathematics. In the course of this study, you will learn:
D1 - The language of mathematics and the rules of logic
D2 - How to state a mathematical idea precisely.
D3 - How to prove or disprove a mathematical conjecture.
D4 - How to extract meaning from mathematics on the written page.
D5 - How to use mathematics to describe the physical world.
Investigative Skills: During your studies you will sometimes find yourself trying to understand mathematics that seems too hard, and trying to solve problems that at first seem impossible.

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 it contributes	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 Method

A- Knowledge and Understanding
1- Explain the concepts of entropy and mutual information
2- Understand how information can be represented in an efficient manner.
3- Explain how information theory can be applied to multiple-access channels, broadcast channels, and to general networks.
4- Explain information-theoretic aspects of information security.

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
5- Problem solving
6- Oral examination
7- Practical examination
8- Quizzes

D. General and Transferable Skills (other skills relevant to employability and personal development) In order to develop the thinking skills of the students:
D1- Communication: The ability to make succinct presentations to a range of audiences about technical problems and their solutions
D2- Information Technology: Effective use of general IT facilities and information retrieval skills
D3 - The ability to understand and explain the quantitative and qualitative dimensions of a problem

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Concept of Information: info source, memory and memoryless source.	interview	Theoretical lecture	
2	2	Entropy: average of info, maximum entropy	Entropy	Theoretical lecture	Quiz
3	2	Rate of Information	Entropy	Theoretical lecture	homework
4	2	Discrete Memoryless Channel: conditional probability, joint probability, channel matrix.	Entropy	Theoretical lecture	Assessment
5	2	Joint Entropy and Conditional Entropy	Entropy	Theoretical lecture	Quiz
6	2	Relations between the different entropies	Entropy	Theoretical lecture	exam
7	2	Mutual Information	Mutual Information	Theoretical lecture	homework
8	2	Channel Types: lossless, deterministic, noiseless, BSC	Channel Types	Theoretical lecture	Quiz
9	2	Channel Capacity	Channel Types	Theoretical lecture	homework
10	2	Additive White Gaussian Noise Channel	Additive White Gaussian Noise Channel	Theoretical lecture	Assessment
11	2	Code length, code efficiency and redundancy	Code length	Theoretical lecture	Assessment
12	2	Kraft Inequality	Code length	Theoretical lecture	Quiz
13	2	Source coding theorem: Prefix coding, Shannon-Fano coding,	coding	Theoretical lecture	Assessment
14	2	Error detection and correction: single parity check.	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	none
Minimum number of students	15
Maximum number of students	30

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 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- 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 Method

A- Knowledge and Understanding
A1- Codes basic programs in Java programming language.
A2- Uses objects and classes.
A3- Lists the object-oriented programming concepts
A4. Names special functions.
A5. Codes object-oriented programs.
A6. Writes multithreaded Java programs.

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 personal development)

.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 Topic Title	Teaching Method	Assessment Method
1	4	Programming of C++	C++ Language (Quick review)	Theoretical lecture	
2	4	C++ Language (Quick review)	Functions, classes, and objects	Theoretical lecture	Quiz
3	4	Function in C++ (Deep Look)	previous topics	Theoretical lecture	homework
4	4	Array Function Interaction .	previous topics	Theoretical lecture	Assessment
5	4	Structures and Array of Structures	previous topics	Theoretical lecture	Quiz
6	4	Introduction to Class Fundamentals	previous topics	Theoretical lecture	exam
7	4	Closer Look at Class Member Access	Functions, classes, and objects	Theoretical lecture	homework
8	4	Constructors and Destructors	genetics	Theoretical lecture	Quiz
9	4	Creating Inline Functions Inside a Class	Creating Inline Functions Inside a Class	Theoretical lecture	homework
10	4	Arrays of Objects (Classes)	Arrays of Objects (Classes)	Theoretical lecture	Assessment
11	4	Pointers to Objects (Classes)	Pointers to Objects (Classes)	Theoretical lecture	Assessment
12	4	Friend Functions	Friend Functions	Theoretical lecture	Quiz
13	4	Overloading Constructors	Overloading Constructors	Theoretical lecture	Assessment
14	4	Passing Objects (Classes) to Functions	Passing Objects (Classes) to Functions	Theoretical lecture	Assessment
15	4	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	none
Minimum number of students	15
Maximum number of students	30

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	ABET
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall semester 2023
7. Number of hours tuition (total)	60
8. Date of production/revision of this specification	November 2023

9. Aims of the Course

6. Explain digital system concept (express analog to digital conversion, use binary number system, and realize conversion between various number systems).
7. 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).
8. 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 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

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

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

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

D1- Digital Design: Proficiency in digital design principles and techniques is essential for creating effective logic circuits.

D2- Problem-Solving: The ability to analyze complex requirements and develop logical solutions is important for designing efficient logic circuits.

D3- Critical Thinking: The capacity to evaluate design options, anticipate potential issues, and make strategic decisions is crucial for successful logic circuit design.

D4- Transferable Skills: Transferable skills such as attention to detail, data analysis, and critical thinking are highly prized by employers and can enhance one's ability to excel in logic circuit design

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	B.1, B.2, C.1	Course Overview	Lectures (power point)	Quiz
2	4	B.1, B.2, C.1	Introduction to Digital Systems. Number Systems	Lectures (power point)	Quiz
3	4	B.1, B.2, C.1	Boolean Algebra and Logic Gates	Lectures (power point	Assignments and Quiz
4	4	B.1, B.2, C.1	Minimization Methods and Don't care conditions	Lectures (power point	Assignments and Quiz
5	4	B.1, B.2, C.1	Representation and implementation of Boolean circuits	Lectures (power point)	Quiz
6	4	B.1, B.2, C.1	Tutorials, review and study guide of first exam material	Lectures (power point	Homework and Quiz
7	4	B.1, B.2, C.1	Analysis Procedure of combinational circuits	Lectures (power point	Assignments and Quiz
8	4	B.1, B.2, C.1	Combinational Circuits design, BCD Display	Lectures (power point)	Quiz
9	4	B.1, B.2, C.1	Adder and Subtractor	Lectures (power point	Assignments and Quiz
10	4	B.1, B.2, C.1	Multiplexers, Encoders, and Decoders	Lectures (power point	Assignments and Quiz
11	4	B.1, B.2, C.1	Tutorials, review and study guide of second exam material	Lectures (power point)	Quiz
12	4	B.1, B.2, C.1	Sequential Circuits: Latches and Flip flops	Lectures (power point	Assignments and Quiz
13	4	B.1, B.2, C.1	Analyzing Sequential Circuits, Finite State Machine	Lectures (power point	Assignments and Quiz
14	4	B.1, B.2, C.1		Lectures (power point	Assignments and Quiz
15	4	B.1, B.2, C.1		Lectures (power point	Assignments and Quiz

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Anant Agarwal and Jeffrey H. Lang, Foundations of Analog and Digital Electronic Circuits, Morgan Kaufmann, 2005 William J. Dally and R. Curtis Harting, Digital Design: A Systems Approach, Cambridge University .Press, 2012
Special requirements (include for example workshops, periodicals, IT software, websites)	Logic Circuit official web site
Community-based facilities (include for example, guest Lectures ,internship,field studies)	
13. Admissions	
Pre-requisites	None
Minimum number of students	15
Maximum number of students	30

Operating Systems

COE 201

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering Department
3. Course title/code	Operating Systems/ 201
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.

A4- Understand memory management operation.

A5- Develop an understanding of file system implementation and of multiple levels of hardware support and management.

A6- Understand the concept of cooperating processes, including communication,

synchronization, and deadlock (detection and avoidance).

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, Organization and Time Management, Manage and priorities 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.

D4- Field Logistics, Customer Service, All Design/Floor Plans/Engineering, Permitting, Code Compliance, Forms creation.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 Theo.	A1, A4,B2	Introduction to Operating Systems	Theoretical lecture	Lecturing by using the board
2	2 Theo.	A1, A4,B2	Operating System Structure Process Management	Theoretical lecture	Lecturing by using the board
3	2 Theo.	A1, A4, A5, B1	Process Management Process Concept (Process Control Block)	Theoretical lecture	quiz
4,5	4 Theo.	A1, A3, A4, A5, B2	CPU Scheduling	Theoretical lecture	
6	2 Theo.	A1, A4, A5, B1	Process Synchronization	Theoretical lecture	Lecturing by using the board
7,8	4 Theo.	A1, A4, A6, B1	Deadlock	Theoretical lecture	Short questions
9,10	4 Theo.	A1, A3, A4, A5, B2	Memory Management	Theoretical lecture	Lecturing by using the board
11,12	4 Theo.	A1, A3, A4, A5, B2	File System	Theoretical lecture	Open discussion on a certain topic
13	2 Theo.	A1, A3, A4, A5, B2	security issues	Theoretical lecture	Open discussion on a certain topic
14	2 Theo.	A1, A3, A4, A5, B2	Networking	Theoretical lecture	Lecturing by using the board
15	2 Theo.	A1, A3, A4, A5, B2	Final Exam	Theoretical lecture	exam

Electronic Circuits Design

COE 204

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	Computer Engineering Department
3. Course title/code	Electronic Circuits Design
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

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 Methods

A- Cognitive goals:

A1- Understand the operations of diode circuits and applications A2. Analyze and design different diode circuits.
A2- Knowledge the operations of transistor devices: BJT and MOSFET
A3- Analyze and design DC bias circuits for BJTs/FETs for the basic categories (CE/CS, CC/CD, and CB/CD).

B. Subject-specific skills

Students will obtain knowledge and understanding of:
B1- Knowledge of the fundamentals of electronic circuits, properties of electronic devices, applicable models and operating margins
B2- Correct application of the theory and resolution techniques in the analysis of electronic circuits
B3- Ability to solve simple exercises of electronic circuit design from a given set of specifications .

Teaching and Learning Methods

Lectures, tutorials, and problem-solving.

Assessment methods

1. Examinations, Tests, and Quizzes.

2. Extracurricular Activities.

3. Student Engagement during Lectures.

4. Responses Obtained from Students, Questionnaire about Curriculum and Faculty Member (Instructor).

C. Thinking Skills

The students will acquire and develop the thinking skills that should enable them to:
C1- Knowledge to reasonably justify the steps followed when solving a problem of electronic circuit analysis and design
C2- Ability to solve problems with initiative, decision making, creativity critical reasoning; and to communicate and transmit knowledge and skills in the field of Industrial Engineering

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

Students will acquire and develop the key transferable skills that will enable them to:
D1- Manage tasks, and solve problems.
D2- Negotiate learning contracts.
D3- Think logically and critically.

11. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1-10	30	A1 A2	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	Oral Questions Quiz Exam
11-15	15	A3 A4	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	Lectures and Tutorials	Oral Questions Quiz Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Communication systems, 4th edition, Simon Haykin. Data communications and networking, 4th edition, Behrouz A. Forouzan
Special requirements (include for example workshops, periodicals, IT software, websites)	None
Community-based facilities (include for example, guest Lectures ,internship, field studies)	None
13. Admissions	
Pre-requisites	None
Minimum number of students	15
Maximum number of students	30

Crimes of the Defunct Baath Party

COE 209

1. Teaching Institution	Gilgamesh private university
2. University Department/Centre	**Computer Engineering Department**
3. Course title/code	Crimes of the Defunct Baath Party
4. Programme(s) to which it contributes	ABET
5. Modes of Attendance offered	Curriculum system
6. Semester/Year	Fall2023
7. Number of hours tuition (total)	30 hours
8. Date of production/revision of this specification	Nov. 2023
9. Aims of the Course	
تهدف هذة المادة الى تعليم الطالب بأنواع الجريمة وانواعها واقسامها والتمييز بين سياسة عسكرة المجتمع وسياسة الارض المحروقة ويكون الطالب على معرفة بالتصنيف الزمني لمقابر الابادة الجماعية في العراق 1963-2003	

10· Learning Outcomes, Teaching, Learning and Assessment Method
A1 - يتعلم الطالب كيفية التعامل مع اقرانة من المجتمعات المختلفة. A2 - يفهم ماهي الجرائم وانواعها واقسامها A3 - يميز الطالب بين عسكرة المجتمع وسياسة الارض المحروقة A4 - يكون الطالب على معرفة بالتصنيف الزمني لمقابر الابادة الجماعية في العراق 1963-2003
Teaching and Learning Methods
Assessment methods
يتم تعليم هذة المادة عن طريق المحاضرات النظرية داخل الصف مع توجية الاسئلة المباشرة للطلبة بالاضافة للامتحانات اليومية والفصلية .

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

1- يكون المتخرج من هذة المادة يحمل الصفات الانسانية المثالية التي تجعل منة متقبلاً للطرف الاخر

2- يحمل من الاهداف الوجدانية وايمانة بحقوق الانسان على مختلف المستويات الاجتماعية والسياسية

3- تقبل النقد الذاتي الايجابي خدمة للصالح العام والمجتمع

11. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	B.1, B.2, C.1	مفهوم الجرائم واقسامها	Lecture	
2	2	A.1, B.2, C.1	انواع الجرائم الدولية	Lecture	Oral Questions
3	2	B.1, A.2, C.1	القرارات الصادرة من المحكمة الجنائية العليا	Lecture	Quiz / Oral Questions
4	2	B.1, B.2, C.1	الجرائم النفسية	Lecture	Oral Questions
5	2	A.1, B.2, C.1	الجرائم الاجتماعية	Lecture	Oral Questions
6	2	B.1, B.2, C.1	عسكرة المجتمع ,موقف النظام البعثي في العراق	Lecture	Quiz / Oral Questions
7	2	A.2, B.2, C.1	انتهاكات القوانين العراقية	Lecture	Exam
8	2	B.1, B.2, C.1	اماكن السجون والاحتجاز لنظام البعث	Lecture	Oral Questions
9	2	B.1, B.2, C.1	الجرائم البيئية لنظام البعث في العراق	Lecture	Quiz / Oral Questions
10	2	A.1, B.2, C.1	تدمير المدن والقرى (سياسة الارض المحروقة)	Lecture	Oral Questions
11	2	B.1, B.2, C.2	تجفيف الاهوار	Lecture	Oral Questions
12	2	B.1, B.2, C.1	تجريف البساتين والاشجار والمزروعات	Lecture	Quiz / Oral Questions
13	2	B.3, B.2, C.2	جرائم المقابر الجماعية	Lecture	Oral Questions
14	2	A.3, B.2, C.1	احداث مقابر الابادة الجماعية	Lecture	Oral Questions
15	2	A.2, B.2, C.1	التصنيف الزمني لمقابر الابادة الجماعية في العراق1963-2003	Lecture	Exam

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS	- قوانين الاحتلال الحربي,حقوق السكان المدنيين في المناطق المحتلة وحمايتها الادارة السياسية,دمشق 1972 - موسوعة البيئة العراقية,الطبعة العربية الاولى ,سليم مطر - جغرافية اهوار ومستنقعات جنوبي العراق,المطبعة العالمية , القاهرة.
13. Admissions	
Pre-requisites	None
Minimum number of students	15
Maximum number of students	30

Course Description Form

1. Course Name:	
Numerical Analysis	
2. Course Code:	
COE32201	
3. Semester / Year:	
Stage 3 - Second Course	
4. Description Preparation Date:	
2025-1-27	
5. Available Attendance Forms:	
Weekly - Theoretical & practical	
6. Number of Credit Hours (Total) / Number of Units (Total)	
units20 hr \ 3	
7. Course administrator's name (mention all, if more than one name)	
Name: aya.a. kadhim Email: aya.a.kadhim@gu.edu.iq	
8. Course Objectives	
Course Objectives	erall, numerical analysis in engineering aims to give dents and professionals the tools and knowledge they need to apply mathematical nciples effectively in their work, to develop and use nterpret the results correctly and numerical methods, and meaningfully.
9. Teaching and Learning Strategies	
Strategy	dent acquiring a general definition of numerical analysis and how to apply it in er sciences, studying the numerical methods used in the solutions of differential ations and linear and nonlinear systems, being able to deal with functions and their ivatives and integrals in an integrated analytical context, the ability to link vital ics to numerical analysis and find potential solutions for them, real or hypothetical

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1		lerstand the principles of Numerical Analysis	rature review, errors , ts finding (Bisection /		• Quizzes

			vton – Raphson) methods	1.Foundational Knowledge	• Assignments • In-class Participatic
2		ly numerical methods	ts finding (Secant / Fixed point) methods	ctures & Reading)	
3		Error Analysis	Curve Fitting	2.Practical	
4	2	Computational Tools	st square regression line	lication and Design(Labs, Simulations, Projects)	
5		lement Numerical Algorithms:	rpolation: Newton (wards , Backwards , divided differences)	3. Active rning and Reinforcement	
6		rpret and Evaluate Results	Interpolation	4.Blended Approach	
7		del Real-world Engineering Problems	Interpolation		
8		ign and Conduct Experiments	Mid exam		
9			merical Differentiation		
10			nerical Solutions of ODE′s		
11			nerical Solutions of Linear Systems		
12			uss – elimination , Gauss – Seidel		
13			nerical Solutions of Linear Systems		
14			Term exam + tutorial		
15			paratory week before the final Exam		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	1-Advanced engineering mathematics by Erwin Krizge
Main references (sources)	1. Numerical methods by Babu Ram. 2. Applied mathematics journals, schaum series numerical analysis
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

13.	Course Name:
	Systems Engineering
14.	Course Code:
	ECE31206
15.	Semester / Year:
	1st Semester / 3rd Stage
16.	Description Preparation Date:
	16-9-2024
17.	Available Attendance Forms:
	Weekly – Theoretical
18.	Number of Credit Hours (Total) / Number of Units (Total)
	2 / hour 30
19.	Course administrator's name (mention all, if more than one name)

Name: aya.a.kadhim
Email: aya.a.kadhim@gu.edu.iq

20. Course Objectives

Course Objectives	Understand the fundamental principles and concepts of systems engineering dentify the system life cycle and process models. evelop skills in analyzing and documenting system requirements nderstand the principles of system design and architecture. Apply system integration, verification, and validation techniques. udy risk management and quality assurance in systems engineering. Explore operational support and system validation techniques pply system engineering principles to real-world projects.

21. Teaching and Learning Strategies

Strategy	• Interactive lectures • Design assessments and critiques • Simulations and modeling • Iterative design tasks • Course objectives udents work in teams to address design challenges, encouraging peer-to-peer learning and sharing of ideas, and solving problems collectively

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	derstand the fundamentals of systems engineering concepts	oduction to Systems Engineering	Lecture Reading Assignments	Competition, Participation
2.3	2	Understand the system life cycle and process models	tem Life Cycle and Models	Lectures Case Studies	Assignment, Study
3.4	2	Develop skills in system requirements analysis	Requirements Engineering	Workshops and Group Discussions	Case

5.6	2	Understand the principles of system design and architecture	tem Design and Architecture	Lecture, Exercises	Requirements Document Competition
7.8	2	Apply system integration and verification techniques	System gration and Verification	Laboratory Exercises Practical Sessions	sign and Presentation Assignment Design
9.10	2	Study risk management and quality assurance in systems engineering	k Management and Quality Assurance	Lecture	Lab Report
11.12	2	Explore system validation and operational support techniques	System Validation and Support	Case Studies	gration Project
13.14	2	Apply system engineering principles to a comprehensive project	Comprehensive System Project	Practical Workshops, Group Work	lidation Project
15	2	Exam	Course Review	Review Board	Exam

23. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
24. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• Systems Engineering Principles and Practice by Alexander Kossiakoff and William N. Sweet. • The Engineering Design of Systems by Dennis M. Buede.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

25. Course Name:	
Database Systems	
26. Course Code:	
COE31207	
27. Semester / Year:	
Stage 3 - first Course	
28. Description Preparation Date:	
16-9-2024	
29.Available Attendance Forms:	
Weekly - Theoretical & practical	
30.Number of Credit Hours (Total) / Number of Units (Total)	
60 hr \ 4 units	

31. Course administrator's name (mention all, if more than one name)

Name: aya.a. kadhim
Email: aya.a.kadhim@gu.edu.iq

32. Course Objectives

Course Objectives	The objective of this course is to study the principles of and implementation of database systems. Topics include data models (relational, document, key/value), storage models, query languages (SQL, stored procedures), storage architectures, indexing, transaction processing, and query processing (joins, sorting, aggregation, and optimization, also include Object and Object Relational Databases). Case studies on commercial database systems will be used to illustrate these techniques and trade-offs. The course is appropriate for students with strong systems programming skills.

33. Teaching and Learning Strategies

Strategy	The main strategy of this module is to equip students with the principles and skillset necessary o design and develop a database system that fulfills the requirements of business operational needs.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	oduction to Databases	Introduction to power electronic		
2		rview of Database guages and Architectures	Power semiconductor devices		
3		a Modeling Using the ty–Relationship (ER) Model	Types of power electronic miconductor switches.		
4		Relational Data del and Relational Database Constraints	Non isolated dc-dc converter		
5		L: Data Definition, a Types, Constraints, Basic Retrieval ries, SELECT-)M- WHERE,	Step down dc-dc converter (Buck)		

		ERT, DELETE, and UPDATE.			
6		Mid-term Exam	tep up dc-dc converter (Boost)		
7		QL Complex Queries	Step up and down dc-dc converter (Buck-Boost)	1.Foundational Knowledge ctures & Reading)	
8		: Specifying straints as Assertions Actions as Triggers, ws, and Schema Modification	Mid-term exam	2.Practical lication and Design(Labs, Simulations,	
9		tional Database ign by ER-to-Relational Mapping	Step up and down dc-dc converter (CUK)	Projects) 3. Active rning and	Quizzes Assignments In-class Participation
10		ics of Functional endencies and malization for Relational Databases:	Step up and down -dc converter (SEPIC)	Reinforcement 4.Blended Approach	
11		Storage, Basic File tructures and Hashing	olated dc-dc converter		
12		xing Structures for s and Physical Database Design	back dc to dc converter		
13		amic Multilevel xes Using B-Trees and B+-Trees	ward dc to dc converter		
14		Database Security	troduction to Inverters		
15		aratory week before the final Exam	Single and three phase voltage source inverter		
1	عملي -2	oduction to Oracle MySQL Server and Workbench Software			
2		ic SQL (CREATE Database, SHOW, DROP, USE, CREATE Table, ALTER)			
3		L Query (SELECT-FROM-WHERE, DER-BY, INSERT, DELETE, UPDATE, TRUNCATE)			
4		anced Querying (JOIN, INNER JOIN, LEFT JOIN, DISTINCT, GROUP BY)			
5		gregate functions, HAVING, UNION, EXISTS, NOT EXISTS			
6		aging Users and Privileges (root User, Creating and Using New Users, Grant Tables)			
7		Modifying and Dropping Users, Privileges			

35. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
36. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	1. Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", 7th edition 2016,Pearson Higher Education. icius M. Grippa & Sergey Kuzmichev, "LearningMySQL", 2nd edition 2021, O'Reilly Media, Inc.
Main references (sources)	aham Silberschatz, Henry F. Korth, and S. Sudarshan tabase System Concepts", 7th edition 2020, McGraw-Hill Education.
Recommended books and references (scientific journals, reports…)	https://www.coursera.org/learn/relational-database#syllabus https://www.w3schools.com/mysql/mysql_sql.asp
Electronic References, Websites	2. Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", 7th edition 2016,Pearson Higher Education. icius M. Grippa & Sergey Kuzmichev, "LearningMySQL", 2nd edition 2021, O'Reilly Media, Inc.

Course Description Form

1. Course Name:
Computer Network
2. Course Code:
COE32306
3. Semester / Year:
Second Semester
4. Description Preparation Date:
8/02/2025
5. Available Attendance Forms:
Class Lecture

6. Number of Credit Hours (Total) / Number of Units (Total)

Theory: 3 Hours
Practical: 2 Hours

7. Course administrator's name (mention all, if more than one name)

Name: Name: Haneen Jumhoor sabbar
Email: haneen.g.sabbar@gu.edu.iq

8. Course Objectives

Course Objectives	As a result of successfully completing this course, students will: 1. Understanding Network Fundamentals: Students should develop a solid understanding of the fundamental concepts and principles of computer networks, including network architecture, protocols, models (such as the OSI model), and network components. 2. Network Design and Implementation: Students should learn how to design and implement computer networks, including planning network topologies, addressing schemes, subnetting, and selecting appropriate networking hardware and software components. 3. Network Protocols and Technologies: Students should gain knowledge about various network protocols and technologies used in modern networks, such as TCP/IP, Ethernet, Wi-Fi, routing protocols (e.g., OSPF, BGP), and network security protocols (e.g., SSL/TLS, IPsec). 4. Network Troubleshooting and Maintenance: Students should learn how to diagnose and troubleshoot network issues, including identifying and resolving common network problems, performance optimization, and network monitoring techniques. 5. Network Security: Students should understand the principles of network security, including authentication, encryption, firewalls, intrusion detection systems (IDS), and network security best practices. 6. Network Management: Students should acquire knowledge of network management concepts, tools, and techniques, including network monitoring, configuration management, performance management, and network documentation. 7. Network Services and Applications: Students should be familiar with various network services and applications, such as DNS, DHCP, email, web servers, file sharing, and virtual private networks (VPNs). These learning objectives provide a foundation for understanding computer networks and preparing students for careers in network administration, network engineering, cybersecurity, and related fields.

9. Teaching and Learning Strategies

Strategy	1. Lectures and Presentations: Instructors deliver lectures and presentations to introduce theoretical concepts, explain network protocols, and provide an overview of network architectures. This strategy helps students gain a foundational understanding of computer networks. 2. Hands-on Labs and Simulations: Practical implementation is crucial in computer network subjects. Students participate in hands-on labs where they configure network devices, simulate network scenarios, and troubleshoot network issues. This strategy allows students to apply theoretical knowledge in a practical setting. 3. Group Discussions and Collaborative Learning: Group discussions and collaborative learning activities encourage students to actively engage with the subject matter. They can discuss network design challenges, analyze case studies, and share their insights and experiences. This strategy promotes critical thinking, problem-solving skills, and peer learning. 4. Assignments and Projects: Assignments and projects provide opportunities for students to apply their knowledge to real-world scenarios. They may involve designing network topologies, implementing network security measures, or troubleshooting network problems. This strategy allows students to deepen their understanding and develop practical skills. 5. Online Resources and Self-Study Materials: Instructors provide students with online resources, such as websites, tutorials, and videos, to supplement their learning. Self-study materials, such as textbooks and reference guides, are also recommended. This strategy enables students to explore topics in more depth and at their own pace. 6. Networking Tools and Simulators: Using networking tools and simulators, such as Packet Tracer or GNS3, allows students to practice network configurations and experiment with different network setups. This strategy enhances hands-on learning and provides a safe environment for experimentation. 7. Guest Lectures and Industry Professionals: Inviting guest speakers, such as network engineers or industry professionals, to share their expertise and experiences can provide valuable insights into real-world applications of computer networks. Students can learn about current industry trends, network management practices, and potential career paths. 8. Assessments and Examinations: Regular assessments, such as quizzes, tests, or exams, evaluate students' comprehension of the subject matter. These assessments can be a mix of theoretical questions and practical exercises, allowing students to demonstrate their knowledge and skills. 9. Real-World Examples and Case Studies: Incorporating real-world examples and case studies helps students connect theoretical concepts to practical situations. They can analyze network implementations in various industries, study network failures and their solutions, and understand the impact of network design choices. 10. Continuous Learning and Professional Development: Encouraging students to engage in continuous learning and professional development is important in a rapidly evolving field like computer networking. Instructors can recommend industry publications, online forums, and networking certifications to students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1			INTRODUCTION: Historical Review		

Week 2			Network Architecture, OSI Vs TCP		
Week 3			Network hardware architecture: topologies, devices.		
Week 4			oduction to types of networks- Optical Networks, Sensor networks.		
Week 5			PHYSICAL AND DATA LINK LAYERS: Basics for Data mmunications, Transmission Media		
Week 6			Guided and unguided, transmission media - Communication satellites -		
Week 7			ata link Layer design issues - Error etection & Correction - Elementary ata link Protocols - Sliding window Protocols.		
Week 8			Mid-course Exam		
Week 9			MAC & NETWORK LAYERS: edia access control and LANs: The channel allocation – Methods and protocols for LANs.		
Week 10			IEEE 802 standards and LAN chnologies – Ethernet, token ring – ardware addressing - Network layer esign issues - Routing Algorithms - Congestion Control Algorithms- Internetworking		
Week 11			TRANSPORT LAYER: Transport services - Elements of transport Protocols - A simple transport otocols –UDP –TCP - Performance issues.		
Week 12			APPLICATION LAYER: DNS - E-mail (SMTP, MIME, POP3, IMAP)		
Week 13			WWW-Multimedia - Introduction to Cryptography		
Week 14			Symmetric _key Algorithms		
Week 15			Public_ key Algorithms—firewalls.		
6**Week 1**			Preparatory week before the final Exam		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	rew S. Tanenbaum, "Computer Networks", Pearson, Fourth Edition, 2010.
Recommended books and references (scientific journals, reports…)	es F. Kurose and Keith W. Ross, "Computer working: A TopDown Approach Featuring the Internet", Pearson Education, Fourth Edition 2011.
Electronic References, Websites	https://faculty.ksu.edu.sa/sites/default/files/comnet-a_top-down_approach_3rd_edition.pdf

Course Description Form

13. Course Name:	
Signals and Systems	
14. Course Code:	
ECE205	
15. Semester / Year:	
Semester 1	
16. Description Preparation Date:	
15/09/2024	
17. Available Attendance Forms:	
Class Lecture	
18. Number of Credit Hours (Total) / Number of Units (Total)	
Theory: 3 Hours Practical: 2 Hours	
19. Course administrator's name (mention all, if more than one name)	
Name: Haneen Jumhoor sabbar Email: haneen.g.sabbar@gu.edu.iq	
20. Course Objectives	
Course Objectives	Students completing this course are expected to have a good understanding of the fundamentals and applications of discrete-time signals and systems, convolution, and z transforms.
21. Teaching and Learning Strategies	
Strategy	Lectures, tutorials, problem solving

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method

1	3			Introduction to discrete linear systems
2	3			[1]Discrete time signals. [2] Special sequences. [3] Shift invariance
3	3			[4] Stability and causality. [5] Impulse response. [6] Difference equations.
4	3			Discrete-Time Fourier Transform and Linear Time Invariant Systems
5	3			Transform definitions.
6	3			Frequency response of linear time invariant systems. Phase and group delays. Matlab computations.
7	3			The Z transform
8	3			Mid-course Exam
9	3			Properties of digital filters
10	3			Averaging filter. Recursive smoother
11	3			First-order notch filter. Second-order unity gain resonator.
12	3			All-pass filters. Comb filters.
13	3			Equalization filters. Group delay, linear phase, all-pass, minimum phase
14	3			Fourier transforms, sampling continuous-time signals: the sampling theorem.Aliasing
15	3			Re-sampling digital signals.

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Digital Signal Processing: A Computer-Based Approach, S. K. Mitra, McGraw-Hill, Third edition, 2006.
Main references (sources)	The Student Edition of MATLAB, Prentice-Hall, New Jersey.
Recommended books and references (scientific journals, reports...)	Supplementary class notes, available over the USC Distance Education Network
Electronic References, Websites	**https://ocw.mit.edu/courses/6-003-signals-and-systems-fall-2011/**

Course Description Form

1. Course Name:	
Computer Network	
2. Course Code:	
COE32306	
3. Semester / Year:	
Second Semester	
4. Description Preparation Date:	
8/02/2025	
5. Available Attendance Forms:	
Class Lecture	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Theory: 3 Hours Practical: 2 Hours	
7. Course administrator's name (mention all, if more than one name)	
Name: Name: Haneen Jumhoor sabbar Email: haneen.g.sabbar@gu.edu.iq	
8. Course Objectives	
Course Objectives	As a result of successfully completing this course, students will: 1. Understanding Network Fundamentals: Students should develop a solid understanding of the fundamental concepts and principles of computer networks, including network architecture, protocols, models (such as the OSI model), and network components. 2. Network Design and Implementation: Students should learn how to design and implement computer networks, including planning network topologies, addressing schemes, subnetting, and selecting appropriate networking hardware and software components.

	3. Network Protocols and Technologies: Students should gain knowledge about various network protocols and technologies used in modern networks, such as TCP/IP, Ethernet, Wi-Fi, routing protocols (e.g., OSPF, BGP), and network security protocols (e.g., SSL/TLS, IPsec). 4. Network Troubleshooting and Maintenance: Students should learn how to diagnose and troubleshoot network issues, including identifying and resolving common network problems, performance optimization, and network monitoring techniques. 5. Network Security: Students should understand the principles of network security, including authentication, encryption, firewalls, intrusion detection systems (IDS), and network security best practices. 6. Network Management: Students should acquire knowledge of network management concepts, tools, and techniques, including network monitoring, configuration management, performance management, and network documentation. 7. Network Services and Applications: Students should be familiar with various network services and applications, such as DNS, DHCP, email, web servers, file sharing, and virtual private networks (VPNs). These learning objectives provide a foundation for understanding computer networks and preparing students for careers in network administration, network engineering, cybersecurity, and related fields.
9. Teaching and Learning Strategies	
Strategy	1. Lectures and Presentations: Instructors deliver lectures and presentations to introduce theoretical concepts, explain network protocols, and provide an overview of network architectures. This strategy helps students gain a foundational understanding of computer networks. 2. Hands-on Labs and Simulations: Practical implementation is crucial in computer network subjects. Students participate in hands-on labs where they configure network devices, simulate network scenarios, and troubleshoot network issues. This strategy allows students to apply theoretical knowledge in a practical setting. 3. Group Discussions and Collaborative Learning: Group discussions and collaborative learning activities encourage students to actively engage with the subject matter. They can discuss network design challenges, analyze case studies, and share their insights and experiences. This strategy promotes critical thinking, problem-solving skills, and peer learning. 4. Assignments and Projects: Assignments and projects provide opportunities for students to apply their knowledge to real-world scenarios. They may involve designing network topologies, implementing network security measures, or troubleshooting network problems. This strategy allows students to deepen their understanding and develop practical skills. 5. Online Resources and Self-Study Materials: Instructors provide students with online resources, such as websites, tutorials, and videos, to supplement their learning. Self-study materials, such as textbooks and reference guides, are also recommended. This strategy enables students to explore topics in more depth and at their own pace. 6. Networking Tools and Simulators: Using networking tools and simulators, such as Packet Tracer or GNS3, allows students to practice network configurations and experiment with different network setups. This strategy enhances hands-on learning and provides a safe environment for experimentation. 7. Guest Lectures and Industry Professionals: Inviting guest speakers, such as network engineers or industry professionals, to share their expertise and experiences can provide

	valuable insights into real-world applications of computer networks. Students can learn about current industry trends, network management practices, and potential career paths. 8. Assessments and Examinations: Regular assessments, such as quizzes, tests, or exams, evaluate students' comprehension of the subject matter. These assessments can be a mix of theoretical questions and practical exercises, allowing students to demonstrate their knowledge and skills. 9. Real-World Examples and Case Studies: Incorporating real-world examples and case studies helps students connect theoretical concepts to practical situations. They can analyze network implementations in various industries, study network failures and their solutions, and understand the impact of network design choices. 10. Continuous Learning and Professional Development: Encouraging students to engage in continuous learning and professional development is important in a rapidly evolving field like computer networking. Instructors can recommend industry publications, online forums, and networking certifications to students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1			INTRODUCTION: Historical review		
Week 2			Network Architecture, OSI Vs TCP		
Week 3			Network hardware architecture: topologies, devices.		
Week 4			Introduction to types of networks- Optical Networks, Sensor networks.		
Week 5			PHYSICAL AND DATA LINK LAYERS: Basics for Data communications, Transmission Media		
Week 6			Guided and unguided, transmission media - Communication satellites -		
Week 7			Data link Layer design issues - Error Detection & Correction - Elementary Data link Protocols - Sliding window Protocols.		
Week 8			Mid-course Exam		
Week 9			MAC & NETWORK LAYERS: Media access control and LANs: The channel allocation – Methods and protocols for LANs.		
Week 10			IEEE 802 standards and LAN technologies – Ethernet, token ring – hardware addressing - Network layer design issues - Routing Algorithms - Congestion		

			Control Algorithms- Internetworking		
Week 11			TRANSPORT LAYER: Transport services - Elements of transport Protocols - A simple transport Protocols –UDP –TCP - Performance issues.		
Week 12			APPLICATION LAYER: DNS - E-mail (SMTP, MIME, POP3, IMAP)		
Week 13			WWW-Multimedia - Introduction to Cryptography		
Week 14			Symmetric _key Algorithms		
Week 15			Public_ key Algorithms— firewalls.		
6**Week 1**			Preparatory week before the final Exam		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Andrew S. Tanenbaum, "Computer Networks", Pearson, Fourth Edition, 2010.
Recommended books and references (scientific journals, reports...)	James F. Kurose and Keith W. Ross, "Computer Networking: A TopDown Approach Featuring the Internet", Pearson Education, Fourth Edition 2011.
Electronic References, Websites	https://faculty.ksu.edu.sa/sites/default/files/comnet-a_top-down_approach_3rd_edition.pdf

Course Description Form

22.	Course Name:
	Waves propagation
23.	Course Code:
	302ECE
24.	Semester / Year:
	First Semester 2024−2025
25.	Description Preparation Date:
	15/09/2024
26.	Available Attendance Forms:
	Class Lecture

27.Number of Credit Hours (Total) / Number of Units (Total)
60 hours

28. Course administrator's name (mention all, if more than one name)
Name: Haneen Jumhoor sabbar Email: haneen.g.sabbar@gu.edu.iq

29. Course Objectives

Course Objectives	• The purpose of the Wave Propagation course is to provide students with a basic understanding of how electromagnetic waves travel through different media. Students will learn to analyze wave behavior such as reflection, refraction, and diffraction and apply these principles to engineering problems in communications, radar systems, and antenna design. The course also covers mathematical modeling, numerical methods, and advanced topics such as guided and surface waves.

30. Teaching and Learning Strategies

Strategy	• Lectures • Lessons • Project-Based Learning • Assignments and Project

31. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	8	Understand the principles and types of basic waves	Introduction to Waves	lecture	Competition and participation

3,4	8	Derivation and solution of wave equations for different media.	Wave equatio	lecture	Tests and Homework
5,6	8	Analysis of wave behavior in different materials.	Wave spread in the media	lecture	Peer review
6,7	8	Study of the propagation of electromagnetic waves in free space.	Electromagnetic waves	lecture	Project Design and Presentation
9	4	Understanding wave behavior in waveguides and resonators.		lecture	mission, competition
10,11	8	Explore antenna theory and its applications.		lecture	PBL
12,13	4	Developing problem-solving skills related to wave propagation.		lecture	Test/Exam/Problem Sets
14	4	Applying concepts to real-world wave propagation scenarios.	Practical applications	lecture	Project ort Presentation
15	4	midterm	Syllabus review	lecture	midterm

32. Course Evaluation

- Frequent testing, peer review, homework, PBL (Problem Based Learning).
- small project
- Midterm and Monthly Exams
- Class Participation
- Final Exam

33. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Wave Propagation by David K. Cheng.
Main references (sources)	oduction to Electrodynamics by David J. Griffiths. Foundations for Microwave Engineering" by R.E. Collin
Recommended books and references (scientific journals, reports…)	Probability, Random Variables, and Stochastic Processes" by Athanasios Papoulis and S. Unnikrishna Pillai
Electronic References, Websites	**• MIT OpenSemesterWare (OCW)** **• YouTube Channels: Channels / "Electromagnetics"**