Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Authority
Department of Quality Assurance and Academic Accreditation

Academic Program and Course Description Guide

For the year 2025-2026 AD

The University :Islamic University :
College/The Institute: College of Engineering Technology.
Scientific Department : Department Of Computer Engineering Technology.

Name of Academic or Professional Program: Bachelor Of Computer Engineering Technology.
Name of Academic Degree: Bachelor of Computer Engineering Technology.
The Educational System: Annual and Bologna System.
Description Preparation Date: 18/4/2026
Date Of Filling Out The File: 28/4/2026

The signature:
Name of the Department Head:Asst.Prof.Dr.Kassem Jumaa Ali Al-Attabi
The date: / /2026 A.D

The signature
Name of the Assistant Dean: Asst.Prof.Jalal Ali Hashim
The date: 5 / 9 /2026 A.D

Check the File Before:
Quality Assurance and University Performance Division/
Name of the Director of the Quality Assurance and University Performance Division:
Signature Date: / /2026 A.D

Dean's approval

Academic Program Description

This academic program description provides a summary of the main features of the academic program and the learning outcomes the student is expected to achieve, and demonstrates whether the student has made the most of the opportunities available. It is accompanied by a full description of each course within the program.

1- Vision The program

The vision of the department stems from our tolerant Islamic faith, our ancient civilization, and the absolute belief in the inevitability of development and progress in the fields of knowledge in general, and knowledge of the mechanisms required to deal with computers and the resulting technologies and information related to them in communications in particular. Therefore, our vision revolves around developing the human energies that come to us, students and faculty members. In the field of students, it is to prepare applied engineers who have the ability to design, install, operate and maintain all computer systems and related devices, and who are able to keep pace with modern cognitive developments in the field of computer technology engineering and emphasize the teaching of systematic scientific thinking, behavior and application. In the field of faculty members and assistants, it is to work on defining an organizational structure for those with experience through their activities in scientific research, scientific seminars and conferences in order to define the university pyramids of specializations that would suggest everything that activates the state of scientific and practical development in the department.

2- Message The program

To establish the foundations for teaching logical thinking to its members, both students and faculty, and to provide the community with specialists in the fields of computer engineering and technology. They are equipped with the ability to practice continuous self-learning to confront the new developments presented by the era, thus facilitating their future duties in solving problems for which the community has no prior knowledge of the solution, on the one hand, and promoting logical thinking to spread the culture of computing, on the other.

3- Objectives The program

1- Providing the opportunity for higher education and learning in the field of computer engineering technology and promoting the spirit of accurate and logical thinking, thus providing society with expert engineers and researchers in the field of computer engineering technology.

2- Encouraging and developing knowledge by conducting scientific research and employing it to solve societal problems.

3- Serving the community and contributing to its development through training programs, courses, seminars, conferences, scientific workshops, and providing advice to spread the culture of computing and its technologies to save effort and time.

4- Building the integrated personality of the university student in its various dimensions in accordance with Islamic values, generating the spirit and values of fruitful joint work to serve the country, and strengthening national belonging to activate change for the better.

5- Focusing on the modern intellectual and cultural development of students and faculty members in the department by learning about the world's experiences in the field of computer technology, by constantly updating the library and conducting discussion sessions and research in order for the department to have a clear scientific presence in conferences, seminars and expertise exchange programs.

4- Accreditation Programmatic

5- Effects Foreign Ministry Other

6- Structure The program				
Program structure	Number of courses	Study unit	percentage	Notes
Institutional requirements	6	14	9%	
College requirements	9	41	26%	
Department requirements	22	102	65%	
Summer training	2	0	1%	
Other				
the total	39	157	100%	

7- a description The program				
Year/ Level	Course code	Course name	Credit hours	
first stage	First course		theoretical	practical The
	CET1101	Digital Basics	✓	✓
	CET1102	Basics of Electrical Engi-neering	✓	✓
	CET1103	mathematics1	✓	
	CET1104	Engineering drawing		✓
	CET1105	Engineering workshops		✓
	MTU1002	English (Beginner)	✓	
	MTU1000	Islamic thought	✓	

	Second course			
	CET1201	digital systems	✓	✓
	CET1202	electrical circuits	✓	✓
	CET1203	Programming basics	✓	✓
	CET1204	mathematics2	✓	
	MTU1004	Human rights and democracy	✓	
	MTU1001	Arabic	✓	
	MTU1006	Computer Basics		✓
	First course			
The second stage	CET2101	Engineering Mathematics	✓	
	CET2104	Electronics Fundamentals	✓	✓
	CET2102	Object Oriented Programming	✓	✓
	CET2105	Communication Fundamentals	✓	✓
	CET2103	Computer Organization and Applications	✓	✓
	MTU1007	The Crimes of the Baath Regime	✓	
	MTU1003	English Language II	✓	
	Second course			
	CET2201	Advanced Engineering Mathematics	✓	✓
	CET2202	Python Programming	✓	✓
	CET2203	Microprocessors	✓	✓
	CET2204	Analog Communications	✓	✓
	CET2205	Electronics Circuits	✓	✓
	CET2206	Instrumentation and Measurement	✓	✓
	MTU1009	Arabic Language (2) MDF	✓	
Stage 3	First course			
	CET3101	-Operating Systems	✓	✓
	CET3102-	Control Engineering Fundamentals	✓	✓
	CET3103	-Digital Signal Processing	✓	✓
	CET3104	-Digital Controllers	✓	✓
	CET3105	-Digital Communications	✓	✓
	CET304	-Networking basics	✓	✓

	CET3106	-Real-Time Systems	✓	✓
	CET3107	-Parallel Computing	✓	✓
	second courses			
	CET3201	-Advanced Control Systems	✓	✓
	CET3202	-Computer Network Fundamentals	✓	✓
	CET3203	-Database Systems	✓	✓
	CET3204	-Engineering Analysis	✓	✓
	CET3205-	-Data Communications	✓	✓
	CET3206	-Digital Image Processing	✓	✓
	CET3207	-Image processing	✓	✓
	First and second courses			
Stage 4	CET403	Computer network security	✓	✓
	CET406	multimedia computing	✓	✓
	CET404	mobile communication systems	✓	✓
	CET402	Information and Coding Theory	✓	✓
	CET405	project management	✓	✓
	CET401	computer network protocols	✓	✓
	CET407	Optical fiber	✓	✓
	CET408	Professional ethics	✓	
		Graduation research		

8- Outputs learning Expected For the program

A. knowledge

1. expansion Frames cognitive For students
2. expansion Horizons thinking I have all student
3. tracking what He gets it done Students in Their journey Academic

B - Skills

1. Consolidation possibility Students in engineering computer
2. building a personality teacher successful
3. development reading And research Scientific I have The student And urged him on completion the study (Master's and PhD)
4. ability on the job within a team Multiple Specializations

5. ability on Contact And communication Effectively and efficiency
6. ability on Use Technologies and skills Engineering Modern and tools necessary To practice profession Engineering

9- Strategies education and learning
1- Accreditation on education theoretical And pay Students to thinking including expands Their abilities 2- expansion Contact emotional between Students gesticulate They study it from Techniques in area engineering computer and its techniques 3- development Skills that Owns it all student And his rehabilitation to Levels higher 4- monitoring Evolution Personal when all student on road Lectures that He throws it Professor In addition to Sources that indicates To her Professor 5- Courses Technology Information and networks (IT & Cisco) 6- Training Summer within Companies same Specialization The approximate For nature The program

10- Methods Evaluation
Activities Daily / Tests between when And another / Tests General/Prepared Reports Scientific procedure Discussions Scientific

Professional development
Orientation of new faculty members
Building the teacher's personality and developing his educational capabilities by refining his educational behavior and by building his correct scientific foundation.
Professional development for faculty members
Encouraging professors to develop their scientific and educational expertise by participating in seminars, training courses, workshops, and continuing education courses.

11	standard Acceptance
The student must have a good reputation, good morals, extensive knowledge, intellectual awareness, and a GPA that qualifies him to enter the college.	

12	Sources Information on The program
1. General electronic resources **2.** Paper sources (books, theses, magazines, research) **3.** Central Curricula	

13	plan development The program

Course description form

1- Course name:
Mathematics II
2- Course code:
CET1204
3- Semester/Year:
2/ 2026
4- description prepared Date:
8-3-2026
5- Available forms of attendance:
On-site in halls
6- Number of Credit hours (total), number of units (total):
150hours, 5 units
7- Course administrator name (mention all, if more than one name):
Name: **Assist. LEC. KASSEM ALI HATEEF** Email:
8- Course objectives
1. To Understand concepts of vectors and vector operations. **2. To Understand concepts of linear algebra.** **3. To get a grasp of various methods to solve systems of linear equations.** **4. To Compute linear transformations.** **5. To be able to determine Eigenvalues and Eigenvectors.** **6. To perform matrix diagonalization.**
9- Teaching and learning strategies
This module will primarily focus on encouraging students to participate in the activities, as well as refining and developing their critical thinking skills. This will be achieved through lectures, tutorials, discussions, and grading activities.
10- Course structure (course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Recognize Vectors concepts, notation and Operations..	Vectors (Definition, notation {Ordered set, Matrix, Unit vector}, Magnitude, Unit, Zero, negative ، Direction, Operations on vectors {addition, subtraction, scalar multiplication}.)	Theoretically	Daily quizzes and homework
2	3	Discuss dot product, cross product, Orthogonal and	Vectors (Operations on vectors {dot product, cross product}, Orthogonal,	Theoretically	Daily quizzes and homework

		orthonormal vectors..	orthonormal vectors.)		
3	3	Discuss the terms Diagonal, Triangular, Symmetric, Square Matrix, Transpose of a Matrix.	Matrices (Matrix, Diagonal, Triangular, Symmetric, Square Matrix, Transpose of a Matrix.)	Theoretically	Daily quizzes and homework
4	3	Describe the matrix operations {addition, subtraction, scalar multiplication ‹ multiplication}.	Matrices (operations {addition, subtraction, scalar multiplication, multiplication}.)	Theoretically	Daily quizzes and homework
5	3	Identify Determinant and Inverse for Nonsingular matrices.	Matrices (Determinant, Inverse (Nonsingular).)	Theoretically	Daily quizzes and homework
6	3	Discuss aspects about System of Linear Equations (Linear Equations, Linear Equations Solution, Matrix equations.	System of Linear Equations (Linear Equations, Linear Equations Solution, Matrix equations.)	Theoretically	Daily quizzes and homework
7	3	Identify Row operations, row-echelon form "triangular", Rank ‹of a Matrix reduced row-echelon form, Augmented Matrix.	System of Linear Equations (Row operations, row-echelon form "triangular", Rank of a Matrix ‹reduced row-echelon form,Augmented Matrix.)	Theoretically	Daily quizzes and homework
8	3	Discuss Gaussian elimination	Midterm Exam + System of Linear Equations (Gaussian elimination.)		
9	3	Explain Gauss–Jordan elimination and Solving Systems with Inverses.	System of Linear Equations (Gauss–Jordan elimination, Solving Systems with Inverses.)	Theoretically	Daily quizzes and homework
10	3	Explain Cramer's Rule.	System of Linear Equations (Cramer's Rule.)	Theoretically	Daily quizzes and homework
11	3	Explain Linear Combinations of Vector, span.	Vector Spaces (Linear Combinations of Vector, span.)	Theoretically	Daily quizzes and homework
12	3	Explain Linear	Vector Spaces (Linear	Theoretically	Daily quizzes and

		Dependence and Independence, Basis and Dimension, Rank of a Matrix.	Dependence and Independence, Basis and Dimension, Rank of a Matrix.) Coefficients.		homework
13	3	Recognize Linear Transformations	Vector Spaces (Linear Transformations.)	Theoretically	Daily quizzes and homework
14	3	Discuss Polynomials of Matrices, Characteristic Polynomial, Cayley–Hamilton Theorem.	Diagonalization (Polynomials of Matrices, Characteristic Polynomial, Cayley–Hamilton Theorem.)	Theoretically	Daily quizzes and homework
15	3	Discuss Eigenvalues and Eigenvectors, Diagonalizing Matrices.	Diagonalization (Eigenvalues and Eigenvectors, Diagonalizing Matrices.)	Theoretically	Daily quizzes and homework

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	David C. Lay, Judi J. McDonald, Steven R. Lay, "Linear Algebra and Its Applications", Pearson Education, 6th edition (July10 th 2020), ISBN-13: 978- 0136880929.
Main references (sources):	
Recommended supporting books and references (scientific journals, reports...):	Gilbert Strang, " Linear Algebra and Its Applications", Cengage Learning, 4th edition, (January 1, 2006), ISBN-13: 978- 0030105678.
Electronic references, websites:	https://www.udemy.com/course/linear-algebra-with-applications/

Teaching signature  Head of Department signature;

Course administrators name

Assist. LEC. KASSEM ALI HATEEF

Head of department

Assist. Prof. Dr. KASSEM JUMAA ALI

Course description form

1- Course name:
Engineering Drawing
2- Course code:
CTE1104
3- Semester/Year:
1st 2025 – 2026
4- description prepared Date:
29 / 01 / 2026
5- Available forms of attendance:
Inside the classroom
6- Number of Credit hours (total), number of units (total):
4 hours / 5 credit
7- Course administrator name (mention all, if more than one name):
Name: Dr.LEC. AHMED THAFEER ABD ALSAHEB Email:
8- Course objectives
1. To develop spatial visualization skills: Enhance your ability to visualize and

mentally manipulate objects in three-dimensional space based on two- dimensional drawings.
Strengthen your spatial awareness and improve
your understanding of complex engineering design
2. Learn sketching and taking field dimensions.
3. Take data and transform it into graphic drawings.
4. Learn basic engineering drawing formats.
5. Learn basic AutoCAD skills.
6. Learn who draw 2D drawings in AutoCAD.

9- Teaching and learning strategies

1. Familiarize with the Software: Before diving into engineering drawing
concepts, it's important to become familiar with the AutoCAD software. This includes
understanding the user interface, basic tools, and commands. with introductory tutorials or online resources that cover the basics of AutoCAD.
2. Step-by-Step Instructions: Break down complex drawing tasks into
smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow
and build their confidence.
3. Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and
examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible.

10- Course structure (course 1)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Introducing of Engineering Drawing		
2	4		Drawing settings of AutoCAD		
3	4		Drawing Tools Point, Line ,Multiline, P line, Spline, X line.		
4	4		Rectangle, Donut, Polygon		
5	4		Circle, Arc, Ellipse		
6	4		Modify Tools Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet.		
7	4		Display Control Zoom, Pan, Redraw, Clean Screen.		

8	4		Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions		
9	4		Annotation Tools Text, Style, M text, Scale text, Spell		
10	4		Hatching Objects		
11	4		3D modeling		
12	4		Convert 2D To 3D		
13	4		Solid Editing		
14	4		Exercises drawing		
15	4		Preparatory week before the final Exam		

(course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

11- Course evaluation:	
Required textbooks (curricular books, if any)	Introduction to AutoCAD 2010 By Alf Yarwood Copyright 2009
Main references (sources):	An Introduction to Autodesk Inventor 2010 and AutoCAD 2010 Unbnd Edition by Randy Shih
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	



Teaching signature;

Head of Department signature;

Course administrators name;

Head of epartment

Course description form

1- Course name:					
Real time system					
2- Course code:					
CET305					
3- Semester/Year:					
First and Second Semester					
4- description prepared Date:					
1-3-2026					
5- Available forms of attendance:					
On-site in halls and labs.					
6- Number of Credit hours (total), number of units (total):					
120 hours, 6 units					
7- Course administrator name (mention all, if more than one name):					
Name: Assist. Lec. MUSTAFA ABAAS SALEH Email:					
8- Course objectives					
Understand the principles used in designing an advanced computer-based system for immediate processing.					
9- Teaching and learning strategies					
The main strategy for delivering this unit is to encourage students to engage in exercises while simultaneously honing and expanding their critical thinking skills. This will be achieved through interactive classes and lessons, and by considering simple experiments that involve some sampling activities of interest to students.					
10- Course structure (course 1)					
week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1- 2- 3-	12	Define Real-Time Systems (RTS) and their importance.	Definitions of RTS	Theoretically and practically	Daily quizzes
4- 5-	8	Understand the concepts of signals, systems, and their specifications in real-time systems.	Signals, Systems, Specification	Theoretically and practically	Daily quizzes
6- 7-	12	Identify and describe	Analog computer	Theoretically and practically	Daily quizzes

8-		components and systems in analog computing.	components, Systems		
9- 10- 11-	12	Define ADC and DAC, explain their types, specifications, errors, and interfacing methods.	ADC, DAC: [Definition, Types, Specifications, Errors, C/Cs and Interfacing choosing]	Theoretically and practically	Daily quizzes
12-	4	Understand the basics of digital systems and their applications.	Introduction to Digital systems	Theoretically and practically	Daily quizzes
13- 14-	8	Identify and describe basic interfacing devices in digital systems	Basic interfacing devices	Theoretically and practically	Daily quizzes
(course 2)					
week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15-	4	Understand the methods of controlling data transfer in systems.	Data Transfer controlling	Theoretically and practically	Daily quizzes
16-	4	Define and explain unprogrammable interfacing devices	Un Programmable interfacing devices [8-bit compatible, General purpose, Timers, Peripheral controller	Theoretically and practically	Daily quizzes
17-	20	Programmable	Identify and	Theoretically	Daily quizzes

18- 19- 20- 21-		interfacing devices [8-bit compatible, General purpose, Timers, Peripheral controller]	describe programmable interfacing devices, including 8-bit compatible, general-purpose, timers, and peripheral controllers.	and practically	
22- 23- 24- 25- 26-	20	Define interrupts, explain hardware and software types, and describe the 8259A controller and interrupt methods.	Interrupts [Introduction, Types (hardware & software), Controller 8259A], Handshaking and interrupts methods	Theoretically and practically	Daily quizzes
27- 28- 29- 30-	16	Understand Direct Memory Access (DMA) and serial interfacing, including their types, standards, and controllers.	DMA, Serial Interfacing [Introduction, Standards, Types, Controller]	Theoretically and practically	Daily quizzes

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	*Real-Time Systems* by Jane W. S. Liu: A foundational book that covers the principles and practices of real-time systems.
Main references (sources):	*Real-Time Systems: Scheduling,*

	Analysis, and Verification by Albert M. K. Cheng: Provides in-depth coverage of scheduling and verification techniques.
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	Embedded - Homepage

Teaching signature:

HeaDepartment signature:

Course administrators name: Assist. Lec. MUSTAFA ABAAS SALEH

Course description form

1. Course name: Control Engineering Fundamentals.
2. Course code: CET308
3. Semester/Year: First and second semester/ Academic Year (2025/2026)
4. description prepared Date: 9/3/2026
5. Available forms of attendance: In-person education for all levels inside the classroom / Morning study
6. Number of Credit hours (total), number of units (total): 4 hours – Units 6
7. Course administrator name (mention all, if more than one name):
Name: SHAFEEQ MOHAMMED JADER **Email:** _____
8. Course objectives
The purpose of this resolution is to provide schools with information on the basic concepts of linear control theory and systems design.
9. Teaching and learning strategies
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.

10- Course structure (course 1)					
week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1st,2nd	4	Introduction To Control Systems, Open And Closed Loop System.	Introduction To Control Systems, Open And Closed Loop System.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
3rd,4th,5th, 6th	4	Mathematical modeling of physical systems and Transfer Functions, Mathematical Modeling of D.C. Servo Motor.	Mathematical modeling of physical systems and Transfer Functions, Mathematical Modeling of D.C. Servo Motor.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
7th,8th	4	Block diagrams.	Block diagrams.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
9th,10th	4	Time-domain analysis of closed loop control systems and error analysis	Time-domain analysis of closed loop control systems and error analysis	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
11th, 12th	4	P, PI, PD and PID Modes of Feedback Control, Realization of PID Controller Using Active and Passive Elements.	P, PI, PD and PID Modes of Feedback Control, Realization of PID Controller Using Active and Passive Elements.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
13th,14th	4	Stability analysis and Routh's stability Criterion.	Stability analysis and Routh's stability Criterion.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities

10- Course structure (course 2)					
week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
15th,16th,17th	4	Root Locus Technique.	Root Locus Technique.		
18th,19th, 20th	4	Analysis of control system in frequency domain and Bode Diagrams	Analysis of control system in frequency domain and Bode Diagrams	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
21th	4	Design of control systems and	Design of control systems and	learning using	Assignments + Exams +

		Compensation concepts.	Compensation concepts.	(White bored + data show)	Reports + Other Activities
22th, 23th,24th,25th	4	Control system design using root locus method.	Control system design using root locus method.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
26th,27th,28th, 29th	4	Control system design using Bode Diagrams.	Control system design using Bode Diagrams.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities
30th	4	Definitions of Non Linear Systems.	Definitions of Non Linear Systems.	learning using (White bored + data show)	Assignments + Exams + Reports + Other Activities

11- Course evaluation:	
Distribution of the marks out of 100 according to the tasks assigned to the student, such as the daily preparation, daily, oral, monthly, written exams, reports, etc.	
12- Learning and Teaching Resources:	
Required textbooks (curricular books, if any)	
Main references (sources):	Control System by Norman S. Nise, Sixth Edition
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	

Teaching signature

Course administrators name

Head of Department signature

Head of Department

Course description form

1- Course name:					
Digital Signal Processing					
2- Course code:					
CET306					
3- Semester/Year:					
First and Second Semester					
4- description prepared Date:					
1-3-2026					
5- Available forms of attendance:					
On-site in halls and labs.					
6- Number of Credit hours (total), number of units (total):					
120 hours, 6 units					
7- Course administrator name (mention all, if more than one name):					
Name: Assist. Lec. zahraa satar jabar Email:					
8- Course objectives					
Teach students the basics of signal processing and their uses in audio and video signal processing and the use of digital filters.					
9- Teaching and learning strategies					
The main strategy for delivering this unit is to encourage students to engage in exercises while simultaneously honing and expanding their critical thinking skills. This will be achieved through interactive classes and lessons, and by considering simple experiments that involve some sampling activities of interest to students.					
10- Course structure (course 1)					
week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1- 2- 3-	12	Basic elements of DSP, DSP vs. ASP, application of DSP, Continues time signals vs. discrete time signals.	Introduction to digital signal processing.	Theoretically and practically	Daily quizzes
4- 5- 6-	12	Identify the Discrete time signals and sequences.	Discrete time signals and sequences.	Theoretically and practically	Daily quizzes
7-	12	Unit sample	Standard of	Theoretically and	Daily quizzes

8- 9-		sequence, Unit step sequence, Unit ramp sequence, Exponential sequence.	discrete time signals (sequences)	practically	
10- 11- 12-	12	Static and dynamic system, shift invariant and shift variant system, Causal and non-causal system, linear and nonlinear system, stable and unstable system.	(classification of discrete time signals) System properties.	Theoretically and practically	Daily quizzes
13- 14-	8	Direct form method, graphical method, slide rule method.	Convolution.	Theoretically and practically	Daily quizzes

(course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15- 16-	8	Cross correlation and auto correlation.	Correlation of discrete time sequence.	Theoretically and practically	Daily quizzes
17- 18-	8	Find Frequency response.	Frequency domain representation.	Theoretically and practically	Daily quizzes
19- 20- 21-	12	Identify the Discrete Fourier transform (DFT), Linear convolution using DFT, Invers Discrete Fourier transform	Discrete Fourier transform (DFT), Linear convolution using DFT, Invers Discrete	Theoretically and practically	Daily quizzes

		(IDFT).	Fourier transform (IDFT).		
22- 23- 24-	12	Butterfly computation , Invers Fast Fourier transform (IFFT).	Fast Fourier transform(FFT). Butterfly computation , Invers Fast Fourier transform (IFFT).	Theoretically and practically	Daily quizzes
25- 26- 27-	12	Definition of Z transform and ROC, Properties of Z transform, Inverse Z transform, application of Z transform(pole& zero plot ,causality and stability of Z transform, solution of difference equation using Z transform.	Introduction to Z transform.	Theoretically and practically	Daily quizzes
28- 29- 30-	12	Basic FIR filter structure, direct form of FIR structure, Cascaded form of FIR structure, Basic IIR filter structure, direct form of IIR structure, Cascaded form of IIR structure, Parallel form of IIR structure.	Realization of digital filter.	Theoretically and practically	Daily quizzes

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	*Digital Signal Processing* by Proakis and Manolakis: A comprehensive guide covering the fundamentals of DSP
Main references (sources):	*Theory and Application of Digital Signal Processing* by Rabiner and Gold: Covers theory and practical applications.
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	85 Best Books on Digital Signal Processing - Sanfoundry

Teaching signature: Zahraa

HeaDepartment signature:

Course administrators name: Assist. Lec. zahraa satar jabar

Course description form

1- Course name:					
Multimedia Computing					
2- Course code:					
3- Semester/Year:					
First and Second Semester					
4- description prepared Date:					
1-3-2026					
5- Available forms of attendance:					
On-site in halls and labs.					
6- Number of Credit hours (total), number of units (total):					
120 hours, 6 units					
7- Course administrator name (mention all, if more than one name):					
Name: Assist. Lec. ryaam abd alhur Email:					
8- Course objectives					
Explaining the concept of multimedia, explaining its applications and components.					
9- Teaching and learning strategies					
The main strategy for delivering this unit is to encourage students to engage in exercises while simultaneously honing and expanding their critical thinking skills. This will be achieved through interactive classes and lessons, and by considering simple experiments that involve some sampling activities of interest to students.					
10- Course structure (course 1)					
week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	What is Multimedia.	Define multimedia and its main components.	Theoretically and practically	Daily quizzes
2	4	components of Multimedia.	Identify and describe the main components of multimedia.	Theoretically and practically	Daily quizzes
3	4	multimedia Research Topics and Projects	Explore key research topics and projects in multimedia.	Theoretically and practically	Daily quizzes
4	4s	Multimedia applications.	Identify various applications of multimedia in different fields.	Theoretically and practically	Daily quizzes
5	4	Multimedia on the	Explain the role of multimedia in web	Theoretically and	Daily quizzes

		web.	development.	practically	
6	4	What's computer graphics.	Define computer graphics and its significance.	Theoretically and practically	Daily quizzes
7	4	Line Drawing algorithms.	Understand and apply basic line drawing algorithms.	Theoretically and practically	Daily quizzes
8	4	Circle Drawing algorithms.	Implement fundamental circle drawing algorithms.	Theoretically and practically	Daily quizzes
9	4	2D translation, scaling.	Perform 2D translation and scaling transformations.	Theoretically and practically	Daily quizzes
10	4	Rotation, reflection.	Apply rotation and reflection transformations in 2D graphics.	Theoretically and practically	Daily quizzes
11	4	Image basic concept.	Explain fundamental image concepts and properties.	Theoretically and practically	Daily quizzes
12	4	Image digitization.	Describe the process of converting images into digital form.	Theoretically and practically	Daily quizzes Daily quizzes
13	4	Spatial resolution and quantization.	Understand the concepts of spatial resolution and quantization in images.	Theoretically and practically	Daily quizzes
14	4	Type of image	Classify different types of images based on format and characteristics.	Theoretically and practically	Daily quizzes
15	4	Image file formats	Identify and compare common image file formats.	Theoretically and practically	Daily quizzes

(course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Arithmetic operation on image	Perform basic arithmetic operations on images.	Theoretically and practically	Daily quizzes
2	4	Logical operation an image	Apply logical operations (AND, OR, NOT, XOR) on images.	Theoretically and practically	Daily quizzes

3	4	Image histogram	Understand and analyze image histograms.	Theoretically and practically	Daily quizzes
4	4	Histogram modification and Histogram equalization.	Modify histograms and apply histogram equalization techniques.	Theoretically and practically	Daily quizzes
5	4	Noise and type of noise	Identify different types of noise in images and sound.	Theoretically and practically	Daily quizzes
6	4	What is sound	Define sound and its properties.	Theoretically and practically	Daily quizzes
7	4	Digitization of sound	Understand the process of converting sound into digital form.	Theoretically and practically	Daily quizzes
8	4	Nyquist theorem	Explain the Nyquist theorem and its importance in signal processing.	Theoretically and practically	Daily quizzes
9	4	Synthetic sound	Understand and generate synthetic sound.	Theoretically and practically	Daily quizzes
10	4	Quantization and transmission of Audio	Describe the process of quantizing and transmitting audio signals.	Theoretically and practically	Daily quizzes
11	4	Compression of audio	Explore techniques for audio compression.	Theoretically and practically	Daily quizzes
12	4	What is video	Define video and explain its basic components.	Theoretically and practically	Daily quizzes
13	4	Video color models	Identify and understand various video color models.	Theoretically and practically	Daily quizzes
14	4	Type of video signals	Understand the different types of video signals.	Theoretically and practically	Daily quizzes
15	4	Video compression	Explain and apply video compression techniques.	Theoretically and practically	Daily quizzes

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral,

	monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	*Multimedia: Making It Work* by Tay Vaughan: A comprehensive guide to multimedia concepts and applications.
Main references (sources):	*Principles of Multimedia* by Ranjan Parekh: Explores multimedia principles with practical examples.
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	ResearchGate | Find and share research

Teaching signature:

Head of Department signature

Course administrators name: Assist. Lec. ryaam abd alhur

Course description form

1- Course name:

Data Communication

2- Course code:

CET3205

3- Semester/Year:

Second Semester / 2026

4- description prepared Date:

1-5-2026

5- Available forms of attendance:

On-site in halls and labs.

6- Number of Credit hours (total), number of units (total):

180 hours, 6 units

7- Course administrator name (mention all, if more than one name):

Name:yass ghodaer salal

Email:

8- Course objectives

1. Understand the basic principles of data communication systems.
2 .Learn methods of transmitting and processing digital signals.
3 .Gain knowledge of techniques for improving communication quality and reducing errors.
4 .Be familiar with modern communication systems and their applications.
5. Develop the ability to analyze and design communication systems.

9- Teaching and learning strategies

The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

10- Course structure (course 1)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Study QPSK and Offset QPSK modulation techniques	Digital Modulation: Quadrature Phase Shift Keying (QPSK, Offset QPSK)	Theoretically and Practically	Daily quizzes
2	4	Understand MSK and GMSK modulation methods	Minimum Shift Keying and Gaussian MSK	Theoretically and Practically	Daily quizzes
3	4	Learn QAM and multilevel modulation	Quadrature Amplitude Modulation (QAM)	Theoretically and Practically	Daily quizzes

		techniques (M-ary PSK, M-ary QAM)	and M-ary Modulation		
4	4	Study synchronization and carrier recovery using PLL	Synchronization : Phase Locked Loop (PLL) Recovery; Carrier Recovery: square law device	Theoretically and Practically	Daily quizzes
5	4	Learn advanced carrier and clock recovery techniques	Costas loop, DF PLL; Clock Recovery: spectrum line method, minimum mean square error, early-late gate method	Theoretically and Practically	Daily quizzes
6	4	Understand line coding and multilevel signaling methods	line codes: Binary Line Code; Multilevel Signaling	Theoretically and Practically	Daily quizzes
7	4	Evaluate students through mid-term exam	Mid exam	Theoretically and Practically	Daily quizzes
8	4	Introduce spread spectrum systems and PN sequence properties	Spread Spectrum Systems: Introduction; Advantages and Disadvantage; Pseudo Noise Sequence (PN Sequence)	Theoretically and Practically	Daily quizzes
9, 10	4	Study DSSS and FHSS spread spectrum techniques	Spread Spectrum Systems: Direct Sequence Spread Spectrum; Frequency Hopping Spread Spectrum (SFH, FFH)	Theoretically and Practically	Daily quizzes
11	4	Learn basics of satellite communication and frequency bands	Satellite Communication: Introduction; Types of Satellites; Frequency Bands;	Theoretically and Practically	Daily quizzes
12	4	Study satellite design and communication link analysis	Satellite Construction, Satellite Lin; Design;	Theoretically and Practically	Daily quizzes
13	4	Understand modulation, multiplexing, and multiple access methods	Modulation and Multiplexing Techniques: FDM/FM, TDM; Multiple Access: FDMA, TDMA, CDMA.	Theoretically and Practically	Daily quizzes

14	4	Learn frequency bands and their classifications	Typical Frequencies; Band Designation‹	Theoretically and Practically	Daily quizzes
15	4	Introduction to antennas and microwave systems and applications	Introduction to antennas & Microwaves, Advantages of Microwaves; Applications of Microwaves.	Theoretically and Practically	Daily quizzes

Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	Sarkar N., Elements of Digital Communications, first edition, 2003
Main references (sources):	Data Communications and Networking, Fourth Edition by Behrouz A. Forouzan
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	coursera.org/browse/physical-science-and-engineering/electricalengineering

Teaching signature:

Head of Department signature:

Course administrators name:

Head of department:

Course description form

1- Course name:					
Security of computer & Networks					
2- Course code:					
CET4203					
3- Semester/Year:					
2026					
4- description prepared Date:					
2026-10-1					
5- Available forms of attendance:					
On-site in halls and labs.					
6- Number of Credit hours (total), number of units (total):					
120 hours, 6 units					
7- Course administrator name (mention all, if more than one name):					
Name: Assist. LecZAHRAA SATAR JABAR Email:					
8- Course objectives					
The subject aims to explain the means and methods that must be followed to protect computers from unauthorized access and tampering, as well as protecting data and databases from intruders, as well as protecting computer networks, especially private networks, from intruder attacks by activating and investing in network protection protocols.					
9- Teaching and learning strategies					
The teaching and learning strategies for this subject are based on the integration of theory and practice, to promote a deep understanding of cryptography and information security concepts and develop problem analysis and solving skills. By using these strategies, students can improve their understanding of cryptography and information security concepts, motivate them to think critically, and enhance their applied skills. Students are assessed on the basis of their learning outcomes through practical and theoretical examinations.					
10- Course structure (course 1)					
week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Learn Introduction to Cryptography, Symmetric Encryption Model Learn	Introduction, Symmetric Ciphers model	Theoretically and Practically	Daily quizzes

		Introduction to Cryptography, Symmetric Encryption Model			
2	4	Learn Introduction to Cryptography, Symmetric Encryption Model	Introduction, Symmetric Ciphers model	Theoretically and Practically	Daily quizzes
3	4	Learn Caesar Cipher, Affine Cipher	Introduction, Symmetric Ciphers model	Theoretically and Practically	Daily quizzes
4	4	Learn Monoalphabetic Substitution Ciphers, Shift Ciphers	Caeser Cipher The affine Cipher	Theoretically and Practically	Daily quizzes
5	4	Learn Monoalphabetic Substitution Ciphers, Shift Ciphers	Mono alphabetic substitution ciphers Shift ciphers	Theoretically and Practically	Daily quizzes
6	4	Learn Hill Cipher	Mono alphabetic substitution ciphers Shift ciphers	Theoretically and Practically	Daily quizzes
7	4	Learn Playfair Cipher	Hill cipher	Theoretically and Practically	Daily quizzes
8	4	Learn Polyalphabetic Ciphers, Vigenère Cipher	Playfair cipher	Theoretically and Practically	Daily quizzes
9	4	Learn Substitution Cipher	Polyalphabetic ciphers Vigenere cipher	Theoretically and Practically	Daily quizzes
10	4	Learn Affine Cipher	The Transposition cipher	Theoretically and Practically	Daily quizzes
11	4	Learn One time pad Cipher	Affine cipher	Theoretically and Practically	Daily quizzes

12	4	Learn Symmetric key cipher analysis	One time pad	Theoretically and Practically	Daily quizzes
13	4	Learn Symmetric key cipher analysis	Cryptanalysis of a Symmetric key	Theoretically and Practically	Daily quizzes
14	4	Learn Symmetric key cipher analysis	Cryptanalysis of a Symmetric key	Theoretically and Practically	Daily quizzes
15	4	Learn Symmetric key cipher analysis	Cryptanalysis of a Symmetric key	Theoretically and Practically	Daily quizzes

(course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Learn Euclid's Algorithm	Euclid's Algorithm	Theoretically and Practically	Daily quizzes
2	4	Learn Symmetric Key Algorithms - DES	Symmetric-Key Algorithms - DES	Theoretically and Practically	Daily quizzes
3	4	Learn Symmetric Key Algorithms - DES	Symmetric-Key Algorithms - DES	Theoretically and Practically	Daily quizzes
4	4	Learn Symmetric Key Algorithms - DES	Symmetric-Key Algorithms - DES	Theoretically and Practically	Daily quizzes
5	4	Learn Public Key Algorithms	Public-Key Algorithms	Theoretically and Practically	Daily quizzes
6	4	Learn Public Key Algorithms	Public-Key Algorithms	Theoretically and Practically	Daily quizzes
7	4	Learn Authentication Protocols	Authentication Protocols	Theoretically and Practically	Daily quizzes
8	4	Learn Authentication Protocols	Authentication Protocols	Theoretically and Practically	Daily quizzes
9	4	Learn Authentication Protocols	Authentication Protocols	Theoretically and Practically	Daily quizzes
10	4	Learn Authentication Protocols	Authentication Protocols	Theoretically and Practically	Daily quizzes
11	4	Learn OSI Security	OSI security Architecture	Theoretically	Daily quizzes

		Architecture		and Practically	
12	4	Learn OSI Security Architecture	OSI security Architecture	Theoretically and Practically	Daily quizzes
13	4	Learn Security Services	Protection Services	Theoretically and Practically	Daily quizzes
14	4	Learn Security Services	Protection Services	Theoretically and Practically	Daily quizzes
15	4	Learn Security Services	Protection Services	Theoretically and Practically	Daily quizzes

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	Cryptography and network security: principles and practice (3rd edition), Author: Stallings, William. Year: 2003 Computer security: Art and science . Author: Matthew Bishop, year: 2003
Main references (sources):	Cryptography and network security: principles and practice (3rd edition), Author: Stallings, William. Year: 2003
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	

Teaching signature: Zaha

Head of Department

Course administrators name: Assist.Lec. Zahraa Sa'ad Head of department:

Course description form

1- Course name:
Advanced Engineering Mathematics
2- Course code:
CET2201
3- Semester/Year:
2/2026
4- description prepared Date:
8-3-2026
5- Available forms of attendance:
On-site in halls
6- Number of Credit hours (total), number of units (total):
125hours, 5 units
7- Course administrator name (mention all, if more than one name):
Name: **Assist. Lec. KASSEM ALI HATEEF** Email:
8- Course objectives
1. To develop problem solving skills complex analysis . **2. To understand power series .** **3. To the way around Fourier series .** **4. To get the grip on using Laplace transform .** **5. To develop a good understanding of ODEs .** **6. This course deals with Advanced Engineering Mathematics.**
9- Teaching and learning strategies
This module will primarily focus on encouraging students to participate in the activities, as well as refining and developing their critical thinking skills. This will be achieved through lectures, tutorials, discussions, and grading activities.
10- Course structure (course 2)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Describe Complex environment.	Complex Numbers. Polar Form of Complex Numbers. Powers and Roots. Complex variables.	Theoretically	Daily quizzes and homework
2	3	Discuss derivative of Analytic Function.	Complex Function. Derivative. Analytic Function. Cauchy–Riemann and Laplace's Equation	Theoretically	Daily quizzes and homework
3	3	Describe Exponential, Trigonometric and	Exponential, Trigonometric and Hyperbolic Functions. Euler's Formula.	Theoretically	Daily quizzes and homework

		Hyperbolic Functions.	Logarithm.		
4	3	Explain Line Integral in the Complex Plane and Cauchy's Integral Formula.	Line Integral in the Complex Plane. Cauchy's Integral Formula. Derivatives of Analytic Functions	Theoretically	Daily quizzes and homework
5	3	Using power Series and how to expand a function	Power Series. Functions Given by Power Series.	Theoretically	Daily quizzes and homework
6	3	Identify elements of Fourier Series.	Fourier Series. Arbitrary Period. Even and Odd Functions. Fourier Analysis for Periodic Functions Fourier series Formula of a function. Differentiation and Integration of Fourier Series	Theoretically	Daily quizzes and homework
7	3	Identify elements of Laplace Transform.	Laplace Transform. Transforms of Derivatives and Integrals. Table of Laplace Transforms. inverse Laplace transform	Theoretically	Daily quizzes and homework
8	2	Discuss different aspects of First-Order ODEs.	Midterm Exam		
9	3	Identify Bernoulli Equation and Population Dynamics.	First-Order ODEs. Separable ODEs. Exact ODEs. Integrating Factors. Linear ODEs. Bernoulli Equation. Population Dynamics.	Theoretically	Daily quizzes and homework
10	3	Discuss different aspects of Second-Order Linear ODEs.	Second-Order Linear ODEs. Homogeneous. Homogeneous with Constant Coefficients.	Theoretically	Daily quizzes and homework
11	3	Using Variation of Parameters.	Nonhomogeneous ODEs. Solution by Variation of Parameters.	Theoretically	Daily quizzes and homework
12	3	Discuss different aspects of Higher Order	Higher Order Linear ODEs. Homogeneous Linear ODEs. Homogeneous Linear	Theoretically	Daily quizzes and homework

		Linear ODEs.	ODEs with Constant Coefficients. Nonhomogeneous Linear ODEs.		
13	3	Using Power Series to solve ODE.	Power Series solution of ODE.	Theoretically	Daily quizzes and homework
14	3	Explain Fourier Series solution of ODE.	Fourier Series solution of ODE.	Theoretically	Daily quizzes and homework
15	3	Discuss Laplace Transform solution of ODE.	Laplace Transform solution of ODE.	Theoretically	Daily quizzes and homework

11- Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	"Advanced Engineering Mathematics ", Erwin Kreyszig, Wiley ،10th edition (August 16, 2011), ISBN-13: 978-0470458365.
Main references (sources):	
Recommended supporting books and references (scientific journals, reports...):	"Differential Equations for Engineers and Scientists", Yunus Cengel, William Palm, McGraw Hill, 1st edition (January 31 ، 2012), ISBN-13: 978-0073385907.
Electronic references, websites:	https://www.coursera.org/learn/differential-equations-engineers

Teaching signature

Head of Department signature;

Course administrators name

Head of department

Course description form

1- Course name:
Microprocessors
2- Course code:
CET2203
3- Semester/Year:
Second Semester / 2026
4- description prepared Date:
1-2-2026
5- Available forms of attendance:
On-site in halls and labs.
6- Number of Credit hours (total), number of units (total):
180 hours, 6 units
7- Course administrator name (mention all, if more than one name):
Name: Assist. Lec. MUSTSFS YAHYA HASAN Email:
8- Course objectives
1. To understand the basic operating concept of specific microprocessor . 2 .To study the hardware architecture of specific microprocessor . 3 .To encode programs based on the specific processor language . 4 .To solve problems encountered in the architecture of a specific microprocessor
9- Teaching and learning strategies
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
10- Course structure (course 1)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Study microprocessor evolution and key milestones.	Introduction - microprocessor evolution	Theoretically and Practically	Daily quizzes
2	4	Learn microprocessor architecture, specifications, and features.	Basics specific microprocessor architecture and its specifications	Theoretically and Practically	Daily quizzes
3	4	Understand microprocessor signals and machine cycle.	Microprocessor signals and machine cycle	Theoretically and Practically	Daily quizzes
4	4	Explore memory	Memory	Theoretically	Daily quizzes

		organization, interfacing, and memory mapping.	organization, interfacing and memory map	and Practically	
5	4	Study interfacing techniques for input devices.	Input devices interfacing	Theoretically and Practically	Daily quizzes
6	4	Study interfacing techniques for output devices.	Output devices interfacing	Theoretically and Practically	Daily quizzes
7	4	Learn assembly language basics and addressing modes.	Introduction to microprocessor assembly language and addressing mode	Theoretically and Practically	Daily quizzes
8	4	Study data transfer instructions and their implementation.	Data transfer instruction	Theoretically and Practically	Daily quizzes
9	4	Understand arithmetic instructions and operations.	Arithmetic instructions	Theoretically and Practically	Daily quizzes
10	4	Study logical instructions and their functions.	logical instruction	Theoretically and Practically	Daily quizzes
11	4	Learn stack registers, stack areas, and related instructions.	Stack register , stack area and related instructions	Theoretically and Practically	Daily quizzes
12	4	Study branching instructions and control flow.	Branching instruction	Theoretically and Practically	Daily quizzes
13	4	Understand delay and counter mechanisms.	Delay and counters	Theoretically and Practically	Daily quizzes
14	4	Learn about interrupts, their types, and handling.	Interrupt concept and types	Theoretically and Practically	Daily quizzes
15	4	Study subroutine concepts and usage.	Subroutine	Theoretically and Practically	Daily quizzes

Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	8085 µp architecture and programming_Gonkar
Main references (sources):	UNDERSTANDING 8085/8086 MICROPROCESSORS and PERIPHERAL ICs
Recommended supporting books and	

references (scientific journals, reports...):	
Electronic references, websites:	coursera.org/browse/physical-science-and-engineering/electricalengineering

Teaching signature: 

Head of Department signature;

Course administrators name: Assist. Lec. MUSTAFA YAHYA HASAAN

Head of department: Assist. Prof. Dr. KASSEM JUMAA

Course description form

1- Course name:
Computer Organization & Architecture
2- Course code:
CET2103
3- Semester/Year:
First Semester / 2026
4- description prepared Date:
1-10-2025
5- Available forms of attendance:
On-site in halls and labs.
6- Number of Credit hours (total), number of units (total):
180 hours, 6 units
7- Course administrator name (mention all, if more than one name):
Name: Assist. Lec. ZAHRAA ALAA ZAKI Email:
8- Course objectives
1. Understand the basic components and organization of a computer system . 2 .Explain the function and operation of the CPU, memory, and I/O devices . 3 .Analyze and evaluate different computer architectures and their trade-offs . 4 .Design and implement basic computer systems using appropriate hardware and software components . 5 .Demonstrate an understanding of the relationship between computer organization and computer performance . 6 .Apply knowledge of computer organization principles to solve real-world computing problems.
9- Teaching and learning strategies
The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
10- Course structure (course 1)

week	Hours	Requlred Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Review fundamentals, watch videos, and document insights.	Introduction to Computer system Organization	Theoretically and Practically	Daily quizzes
2	4	Analyze components, illustrate structures, and compare architectures.	Main parts of computer system, Organization and architecture	Theoretically and Practically	Daily quizzes
3	4	Identify key	Von Neumann	Theoretically	Daily quizzes

		elements, examine structure, and create a block diagram.	architecture and its components	and Practically	
4	4	Study instruction formats, practice decoding, and compare architectures.	Instruction Set Design in Von Neuman	Theoretically and Practically	Daily quizzes
5	4	Explore execution cycles, watch simulations, and test comprehension.	Overview of instruction execution cycle	Theoretically and Practically	Daily quizzes
6	4	Study memory hierarchy, diagram structures, and classify memory types.	Introduction to Memory unit	Theoretically and Practically	Daily quizzes
7	4	Compare memory techniques, solve problems, and illustrate hierarchy.	Memory Organization & classification	Theoretically and Practically	Daily quizzes
8	4	Examine memory types, conduct experiments, and assess performance.	Prime Memory :RAM ,ROM ,EPROM ,EEPROM& Storage memory :,Hard disk ,CD ROM	Theoretically and Practically	Daily quizzes
9	4	Differentiate processors, analyze systems, and use simulators.	Concepts of Microprocessors &Microcomputer & Microcontroller	Theoretically and Practically	Daily quizzes
10	4	Study microprocessor systems, diagram architecture, and analyze cases.	Organization of MP base system	Theoretically and Practically	Daily quizzes
11	4	Learn instruction formats, solve problems, and use an assembler.	Instruction formats and addressing modes	Theoretically and Practically	Daily quizzes
12	4	Understand machine and assembly languages, write programs, and translate code.	Machine language & Assembly language	Theoretically and Practically	Daily quizzes
13	4	Study I/O techniques, illustrate interfaces, and explore applications.	Input/Output (I/O) Organization	Theoretically and Practically	Daily quizzes
14	4	Analyze polling, interrupts, and DMA, simulate processes, and review cases.	Polling, interrupts, and DMA	Theoretically and Practically	Daily quizzes

15	4	Study pipelining, assess performance, and solve scheduling problems.	Pipelining and Instruction-Level Parallelism	Theoretically and Practically	Daily quizzes

Course evaluation:	The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.
Required textbooks (curricular books, if any)	Structured Computer Organization" by Andrew S. Tanenbaum
Main references (sources):	"Computer Organization and Design" by David A. Patterson and John L. Hennessy
Recommended supporting books and references (scientific journals, reports...):	
Electronic references, websites:	Computer Organization Online Course - Learn from Scratch

Teaching signature:

Head of Department signature;

Course administrators name: Assist. Lec. ZAHRAA ALAA ZAKI