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

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are

followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: ....

Faculty/Institute: ....

Scientific Department: ....

Academic or Professional Program Name: ....

Final Certificate Name: ....

Academic System: ....

Description Preparation Date:

File Completion Date:

Signature:

Head of Department Name:Aous .H.kurdi

Date: 7/4/2024

Signature:

Scientific Associate Name: Said Salman

Date: 7/4/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: khawla sadon

Date: 7/4/2024

Signature:

Approval of the Dean

3

1. Program Vision

This academic program description provides a succinct summary of the most important features of the program and the learning outcomes expected of it

The student achieves it by proving whether he has made the most of the available opportunities. It is accompanied by a description of each

Scheduled within the programme

2. Program Mission

It provides the work fields with distinguished engineers in the field of computer technology

3. Program Objectives

Excellence in the field of preparing engineers scientifically and practically in Iraq and the region..

4. Program Accreditation

It is the Authority's accreditation of the training program after achieving the program accreditation standards and harnessing all administrative, educational and clinical capabilities

In training centers for the purposes of training in postgraduate health professional programs (general specialty certificate, specific specialty).

Or professional health diploma) supervised by the Authority, which results in the provision of an educational environment

5. Other external influences

no

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements				

Department Requirements				
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

1. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	practical
	CET 2101	**computer applications**	1	2
	CET 2102	**Mathematics (II)**	3	-
	CET 2103	**Microprocessor architecture**	2	3
	CET 2104	**Instrumentation and measurement**	2	2
	CET 2105	Computer Programming (II)	2	2
	CET 2106	Foundations of communications	3	2
	CET 2107	Electronic	2	2
	CET 2108	summer training	-	-
	CET 2109	English	1	-
	CET 3101	Electronic systems simulators	1	2
	CET 3102	Engineering analysis	2	2
	CET 3103	Fundamentals of control engineering	2	2
	CET 3104	Electronic capacity	2	2
	CET 3105	Design of real time systems	2	2
	CET 3106	Digital signal processing	2	2
	CET 3107	Digital controllers	2	2
	CET 3108	Optional topic	2	2
	CET 3109	summer training	2	2
	CET 3110	English	2	2
	CET 4101	Intelligent systems modeling	2	2

	CET 4102	Advanced computer technology	2	2
	CET 4103	Design of computer adaptation circuits	2	2
	CET 4104	Advanced digital electronics	2	2
	CET 4105	project management	2	2
	CET 4106	computer networks	2	2
	CET 4107	Optional topic	2	2
	CET 4108	graduation project	–	4
	CET 4109	English	1	1
	CET 41010	Professional ethics	2	2

2. Expected learning outcomes of the program

Knowledge

1-Enable students to obtain knowledge and understanding of computer basics

2. Enable students to obtain knowledge and understanding of computer applications

3. Enable students to obtain knowledge and understanding of computer programming

4. Enable students to obtain knowledge and understanding of computer networks

Skills

1-With scientific skills
2. Memorization and analysis skills
3. Skills to use and develop.

Ethics

1- Motivation and self-confidence: Increase the level of motivation and build self-confidence among students through achieving successes and experiences
Positive learning.
2- Achieving personal and professional goals: Helping students determine their personal and professional goals and directing them towards achieving them
Through continuous learning and development.

3. Teaching and Learning Strategies

1 The ability to apply knowledge in the fields of mathematics and specialized engineering sciences in the field of computers.

-2 Acquiring the necessary sciences in the various specializations of computer engineering

3- Preparing the student to continue self-learning and acquire new technologies and skills in the field of computer engineering.

4-Building skills by following the correct procedures.

4.	Evaluation methods

Studying the theoretical and practical academic program for specialization lessons.

Data Show The theoretical program is linked using a whiteboard or display

On the personal computer, discuss ideas and facts with students.

The practical program for specialization lessons involves conducting laboratory or field

experiments and collecting measurements from…

Before small groups of students, analyze, discuss and present the measurements

5. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof.	computer	computer	–	–	–	–
Ass.prof.	computer	computer	–	–	–	–
lecturer	computer	computer	–	–	5	5
Ass.lecturer	computer	computer			2	–

Professional Development

Mentoring new faculty members

Include various methods in the curricula, mentioning the advantages of each method

Its good and bad

Include curricular vocabulary – relevant to the specialty – real issues and problems and motivate students to excel

Their opinions and proposed solutions for the best way to address problems and challenges.

Professional development for faculty members

1- The ability to work with others with discipline within a single work team (teamwork).

2 – Full awareness of the moral and practical responsibility for the work that the student will practice after graduation (professional ethics).

-3 The ability to present, discuss, and defend ideas orally, in writing, and electronically.

-4 The ability to comprehend and comprehend the English language within the technical level related to the field of specialization.

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6. Acceptance Criterion

Students are accepted into the college according to their averages in the sixth year of middle school (baccalaureate). As for the criteria for distributing students:

The section is carried out according to:

• The student's desire.

• Total number of students in the sixth grade of middle school.

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7. The most important sources of information about the program

Methodical books.

Sources.

Specifications and descriptions.

8. Program Development Plan

				Required program Learning outcomes											
				Knowledge				**Skills**				**Ethics**			
Year/Level	**Course Code**	**Course Name**	**Basic or optional**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**
	CET 2101	**computer applications**	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 2102	**Mathematics (II)**	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 2103	**Microprocessor architecture**	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 2104	**Instrumentation and measurement**	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 2105	Computer	Specialized	*	*	*	*	*	*	*	*	*	*	*	

The table is titled: **Program Skills Outline**

		Programming (II)													
	CET 2106	Foundations of communications	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 2107	Electronic	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 2108	summer training	Interpolation	*	*	*	*	*	*	*	*	*	*	*	
	CET 2109	English	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 3101	Electronic systems simulators	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 3102	Engineering analysis	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 3103	Fundamentals of control engineering	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 3104	Electronic capacity	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 3105	Design of real time systems	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 3106	Digital signal processing	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 3107	Digital controllers	Specialized	*	*	*	*	*	*	*	*	*	*	*	

	CET 3108	Optional topic	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 3109	summer training	Interpolation	*	*	*	*	*	*	*	*	*	*	*	
	CET 3110	English	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 4101	Intelligent systems modeling	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 4102	Advanced computer technology	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 4103	Design of computer adaptation circuits	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 4104	Advanced digital electronics	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 4105	project management	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 4106	computer networks	secondary	*	*	*	*	*	*	*	*	*	*	*	
	CET 4107	Optional topic	Specialized	*	*	*	*	*	*	*	*	*	*	*	
	CET 4108	graduation project	Specialized	*	*	*	*	*	*	*	*	*	*	*	

| | CET 4109 | English | Specialized | * | * | * | * | * | * | * | * | * | * | * | |
| | CET 41010 | Professional ethics | Specialized | * | * | * | * | * | * | * | * | * | * | * | |

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description
Second stage
2024

Course Description
Computer Applications

Course Description Form

1. **Course Name:**
Computer Applications
2. **Course Code:**
CET 2101
3. **Semester / Year**
(1 semester , 2024 Year)
4. **Description Preparation Date:**
1 / 4 / 2024
5. **Available Attendance Forms:**   **Weekly attendance**
6. **Number of Credit Hours (Total) / Number of Units (Total)**
120-2 units

7. Course administrator's name (mention all, if more than one name)
Name: lecturer. Osama basil gazi   Email: osama87@mauc.edu.iq

8. Course Objectives	
Course Objectives	**As illustrated below .**

General goal //

1. Understanding the fundamental concepts of MATLAB programming language environment.
2. The students will understand and learn how to use MATLAB as an effective programming language.
3. The students will be able to solve different mathematical and engineering problems as well as using plotting functions and design projects using codes or GUI.
4. Students will acquire the knowledge of basic MATLAB syntax such as: variables, input, output, vectors, matrices, functions, plotting, and GUI,
5. The students will gain the necessary skills to design and implements appropriate algorithms that solve problems dealing with different mathematical and engineering applications.

Special (Behavioral) goals //

Behavioral goals //

1. Understand the MATLAB environments and windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).
2. The students learn how to write first program and learn Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
3. Explain how to use variables and assignment statement, logical operator.
4. Practice on using Arrays, Built in functions, Basic Matrix Functions(sum, max, min, mean, magic, diag, length, size, median, prod, sort).
5. Learn how to perform basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).

9. Teaching and Learning Strategies

Strategy	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. Moreover, motivate the creative side by posing various problems to students and urging them to find appropriate solutions. Also forming work teams to assess the results of their work and change their structure periodically to develop the spirit of cooperation and development and motivate students to make intensive efforts to work different roles.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2theoretical – 2practical	Understanding and assimilation	Introduction, MATLAB Environment, MATLAB Windows(Command Window, Workspace Window, Command History window, Help Window, Editor Window).	Combining different strategies	Oral and written Examination
2	2theoretical – 2practical	Understanding and assimilation	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix	Combining different strategies	Oral and written Examination

			Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.		
3	2theoretical – 2practical	Understanding and assimilation	Variables and assignment statement, logical operator.	Combining different strategies	Oral and written Examination
4	2theoretical – 2practical	Understanding and assimilation	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).	Combining different strategies	Oral and written Examination
5	2theoretical – 2practical	Understanding and assimilation	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).	Combining different strategies	Oral and written Examination
6	2theoretical – 2practical	Understanding and assimilation	Arguments and return values, M-file, input-output statement,+ + Control Statements (Conditional statements: If, Else, Elseif, switch case)	Combining different strategies	Oral and written Examination
7	2theoretical – 2practical	Understanding and assimilation	Mid-Exam	Combining different strategies	Oral and written Examination
8	2theoretical – 2practical	Understanding and assimilation	Repetition statements: (While statement, For statement)	Combining different strategies	Oral and written Examination
9	2theoretical – 2practical	Understanding and assimilation	Combination of conditional and repetition statements I	Combining different strategies	Oral and written Examination
10	2theoretical – 2practical	Understanding and assimilation	Combination of conditional and repetition statements II	Combining different strategies	Oral and written Examination
11	2theoretical – 2practical	Understanding and	Procedures and Functions (a custom-made MATLAB	Combining different strategies	Oral and written Examination

		assimilation	function, define the name of the function, the input and the output variables, Calling Functions)		
12	2theoretical − 2practical	Understanding and assimilation	Handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics	Combining different strategies	Oral and written Examination
13	2theoretical − 2practical	Understanding and assimilation	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I	Combining different strategies	Oral and written Examination
14	2theoretical − 2practical	Understanding and assimilation	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II	Combining different strategies	Oral and written Examination
15	2theoretical − 2practical	Understanding and assimilation	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).	Combining different strategies	Oral and written Examination
16	2theoretical − 2practical	Understanding and assimilation	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.	Combining different strategies	Oral and written Examination
17	2theoretical − 2practical	Understanding and assimilation	Variables and assignment statement, logical operator.	Combining different strategies	Oral and written Examination
18	2theoretical − 2practical	Understanding and assimilation	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).	Combining different strategies	Oral and written Examination
19	2theoretical − 2practical	Understanding and	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line	Combining different strategies	Oral and written Examination

		assimilation	Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).		
20	2theoretical − 2practical	Understanding and assimilation	Arguments and return values, M-file, input-output statement	Combining different strategies	Oral and written Examination
21	2theoretical − 2practical	Understanding and assimilation	Control Statements (Conditional statements: If, Else, Elseif, switch case)	Combining different strategies	Oral and written Examination
22	2theoretical − 2practical	Understanding and assimilation	Repetition statements: (While statement, For statement)	Combining different strategies	Oral and written Examination
23	2theoretical − 2practical	Understanding and assimilation	Combination of conditional and repetition statements I	Combining different strategies	Oral and written Examination
24	2theoretical − 2practical	Understanding and assimilation	Combination of conditional and repetition statements II	Combining different strategies	Oral and written Examination
25	2theoretical − 2practical	Understanding and assimilation	Procedures and Functions(a custom-made Matlab function, define the name of the function, the input and the output variables, Calling Functions)	Combining different strategies	Oral and written Examination
26	2theoretical − 2practical	Understanding and assimilation	Handle graphics and user interface. 1.Pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects	Combining different strategies	Oral and written Examination
27	2theoretical − 2practical	Understanding and assimilation	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I	Combining different strategies	Oral and written Examination
28	2theoretical − 2practical	Understanding and assimilation	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) 2	Combining different strategies	Oral and written Examination

29	2theoretical − 2practical	Understanding and assimilation	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) 3	Combining different strategies	Oral and written Examination
30	2theoretical − 2practical	Understanding and assimilation	**Preparatory week before the final exam**	Combining different strategies	Oral and written Examination

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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
					100

12. Learning and Teaching Resources

Matlab primer	Nothing
Introduction to MATLAB for Engineers William J. Palm III	
INTRODUCTION TO MATLAB FOR ENGINEERING STUDENTS ,David Houcque	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description Guide
Computer Programming (II)

Course Description Form

13. **Course Name:**	
Computer Programming(II)	
14. **Course Code:**	
CET 2105	
15. **Semester / Year**	
(First and second semester , second Year)	
16. **Description Preparation Date:**	
1 / 4 / 2024	
17. **Available Attendance Forms:**	
Weekly attendance	
18. **Number of Credit Hours (Total) / Number of Units (Total)**	
120-2 units	
19. Course administrator's name (mention all, if more than one name)	
Name: lecturer. Dr. ghada salim mohammed Email: aalkhalg23@gmail.com	

20. Course Objectives	
Course Objectives	**As illustrated below .**

General goal //

At the end of the course, the student will be able to use the

C++ programming language to design and implement

programs related to his specialty

Special (Behavioral) goals //

Behavioral goals //

1– At the end of the course, the student will be able to

recognize the most important principles and basic pillars of object-oriented programming.

2- At the end of the course, the student will be able to distinguish between the tools used in object-oriented programming

3- At the end of the course, the student will be able to determine the type of problem and what tools are needed to solve the problem

4- At the end of the course, the student will be able to design and implement programs to solve the identified problems

5- At the end of the course, the student will be able to analyze the results of the programs that are implemented

21.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
31	2theoretical – 2practical	Understanding and assimilation	C++ Review (Program structure, namespace, identifiers, variables, constants, enum, operators).	Combining different strategies	Oral and written Examination
32	2theoretical – 2practical	Understanding and assimilation	C++ Review (type castings, control structures and functions).	Combining different strategies	Oral and written Examination
33	2theoretical – 2practical	Understanding and assimilation	Introduction to Object-Oriented Programming in C++.	Combining different strategies	Oral and written Examination

34	2theoretical − 2practical	Understanding and assimilation	Objects and Classes (Basics of objects and classes in C++	Combining different strategies	Oral and written Examination
35	2theoretical − 2practical	Understanding and assimilation	private and public members,	Combining different strategies	Oral and written Examination
36	2theoretical − 2practical	Understanding and assimilation	static data and function members,	Combining different strategies	Oral and written Examination
37	2theoretical − 2practical	Understanding and assimilation	constructors and their types, .	Combining different strategies	Oral and written Examination
38	2theoretical − 2practical	Understanding and assimilation	destructors and operator overloading	Combining different strategies	Oral and written Examination
39	2theoretical − 2practical	Understanding and assimilation	Inheritance (Concepts of Inheritance)	Combining different strategies	Oral and written Examination
40	2theoretical − 2practical	Understanding and assimilation	types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class).	Combining different strategies	Oral and written Examination
41	2theoretical − 2practical	Understanding and assimilation	types of inheritance: single, multiple	Combining different strategies	Oral and written Examination
42	2theoretical − 2practical	Understanding and assimilation	types of inheritance multilevel,	Combining different strategies	Oral and written Examination
43	2theoretical − 2practical	Understanding and assimilation	types of inheritance hierarchical, hybrid	Combining different strategies	Oral and written Examination
44	2theoretical − 2practical	Understanding and assimilation	types of inheritance: protected members, overriding, virtual base class).	Combining different strategies	Oral and written Examination
45	2theoretical − 2practical	Understanding and assimilation	Polymorphism	Combining different strategies	Oral and written Examination

46	2theoretical – 2practical	Understanding and assimilation	Pointers in C++, Pointes and Objects	Combining different strategies	Oral and written Examination
47	2theoretical – 2practical	Understanding and assimilation	this pointer	Combining different strategies	Oral and written Examination
48	2theoretical – 2practical	Understanding and assimilation	virtual and pure virtual functions	Combining different strategies	Oral and written Examination
49	2theoretical – 2practical	Understanding and assimilation	Implementing polymorphism	Combining different strategies	Oral and written Examination
50	2theoretical – 2practical	Understanding and assimilation	I/O and File management (Concepts of streams, cin and cout objects, C++ stream classes,).	Combining different strategies	Oral and written Examination
51	2theoretical – 2practical	Understanding and assimilation	Unformatted and formatted I/O, manipulators,	Combining different strategies	Oral and written Examination
52	2theoretical – 2practical	Understanding and assimilation	File stream, C++ File stream classes,	Combining different strategies	Oral and written Examination
53	2theoretical – 2practical	Understanding and assimilation	File management functions, File modes	Combining different strategies	Oral and written Examination
54	2theoretical – 2practical	Understanding and assimilation	Binary and random files	Combining different strategies	Oral and written Examination
55	2theoretical – 2practical	Understanding and assimilation	Templates	Combining different strategies	Oral and written Examination
56	2theoretical – 2practical	Understanding and assimilation	, Exceptions and STL (What is template?	Combining different strategies	Oral and written Examination
57	2theoretical – 2practical	Understanding and assimilation	function templates and class templates	Combining different strategies	Oral and written Examination

58	2theoretical − 2practical	Understanding and assimilation	Introduction to exception, try-catch-throw, multiple catch, catch all, rethrowing user defined exceptions,	Combining different strategies	Oral and written Examination
59	2theoretical − 2practical	Understanding and assimilation	Introduction to exception, try-catch-throw, multiple catch, catch all, rethrowing user defined exceptions,	Combining different strategies	Oral and written Examination
60	2theoretical − 2practical	Understanding and assimilation	Overview and use of Standard Template Library).	Combining different strategies	Oral and written Examination

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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
5	20	5	20	50	100

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	**"Object-Oriented Programming in C++"**, 4th Edition, Robert Lafore, Sams Publishing, 2002.
Recommended books and references (scientific journals, reports…)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description

Computer Interface Circuits Design

Course Description Form

1. Course Name:
Computer Interface Circuits Design
2. Course Code:
CET 2103
3. Semester / Year
(2, 2ⁿᵈ Year)
4. Description Preparation Date:
1/ 4 / 2024
5. Available Attendance Forms:
Weekly attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
150 (60 theoretical+90 Practical) **- 7 units**
7. Course administrator's name (mention all, if more than one name)
Name: lecturer. Dr. khudhaier. j. kazim Email: khudhair.j.kazim@Gmail.com

8. Course Objectives

Course Objectives	

General goal // At the end of the course, the student will be able to employ knowledge of the major components and know the basic parts of the electronic calculator, the CPU and components in the electronic parts, and the main types of memory used in the computer to possession of a scientific and practical skill of being able to diagnose faults and perform maintenance and repairs to the system calculator

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to recognize the different stages of the development of electronic computer, how data is represented inside the computers and knowledge of the processor of the type 8086.

2- At the end of the course, the student will be able to distinguish the different types of electronic computers and their major parts.

3– At the end of the course, the student will be able to determine the structural core CPU and the structural core of the memory and the various classifications of memory from the main memory and secondary memory.

4– At the end of the course, the student will be able to diagnose faults in the electronic computers.

5– At the end of the course, the student will be able to to program processor 8086.

9. Teaching and Learning Strategies

Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	2theoretical – 3practical	Identify the main parts of the computer	General architecture of digital computer, review of 8085 p	Combining different strategies	Oral and written Examination
3,4	2theoretical – 3practical	Knowledge of the main principles of Von neuman	8085 memory addressing	Combining different strategies	Oral and written Examination
5,6	2theoretical – 3practical	Understanding methods of data representation within the electronic computer	8085 1/0addressing	Combining different strategies	Oral and written Examination
7,8	2theoretical – 3practical	Knowledge of different types of input, output in the computer	8085 machine cycle & bus timing	Combining different strategies	Oral and written Examination
9	2theoretical – 3practical	Identify the various memory types in the computer	8085 Interrupt Types	Combining different strategies	Oral and written Examination
10	2theoretical – 3practical	Understanding the main components of 8086 MP	Introduction to 8086 p	Combining different strategies	Oral and written Examination
11,12	2theoretical – 3practical	Understanding the main components of 8086 MP	Software Architecture, BIU, EU, registers, pipeline	Combining different strategies	Oral and written Examination

13	2theoretical – 3practical	Understanding the different types of Input and output devices inside the computer	Memory segmentation, generating memory address	Combining different strategies	Oral and written Examination
14	2theoretical – 3practical	Identify the Buses that used in computer	Hardware organization 8086 space, Data organization (aligned and Misaligned word, double word)	Combining different strategies	Oral and written Examination
15,16	2theoretical – 3practical	Understanding the main components of 8086 MP	Pin configuration, min & max mode, 8288 bus controller, 8284 system clock	Combining different strategies	Oral and written Examination
17,18	2theoretical – 3practical	Understanding and assimilation Addressing mode	Addressing mode, machine language coding	Combining different strategies	Oral and written Examination
19,20, 21,22, 23	2theoretical – 3practical	Knowledge of types of instruction that used in 8086 MP	8086 instructions set (Data transfer LOOP instructions)	Combining different strategies	Oral and written Examination
24	2theoretical – 3practical	Knowledge of types of instruction that used in 8086 MP	Stack memory, POP & PUSH instructions	Combining different strategies	Oral and written Examination
25	2theoretical – 3practical	Understanding and assimilation	Memory read & write Bus Cycles, Idle & wait state	Combining different strategies	Oral and written Examination
26,27	2theoretical – 3practical	Understanding and assimilation Interface Circuits Memory	Memory Interface Circuits, bus transceivers, Bank Write and Bank Read Control Logic, memory expansion	Combining different strategies	Oral and written Examination
28,29	2theoretical – 3practical	Understanding and assimilation Interface Circuits I/O	1/0 Interface Circuits (isolated input/output & Memory input/output, 1/0 instructions, Input/Output Bus Cycles)	Combining different strategies	Oral and written Examination
30	2theoretical – 3practical	Understanding of different programs for 8086 MP	8086 Interrupt Types	Combining different strategies	Oral and written Examination

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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total

5	20	5	20	50	100

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Nothing
Main references (sources)	Digital Fundamental by Floyed
Recommended books and references (scientific journals, reports…)	Ramesh S. Goankar, "Microprocessor Architecture, Programming and Applications with 8085", 5thEdition, Prentice Hall
Electronic References, Websites	

.

Course Description

Instrumentation & Measurements

Course Description Form

25. Course Name: Instrumentation & Measurements	
26. Course Code: CET 2104	
27. Semester / Year	
(————— **semester** , — Yearly Program ——— **Year**)	
28. Description Preparation Date:	
1 / 4 / 2024	
29. Available Attendance Forms:	
Weekly attendance	
30. Number of Credit Hours (Total) / Number of Units (Total)	
120-2 units	
31. Course administrator's name (mention all, if more than one name)	
Name: lecturer. REYAM MUTHANA	
Email:	
reyam.m.sabree@mauc.edu.iq	
32. Course Objectives	

Course Objectives	**As illustrated below .**

General goal // At the end of the course, the student will be able to recognize knowledge and measurement units for electrical engineering physical quantit

Special (Behavioral) goals //

Behavioral goals //

1– At the end of the course, the student will be able to

recognize knowledge and measurement units for electrical engineering physical quantit

2- At the end of the course, the student will be able to distinguish knowledge of measurement devices for basic electrical transactions

3- At the end of the course, the student will be able to determine . knowledge of the special electronic measurement devices

4- At the end of the course, the student will be and understanding of how to work oscilloscope and sensors of various physical quantities able to

5- At the end of the course, the student will be able to analyze . know and understand how the different devices generate electrical signal

33.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
61	2theoretical – 2practical	Understanding and assimilation	Introduction To Measurements Quantities And Instruments.	Combining different strategies	Oral and written Examination
62	2theoretical – 2practical	Understanding and assimilation	Introduction To Measurements Quantities And Instruments.	Combining different strategies	Oral and written Examination
63	2theoretical – 2practical	Understanding and assimilation	Introduction To Measurements Quantities And Instruments.	Combining different strategies	Oral and written Examination
64	2theoretical – 2practical	Understanding and assimilation	Introduction To Measurements Quantities And Instruments.	Combining different strategies	Oral and written Examination

65	2theoretical – 2practical	Understanding and assimilation	Electromechanic al Indicating Instruments	Combining different strategies	Oral and written Examination
66	2theoretical – 2practical	Understanding and assimilation	Electromechanic al Indicating Instruments	Combining different strategies	Oral and written Examination
67	2theoretical – 2practical	Understanding and assimilation	Electromechanic al Indicating Instruments	Combining different strategies	Oral and written Examination
68	2theoretical – 2practical	Understanding and assimilation	Electromechanic al Indicating Instruments	Combining different strategies	Oral and written Examination
69	2theoretical – 2practical	Understanding and assimilation	Bridges And Their Applications	Combining different strategies	Oral and written Examination
70	2theoretical – 2practical	Understanding and assimilation	Bridges And Their Applications	Combining different strategies	Oral and written Examination
71	2theoretical – 2practical	Understanding and assimilation	Bridges And Their Applications	Combining different strategies	Oral and written Examination
72	2theoretical – 2practical	Understanding and assimilation	Bridges And Their Applications	Combining different strategies	Oral and written Examination
73	2theoretical – 2practical	Understanding and assimilation	Oscilloscopes	Combining different strategies	Oral and written Examination
74	2theoretical – 2practical	Understanding and assimilation	Oscilloscopes	Combining different strategies	Oral and written Examination
75	2theoretical – 2practical	Understanding and assimilation	Oscilloscopes	Combining different strategies	Oral and written Examination
76	2theoretical – 2practical	Understanding and assimilation	Oscilloscopes	Combining different strategies	Oral and written Examination

77	2theoretical − 2practical	Understanding and assimilation	Signal Generation	Combining different strategies	Oral and written Examination
78	2theoretical − 2practical	Understanding and assimilation	Signal Generation	Combining different strategies	Oral and written Examination
79	2theoretical − 2practical	Understanding and assimilation	Signal Generation	Combining different strategies	Oral and written Examination
80	2theoretical − 2practical	Understanding and assimilation	Signal Generation	Combining different strategies	Oral and written Examination
81	2theoretical − 2practical	Understanding and assimilation	Primary Sensing Element	Combining different strategies	Oral and written Examination
82	2theoretical − 2practical	Understanding and assimilation	Primary Sensing Element	Combining different strategies	Oral and written Examination
83	2theoretical − 2practical	Understanding and assimilation	Primary Sensing Element	Combining different strategies	Oral and written Examination
84	2theoretical − 2practical	Understanding and assimilation	Analogue And Digital Data Acquisition System.	Combining different strategies	Oral and written Examination
85	2theoretical − 2practical	Understanding and assimilation	Analogue And Digital Data Acquisition System.	Combining different strategies	Oral and written Examination
86	2theoretical − 2practical	Understanding and assimilation	Analogue And Digital Data Acquisition System.	Combining different strategies	Oral and written Examination
87	2theoretical − 2practical	Understanding and assimilation	Analogue And Digital Data Acquisition System.	Combining different strategies	Oral and written Examination
88	2theoretical − 2practical	Understanding and assimilation	Analogue And Digital Data Acquisition System.	Combining different strategies	Oral and written Examination

89	2theoretical – 2practical	Understanding and assimilation	Computer – Controlled Test System.	Combining different strategies	Oral and written Examination
90	2theoretical – 2practical	Understanding and assimilation	Computer – Controlled Test System.	Combining different strategies	Oral and written Examination

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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
10	10	10	20	50	100

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**"Modern electronic instrumentation and measuring techniques",** Cooper D & A D Helfrick
Main references (sources)	1. **"Electronic Instrumentation",** H. S. Kalsi 2. **"Electronic Instrumentation and"Electronic Instrumentation",** H. S. Kalsi **"Electronic Instrumentation and**
Recommended books and references (scientific journals, reports…)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

Course Description
Communications
Fundamentals

Course Description Form

37. Course Name: Communications Fundamentals

38. Course Code: CET 2016

39. Semester / Year
Yearly Program

40. Description Preparation Date:
1 / 4 / 2024

41. Available Attendance Forms:
Weekly attendance

42. Number of Credit Hours (Total) / Number of Units (Total)
150 (3 theoretical+2 Practical)

43. Course administrator's name (mention all, if more than one name)
Name: lecturer. REYAM MUTHANA
Email: reyam.m.sabree@mauc.edu.iq

44. Course Objectives	
Course Objectives	**As illustrated below .**

General goal // The purpose of this course is to teach the student the basic topics of the basics of communication used in the transmission of data and information transmitted electrically

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to recognize ……

2- At the end of the course, the student will be able to distinguish ………

3- At the end of the course, the student will be able to determine ……….

4- At the end of the course, the student will be able to ……….

5- At the end of the course, the student will be able to analyze ……..

45. Teaching and Learning Strategies	
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
91	2theoretical - 2practical	Understanding and assimilation	Introduction to Communications fundamentals: Basic elements of communication system,	Combining different strategies	Oral and written Examination

			s		
92	2theoretical - 2practical	Understanding and assimilation	Introduction to Communications fundamentals: Basic elements of communication system, s	Combining different strategies	Oral and written Examination
93	2theoretical - 2practical	Understanding and assimilation	Introduction to Communications fundamentals: Basic elements of communication system, s	Combining different strategies	Oral and written Examination
94	2theoretical - 2practical	Understanding and assimilation	Fourier Series	Combining different strategies	Oral and written Examination
95	2theoretical - 2practical	Understanding and assimilation	Fourier Series	Combining different strategies	Oral and written Examination
96	2theoretical - 2practical	Understanding and assimilation	Fourier Series	Combining different strategies	Oral and written Examination
97	2theoretical - 2practical	Understanding and assimilation	Fourier Series	Combining different strategies	Oral and written Examination
98	2theoretical - 2practical	Understanding and assimilation	Fourier Transform	Combining different strategies	Oral and written Examination
99	2theoretical - 2practical	Understanding and assimilation	Fourier Transform	Combining different strategies	Oral and written Examination
100	2theoretical - 2practical	Understanding and assimilation	Fourier Transform	Combining different strategies	Oral and written Examination
101	2theoretical - 2practical	Understanding and assimilation	Modulation: Amplitude Modulation frequency Modulation	Combining different strategies	Oral and written Examination

				Combining different strategies	
102	2theoretical - 2practical	Understanding and assimilation	Modulation: Amplitude Modulation frequency Modulation	Combining different strategies	Oral and written Examination
103	2theoretical - 2practical	Understanding and assimilation	Modulation: Amplitude Modulation frequency Modulation	Combining different strategies	Oral and written Examination
104	2theoretical - 2practical	Understanding and assimilation	Sampling	Combining different strategies	Oral and written Examination
105	2theoretical - 2practical	Understanding and assimilation	Sampling	Combining different strategies	Oral and written Examination
106	2theoretical - 2practical	Understanding and assimilation	Pulse Amplitude Modulation	Combining different strategies	Oral and written Examination
107	2theoretical - 2practical	Understanding and assimilation	Pulse Amplitude Modulation	Combining different strategies	Oral and written Examination
108	2theoretical - 2practical	Understanding and assimilation	Pulse Amplitude Modulation	Combining different strategies	Oral and written Examination
109	2theoretical - 2practical	Understanding and assimilation	Pulse Width Modulation, Pulse Position Modulation	Combining different strategies	Oral and written Examination
110	2theoretical - 2practical	Understanding and assimilation	Pulse Width Modulation, Pulse Position Modulation	Combining different strategies	Oral and written Examination
111	2theoretical - 2practical	Understanding and assimilation	Digital modulation	Combining different strategies	Oral and written Examination
112	2theoretical - 2practical	Understanding and assimilatio	Digital modulation	Combining different strategies	Oral and written Examination

		n			
113	2theoretical - 2practical	Understanding and assimilation	Digital modulation	Combining different strategies	Oral and written Examination
114	2theoretical - 2practical	Understanding and assimilation	Filters	Combining different strategies	Oral and written Examination
115	2theoretical - 2practical	Understanding and assimilation	Filters	Combining different strategies	Oral and written Examination
116	2theoretical - 2practical	Understanding and assimilation	Filters	Combining different strategies	Oral and written Examination
117	2theoretical - 2practical	Understanding and assimilation	Filters	Combining different strategies	Oral and written Examination
118	2theoretical - 2practical	Understanding and assimilation	Transmission lines	Combining different strategies	Oral and written Examination
119	2theoretical - 2practical	Understanding and assimilation	Transmission lines	Combining different strategies	Oral and written Examination
120	2theoretical - 2practical	Understanding and assimilation	Transmission lines	Combining different strategies	Oral and written Examination

47. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
					100

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals

	related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description:

Electronics

Course Description Form

13.	Course Name
Electronics	
14.	**Course Code**
CET 2107	
15.	**Semester / Year**
(1 & 2 semesters , 2nd Year)	
16.	**Description Preparation Date:**
1 / 4 / 2024	
17.	**Available Attendance Forms:**
Weekly attendance	
18.	**Number of Credit Hours (Total) / Number of Units (Total)**
120 hrs. / 6 units	
19.	**Course administrator's name (mention all, if more than one name)**
Name: Lecturer. Saad Taha Yaseen Email: saad.t.yasin@mauc.edu.iq	
20.	**Course Objectives**
Course Objectives	**As illustrated below**

General goal //
The course aims to provide students of the second year with fundamental information on the core concepts of electronics in computer engineering.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to recognize the purpose of electronic components and discriminate between their features.
2- At the end of the course, the student will be able to design the AC to DC rectifier; Single and three phase.
3- At the end of the course, the student will be able to design & analyze diode circuits.
4- At the end of the course, the student will be able to design,

analyze, and troubleshoot transistor circuits (BJT & FET)

5- At the end of the course, the student will be able to build, operate, and analyze PC Boards with 741 operational amplifier.

21.   Teaching and Learning Strategies

Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
121	2 theoretical / 2 practical	Understanding and assimilation	Introduction to the semiconductor materials	Combining different strategies	Oral and written Examination
122	2 theoretical / 2 practical	Understanding and assimilation	Introduction to the semiconductor materials	Combining different strategies	Oral and written Examination
123	2 theoretical / 2 practical	Understanding and assimilation	Diode characteristics	Combining different strategies	Oral and written Examination
124	2 theoretical / 2 practical	Understanding and assimilation	Diode characteristics	Combining different strategies	Oral and written Examination
125	2 theoretical / 2 practical	Understanding and assimilation	Diode application in DC	Combining different strategies	Oral and written Examination
126	2 theoretical / 2 practical	Understanding and assimilation	Diode application in DC	Combining different strategies	Oral and written Examination
127	2 theoretical / 2 practical	Understanding and assimilation	Diode application in AC	Combining different strategies	Oral and written Examination

128	2 theoretical / 2 practical	Understanding and assimilation	Zener diode characteristics and applications	Combining different strategies	Oral and written Examination
129	2 theoretical / 2 practical	Understanding and assimilation	Zener diode characteristics and applications	Combining different strategies	Oral and written Examination
130	2 theoretical / 2 practical	Understanding and assimilation	Zener diode characteristics and applications	Combining different strategies	Oral and written Examination
131	2 theoretical / 2 practical	Understanding and assimilation	BJT transistor characteristic and configuration	Combining different strategies	Oral and written Examination
132	2 theoretical / 2 practical	Understanding and assimilation	BJT transistor characteristic and configuration	Combining different strategies	Oral and written Examination
133	2 theoretical / 2 practical	Understanding and assimilation	BJT transistor characteristic and configuration	Combining different strategies	Oral and written Examination
134	2 theoretical / 2 practical	Understanding and assimilation	methods of BJT DC analysis	Combining different strategies	Oral and written Examination
135	2 theoretical / 2 practical	Understanding and assimilation	methods of BJT DC analysis	Combining different strategies	Oral and written Examination
136	2 theoretical / 2 practical	Understanding and assimilation	methods of BJT DC analysis	Combining different strategies	Oral and written Examination
137	2 theoretical / 2 practical	Understanding and assimilation	methods of BJT DC analysis	Combining different strategies	Oral and written Examination
138	2 theoretical / 2 practical	Understanding and assimilation	Transistor modeling and analysis of AC models used	Combining different strategies	Oral and written Examination
139	2 theoretical / 2 practical	Understanding and assimilation	Transistor modeling and analysis of AC models used	Combining different strategies	Oral and written Examination

140	2 theoretical / 2 practical	Understanding and assimilation	Transistor modeling and analysis of AC models used	Combining different strategies	Oral and written Examination
141	2 theoretical / 2 practical	Understanding and assimilation	Transistor modeling and analysis of AC models used	Combining different strategies	Oral and written Examination
142	2 theoretical / 2 practical	Understanding and assimilation	FET transistor characteristics and applications	Combining different strategies	Oral and written Examination
143	2 theoretical / 2 practical	Understanding and assimilation	FET transistor characteristics and applications	Combining different strategies	Oral and written Examination
144	2 theoretical / 2 practical	Understanding and assimilation	FET transistor characteristics and applications	Combining different strategies	Oral and written Examination
145	2 theoretical / 2 practical	Understanding and assimilation	Transistors frequency response	Combining different strategies	Oral and written Examination
146	2 theoretical / 2 practical	Understanding and assimilation	Transistors frequency response	Combining different strategies	Oral and written Examination
147	2 theoretical / 2 practical	Understanding and assimilation	Transistors frequency response	Combining different strategies	Oral and written Examination
148	2 theoretical / 2 practical	Understanding and assimilation	Amplifiers types and applications Integrated circuits	Combining different strategies	Oral and written Examination
149	2 theoretical / 2 practical	Understanding and assimilation	Amplifiers types and applications Integrated circuits	Combining different strategies	Oral and written Examination
150	2 theoretical / 2 practical	Understanding and assimilation	Amplifiers types and applications Integrated circuits	Combining different strategies	Oral and written Examination

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.

Daily Preparation Oral Exams	practical Exams	Report	Monthly Exams	Final theoretical + practical exam	Total
10	10	10	20	50	100

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electronic Devices and Circui Theory, by Boylestad.
Main references (sources)	-
Recommended books and references (scientific journals, reports…)	-
Electronic References, Websites	https://www.slideshare.net/shiwamisrie1/electronic-devicesandcircuittheory10thedboylestadchapter1

Course Description
Third stage
2024

Course Description
Electronic System Simulators

Course Description Form

49.	Course Name:
Electronic System Simulators	

50.	Course Code:
CET3101	

51.	Semester / Year
Year	

52.	Description Preparation Date:
1 / 4 / 2024	

53.	Available Attendance Forms:
Weekly attendance	

54.Number of Credit Hours (Total) / Number of Units (Total)
120-4 units

55.	Course administrator's name (mention all, if more than one name)
Name: lecturer. Dr. Amer Kais Obaid Email: amerkais2010@yahoo.com	

56.Course Objectives

Course Objectives	As illustrated below.

General goal //

At the end of the course, the student will be able to employ modeling, simulation, and related processes around computers and embedded systems, in addition to the practical tools used in the field of systems design.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to perform modeling and simulation processes to enhance computer electronic design processes and their applications.

2- At the end of the course, the student will be able to distinguish between the different types of modeling and simulation programs in terms of the advantages and disadvantages of each program scheme.

3- At the end of the course, the student will be able to apply simulation tools to enhance the analysis phase of the design process.

	4- At the end of the course, the student will be able to convert models into a format suitable for production processes using computer numerical control techniques.				

57. Teaching and Learning Strategies

Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

58. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15	2theoretical – 2practical	Understanding and assimilation	Logic design with MSI components and programmable logic devices	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Comparators, Decoders, Encoders and Multiplexers	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Programmable Logic Devices (PLDs)	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Programmable Logic Arrays (PLAs)	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Programmable Array Logic (PAL)	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Synchronous Sequential Networks	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Synchronous Sequential Networks	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Structure and Operation of Clocked Synchronous Sequential Networks.	Combining different strategies	Oral and written Examination
15	2theoretical – 2practical	Understanding and assimilation	Analysis of Clocked Synchronous Sequential Networks.	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	Modeling Clocked Synchronous Sequential Network Behavior	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	Modeling Clocked Synchronous Sequential Network Behavior..	Combining different strategies	Oral and written Examination

16	2theoretical – 2practical	Understanding and assimilation	State Table Reduction	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	Exam -1	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	Completing Design Of Clocked Synchronous Sequential Networks	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	Completing Design Of Clocked Synchronous Sequential Networks	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	The Algorithmic State Machine (ASM)	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	The Algorithmic State Machine (ASM)	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	The Algorithmic State Machine (ASM)	Combining different strategies	Oral and written Examination
16	2theoretical – 2practical	Understanding and assimilation	ASM Charts	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	ASM Charts	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	ASM Realizations .	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Asynchronous Sequential Networks	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Exam-2	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Structure and Operation of Asynchronous Sequential Networks	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Structure and Operation of Asynchronous Sequential Networks	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Analysis Of Asynchronous Sequential Networks	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Analysis Of Asynchronous Sequential Networks	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Reduction of Input-Restricted Flow Tables.	Combining different strategies	Oral and written Examination
17	2theoretical – 2practical	Understanding and assimilation	Reduction of Input-Restricted Flow Tables	Combining different strategies	Oral and written Examination

18	2theoretical – 2practical	Understanding and assimilation	A General Procedure to Flow Table Reduction	Combining different strategies	Oral and written Examination

59. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
10	10	10	20	50	100

60. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	**Digital Fundamental by Floyed Digital_Circuit_Analysis_and_Design_with_Sim ulink_Modeling_2nd_Ed by Steven T. Karris**
Recommended books and references (scientific journals, reports...)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Engineering Analysis

2024

Course Description Form

61.	Course Name:
Engineering Analysis	

62.	Course Code:
3012	

63.	Semester / Year:
Yearly Program	

64.	Description Preparation Date:
7/4/2024	

65. Available Attendance Forms:
Weekly participation

66. Number of Credit Hours (Total) / Number of Units (Total)
120 (60 theoretical+60 Practical)- 6 units

67.	Course administrator's name (mention all, if more than one name)
Name: Wala'a A. Mahdi Email: walaaa.mahdi@mauc.edu.iq	

68.	Course Objectives
Course Objectives	• Aim to assist the student to understand the laws and mathematical issues for the purpose of solving engineering problems such as complex electrical and electronic circuits. • Identify basic software used in facilitating the solution of complex sports issues • Search the modern subjects and define problems that need depth scientific research

69.	Teaching and Learning Strategies
Strategy	B. Subject-specific skills B1 - Ability to analyze complex engineering problems B2.The ability to think about dealing with the problem according to certain rules B3 - The ability to implement methods of solving mathematical problems in a practical way to verify result B4 - Knowing the comparison between the theoretical side in solvi mathematical problems and the practical side Teaching and Learning Methods

- Readings, self-learning and discussion sessions that are applied in the laboratory
- Classroom exercises and activities
- Guide students to some websites to benefit from them to develop their capabilities.
- Holding research seminars to explain and analyze some problems and find solutions to them
- Holding research seminars to explain and analyze some problems and find solutions to them

Assessment methods
- Participation in the classroom
- Semester and final exams (theoretical and practical) and activities
- Quizzes
- Searching the Internet and writing relevant reports

. Thinking Skills

C1. Develop the student's ability to work on homework and deliver them on time

C2. Logical and practical thinking to find solutions to problems in a theoretical-mathematical style

C3. Develop the student's ability to dialogue and discussion

C4. Develop the student's ability to volunteer to participate in group work

Teaching and Learning Methods
- Manage the lecture in a way that feels the importance of time
- Assigning the student some group activities and assignments
- Allocate a percentage of the grade for group activities

Assessment methods
- Active participation in the classroom is evidence of student commitment and responsibility
- Commitment to the deadline specified in submitting the assignments and research required of the student to submit them
- The semester and final exams (theoretical and practical) express commitment and cognitive and skill achievement

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

D1. Develop the student's ability to deal with technical means

D2. Develop the student's ability to deal with the Internet and multiple media

D3. Develop the student's ability to dialogue and discussion, thus enabling him to pass professional exams organized by local/regional/international bodies

		D4. Enabling the student for continuous self-development af graduation			

70. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2 ,4,5	2 theoreti +2 practica For ea week	Learn to the Lapl transform	Laplace transform	theor cal pract l	General question and discussi
6,7	2 theoreti +2 practica For ea week	Laplace app	Laplace transform theorems a applications	=	Achievemen t test and quizzes
8,9 10,1,1	2 oretical +2 ractical r each week	arn to use Z transform	Z transform	=	General question and discussi
13 4	2 oretical +2 ractical r each week	The use of the Z transform and its applications	Z-transform Theorems a applications	=	Achievemen t test and quizzes
15, 6,1 18, 9	2 oretical +2 ractical r each week	Learn probability calculations nd statistics	Probability and statisti	=	General uestions and cussion and chievem ent test

20 1,2 23	=	Numerical alysis and uses in solving complex athematical problems	Numerical computations 1) bisection method, 2) false position method, 3) Newto Raphson method	=	Achievemen t test and quizzes
24 5	=		Solution nonlinear equation	=	Achievemen t test and quizzes
26 7,2	=	-	Numerical solution of ordinary differential equation:	=	Achievemen t test and quizzes
29	=		Matrix operations, solution of linear system equation	=	Achievemen t test and quizzes
30	=		linear transformations, Cayley- Hamilton theorem	=	Achievemen t test and quizzes

71. 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

72. Learning and Teaching Resources

Required textbooks (curricular books, if any)	ERWIN KREYSZIG, "Advanc Engineering Mathematics", 10th Editi JOHN WILEY & SONS, INC., 2011
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Richard L. Burden & J. Douglas Faires, "Numerical Analysis", 8th Edition, 2011.

Electronic References, Websites	*"Laplace Transforms (LT)"*, Tutorials Point website *"Z-Transforms (ZT)"*, Tutorials Point website *"Statistics - Probability"*, Tutorials Point websit *"MATLAB - Overview"*, Tutorials Point website http://www.tutorialspoint.com

Course Description:

2024

Course Description Form

73.	**Course Name**
	Control Engineering Fundamentals
74.	**Course Code**
	CET 3103
75.	**Semester / Year**
	(1 & 2 semesters , 3rd Year)
76.	**Description Preparation Date:**
	1 / 4 / 2024
77.	**Available Attendance Forms:**
	Weekly attendance
78.	**Number of Credit Hours (Total) / Number of Units (Total)**
	120 hrs. / 6 units
79.	**Course administrator's name (mention all, if more than one name)**
	Name: Lecturer. Saad Taha Yaseen Email: saad.t.yasin@mauc.edu.iq
80.	**Course Objectives**

Course Objectives	**As illustrated below**

General goal //

The course aims to provide students of the third stage with fundamental core concepts of control engineering to be able to design controllers and execute procedures to determine systems stability.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to perform

system analysis in the time domain by using differential equations in the lumpy field using Laplace transform.

2- At the end of the course, the student will be able to perform system analysis in the frequency domain in the lumpy field.

3- At the end of the course, the student will be able to do analysis of different systems for different entries response.

4- At the end of the course, the student will be able to analyze

the stability of different types of control systems.					
81.	**Teaching and Learning Strategies**				
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies				

82. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
181	2 theoretical / 2 practical	Understanding and assimilation	Open and closed loop system	Combining different strategies	Oral and written Examination
182	2 theoretical / 2 practical	Understanding and assimilation	Open and closed loop system	Combining different strategies	Oral and written Examination
183	2 theoretical / 2 practical	Understanding and assimilation	Transfer function and Mathematical modelling of control systems	Combining different strategies	Oral and written Examination
184	2 theoretical / 2 practical	Understanding and assimilation	Transfer function and Mathematical modelling of control systems	Combining different strategies	Oral and written Examination
185	2 theoretical / 2 practical	Understanding and assimilation	Transfer function and Mathematical modelling of control systems.	Combining different strategies	Oral and written Examination
186	2 theoretical / 2 practical	Understanding and assimilation	DC servo motor transfer function	Combining different strategies	Oral and written Examination
187	2 theoretical / 2 practical	Understanding and assimilation	DC servo motor transfer function	Combining different strategies	Oral and written Examination
188	2 theoretical / 2 practical	Understanding and assimilation	Block diagram representation	Combining different strategies	Oral and written Examination

				Combining different strategies	Oral and written Examination
189	2 theoretical / 2 practical	Understand ing and assimilation	Time domain analysis of control system	Combining different strategies	Oral and written Examination
190	2 theoretical / 2 practical	Understand ing and assimilation	Steady state analysis	Combining different strategies	Oral and written Examination
191	2 theoretical / 2 practical	Understand ing and assimilation	Transient response analysis	Combining different strategies	Oral and written Examination
192	2 theoretical / 2 practical	Understand ing and assimilation	Analysis of 1st order system Analysis of 2nd order system	Combining different strategies	Oral and written Examination
193	2 theoretical / 2 practical	Understand ing and assimilation	P-I-D controllers	Combining different strategies	Oral and written Examination
194	2 theoretical / 2 practical	Understand ing and assimilation	P-I-D controllers	Combining different strategies	Oral and written Examination
195	2 theoretical / 2 practical	Understand ing and assimilation	Routh's criterion and applications of Routh's Criterion	Combining different strategies	Oral and written Examination
196	2 theoretical / 2 practical	Understand ing and assimilation	Routh's criterion and applications of Routh's Criterion	Combining different strategies	Oral and written Examination
197	2 theoretical / 2 practical	Understand ing and assimilation	Root Locus	Combining different strategies	Oral and written Examination
198	2 theoretical / 2 practical	Understand ing and assimilation	Root Locus	Combining different strategies	Oral and written Examination
199	2 theoretical / 2 practical	Understand ing and assimilation	Root Locus	Combining different strategies	Oral and written Examination
200	2 theoretical / 2 practical	Understand ing and assimilation	Root Locus	Combining different strategies	Oral and written Examination

201	2 theoretical / 2 practical	Understanding and assimilation	Bode plot	Combining different strategies	Oral and written Examination
202	2 theoretical / 2 practical	Understanding and assimilation	Bode plot	Combining different strategies	Oral and written Examination
203	2 theoretical / 2 practical	Understanding and assimilation	Bode plot	Combining different strategies	Oral and written Examination
204	2 theoretical / 2 practical	Understanding and assimilation	Bode plot	Combining different strategies	Oral and written Examination
205	2 theoretical / 2 practical	Understanding and assimilation	Compensation	Combining different strategies	Oral and written Examination
206	2 theoretical / 2 practical	Understanding and assimilation	Compensation	Combining different strategies	Oral and written Examination
207	2 theoretical / 2 practical	Understanding and assimilation	Compensation	Combining different strategies	Oral and written Examination
208	2 theoretical / 2 practical	Understanding and assimilation	Compensation	Combining different strategies	Oral and written Examination
209	2 theoretical / 2 practical	Understanding and assimilation	Different examples	Combining different strategies	Oral and written Examination
210	2 theoretical / 2 practical	Understanding and assimilation	Different examples	Combining different strategies	Oral and written Examination

83. 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.

Daily Preparation Oral Exams	practical Exams	Report	Monthly Exams	Final theoretical + practical exam	Total
10	10	10	20	50	100

84. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Modern Control Engineering Ogata
Main references (sources)	Control Systems by Bakshi
Recommended books and references (scientific journals, reports...)	Modern Control Systems by Dorf
	Control Systems Engineering by Nise
Electronic References, Websites	-

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Course Description:

Power Electronics

Course Description Form

85.	Course Name
Power Electronics	
86.	**Course Code**
CET 3104	
87.	**Semester / Year**
(1 & 2 semesters , 3rd Year)	
88.	**Description Preparation Date:**
1 / 4 / 2024	
89.	**Available Attendance Forms:**
Weekly attendance	
90.	**Number of Credit Hours (Total) / Number of Units (Total)**
120 hrs. / 6 units	
91.	**Course administrator's name (mention all, if more than one name)**
Name: Lecturer. Saad Taha Yaseen Email: saad.t.yasin@mauc.edu.iq	
92.	**Course Objectives**
Course Objectives	**As illustrated below**

General goal //
The course aims to provide students of the third year with fundamental information on the core concepts of computer engineering techniques.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to recognize the purpose of PE and discriminate between PE devices' features.
2- At the end of the course, the student will be able to design the AC to DC converter (rectifier); Single and three phase rectifiers.
3- At the end of the course, the student will be able to design & analyze Thyristor triggering circuits.
4- At the end of the course, the student will be able to design,

analyze, and troubleshoot AC to AC converters, DC to AC converters (inverters), and DC choppers (Buck, Boost and Buck-Boost).

5- At the end of the course, the student will be able to sketch block diagram for Switch-mode power supply and DC drive construction & analyze its operation.

93.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

94. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
211	2 theoretical / 2 practical	Understanding and assimilation	Power Electronics Devices: SCR's construction, symbol, operation, characteristics, and applications.	Combining different strategies	Oral and written Examination
212	2 theoretical / 2 practical	Understanding and assimilation	Power Electronics Devices: TRIAC's construction, symbol, operation, characteristics, and applications.	Combining different strategies	Oral and written Examination
213	2 theoretical / 2 practical	Understanding and assimilation	Power Electronics Devices: DIAC's construction, symbol, operation, characteristics, and applications.	Combining different strategies	Oral and written Examination
214	2 theoretical / 2 practical	Understanding and assimilation	Power Electronics Devices: IGBT's construction, symbol, operation, characteristics, and applications.	Combining different strategies	Oral and written Examination
215	2 theoretical / 2 practical	Understanding and assimilation	Power Electronics Devices: MOSFET's construction, symbol, operation, characteristics, and applications.	Combining different strategies	Oral and written Examination
216	2 theoretical / 2 practical	Understanding and assimilation	Single and three phase rectifiers using SCR (thyristors) and diodes & the firing circuits design.	Combining different strategies	Oral and written Examination

217	2 theoretical / 2 practical	Understanding and assimilation	Single and three phase rectifiers using SCR (thyristors) and diodes & the firing circuits design.	Combining different strategies	Oral and written Examination
218	2 theoretical / 2 practical	Understanding and assimilation	Single and three phase rectifiers using SCR (thyristors) and diodes & the firing circuits design.	Combining different strategies	Oral and written Examination
219	2 theoretical / 2 practical	Understanding and assimilation	Single and three phase rectifiers using SCR (thyristors) and diodes & the firing circuits design.	Combining different strategies	Oral and written Examination
220	2 theoretical / 2 practical	Understanding and assimilation	Single and three phase rectifiers using SCR (thyristors) and diodes & the firing circuits design.	Combining different strategies	Oral and written Examination
221	2 theoretical / 2 practical	Understanding and assimilation	DC to DC converter (DC choppers) -Buck, -boost, and Buck-boost	Combining different strategies	Oral and written Examination
222	2 theoretical / 2 practical	Understanding and assimilation	DC to DC converter (DC choppers) -Buck, -boost, and Buck-boost	Combining different strategies	Oral and written Examination
223	2 theoretical / 2 practical	Understanding and assimilation	DC to DC converter (DC choppers) -Buck, -boost, and Buck-boost	Combining different strategies	Oral and written Examination
224	2 theoretical / 2 practical	Understanding and assimilation	DC line commutation circuits and transient analysis	Combining different strategies	Oral and written Examination
225	2 theoretical / 2 practical	Understanding and assimilation	DC line commutation circuits and transient analysis	Combining different strategies	Oral and written Examination
226	2 theoretical / 2 practical	Understanding and assimilation	AC voltage controllers; phase control and on-off control	Combining different strategies	Oral and written Examination
227	2 theoretical / 2 practical	Understanding and assimilation	AC voltage controllers; phase control and on-off control	Combining different strategies	Oral and written Examination
228	2 theoretical / 2 practical	Understanding and assimilation	AC voltage controllers; phase control and on-off control	Combining different strategies	Oral and written Examination

229	2 theoretical / 2 practical	Understand ing and assimilation	AC voltage controllers; phase control and on-off control	Combining different strategies	Oral and written Examination
230	2 theoretical / 2 practical	Understand ing and assimilation	AC frequency controllers (Cycloconverters)	Combining different strategies	Oral and written Examination
231	2 theoretical / 2 practical	Understand ing and assimilation	Switch-mode power supply(SMPS) Flyback (SMPS)	Combining different strategies	Oral and written Examination
232	2 theoretical / 2 practical	Understand ing and assimilation	Switch-mode power supply(SMPS) Flyback (SMPS)	Combining different strategies	Oral and written Examination
233	2 theoretical / 2 practical	Understand ing and assimilation	Inverter (DC to AC converter). Half-bridge & Full-bridge inverter. Single and three phase inverters	Combining different strategies	Oral and written Examination
234	2 theoretical / 2 practical	Understand ing and assimilation	Inverter (DC to AC converter). Half-bridge & Full-bridge inverter. Single and three phase inverters	Combining different strategies	Oral and written Examination
235	2 theoretical / 2 practical	Understand ing and assimilation	Inverter (DC to AC converter). Half-bridge & Full-bridge inverter. Single and three phase inverters	Combining different strategies	Oral and written Examination
236	2 theoretical / 2 practical	Understand ing and assimilation	Inverter (DC to AC converter). Half-bridge & Full-bridge inverter. Single and three phase inverters	Combining different strategies	Oral and written Examination
237	2 theoretical / 2 practical	Understand ing and assimilation	DC machine analysis and DC motor drives	Combining different strategies	Oral and written Examination
238	2 theoretical / 2 practical	Understand ing and assimilation	DC machine analysis and DC motor drives	Combining different strategies	Oral and written Examination
239	2 theoretical / 2 practical	Understand ing and assimilation	DC machine analysis and DC motor drives	Combining different strategies	Oral and written Examination
240	2 theoretical / 2 practical	Understand ing and	Fourier series analysis for signal waveforms to find their harmonics	Combining different strategies	Oral and written

		assimilation			Examination

95. 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.

Daily Preparation Oral Exams	practical Exams	Report	Monthly Exams	Final theoretical + practical exam	Total
10	10	10	20	50	100

96. Learning and Teaching Resources

Required textbooks (curricular books, if any)	-
Main references (sources)	Power electronic systems, by Lander.
Recommended books and references (scientific journals, reports...)	Power electronics and application, by Rashid.
Electronic References, Websites	-

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Course Description
Real Time System Designs

Course Description Form

97.	**Course Name:**

Real Time System Designs

98.	**Course Code:**

CET 3105

99.	**Semester / Year**

(1ˢᵗ and 2ⁿᵈ semester , 2023–2024 Year)

100.	**Description Preparation Date:**

1 / 9 / 2023

101.	**Available Attendance Forms:**
	Weekly attendance

102.	**Number of Credit Hours (Total) / Number of Units (Total)**

120-2 units

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

Name: lecturer. Dr. Hussein Alsheakh
Email: iraqnorth@gmail.com

104.	Course Objectives

Course Objectives	**As illustrated below .**

General goal //

Computers are embedded in countless real-world devices such as cell phones and remote controllers and in systems inside automobiles and aircrafts. These devices and systems are required to perform flawlessly and in real-time. This course will address fundamental challenges in the design, implementation, and validation of these real-time and embedded systems. Course topics include resource management, concurrency, secure coding practices, memory management, timeline design and analysis, stimulability tests, hardware interfacing, device driver programming, memory maps and boot kernels, firmware and ROM-resident system code, communications and networking, and debugging live systems. These concepts will be reinforced through C programming assignments using the Linux-based operating systems. Students will work on special devices such as a mobile phone, Internet of Things, small device controllers (Arduino, Raspberry Pi, mobile tablets and phones), drones and virtual reality (VR/AR) devices

Special (Behavioral) goals //

Behavioral goals //

On completion of this course students will be able to

(i) understand the components and working of a realtime and embedded operating systems.

(ii) program devices using C programming language.

(iii) design and implement various embedded systems functions. Students will also learn the regulations, privacy, security and safety issues related to designing and using drones.

105.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

106. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
241	2theoretical – 2practical	Understanding and assimilation	Definitions of RTS	Combining different strategies	Oral and written Examination
242	2theoretical – 2practical	Understanding and assimilation	Definitions of RTS	Combining different strategies	Oral and written Examination
243	2theoretical – 2practical	Understanding and assimilation	Definitions of RTS	Combining different strategies	Oral and written Examination
244	2theoretical – 2practical	Understanding and assimilation	Signals systems, specification	Combining different strategies	Oral and written Examination
245	2theoretical – 2practical	Understanding and	Signals systems, specification	Combining different strategies	Oral and written Examination

		assimilation			
246	2theoretical − 2practical	Understanding and assimilation	Analog Computer components, system	Combining different strategies	Oral and written Examination
247	2theoretical − 2practical	Understanding and assimilation	Analog Computer components, system	Combining different strategies	Oral and written Examination
248	2theoretical − 2practical	Understanding and assimilation	Analog Computer components, system	Combining different strategies	Oral and written Examination
249	2theoretical − 2practical	Understanding and assimilation	ADC,DAC	Combining different strategies	Oral and written Examination
250	2theoretical − 2practical	Understanding and assimilation	ADC,DAC	Combining different strategies	Oral and written Examination
251	2theoretical − 2practical	Understanding and assimilation	ADC,DAC	Combining different strategies	Oral and written Examination
252	2theoretical − 2practical	Understanding and assimilation	Introduction to digital systems	Combining different strategies	Oral and written Examination
253	2theoretical − 2practical	Understanding and assimilation	Basic interfacing devices	Combining different strategies	Oral and written Examination
254	2theoretical − 2practical	Understanding and assimilation	Basic interfacing devices	Combining different strategies	Oral and written Examination
255	2theoretical − 2practical	Understanding and assimilation	Data transfer controlling	Combining different strategies	Oral and written Examination
256	2theoretical − 2practical	Understanding and assimilation	Un Programmable interfacing device	Combining different strategies	Oral and written Examination
257	2theoretical − 2practical	Understanding and assimilation	Programmable interfacing devices	Combining different strategies	Oral and written Examination

				Combining different strategies	Oral and written Examination
258	2theoretical − 2practical	Understanding and assimilation	Programmable interfacing devices	Combining different strategies	Oral and written Examination
259	2theoretical − 2practical	Understanding and assimilation	Programmable interfacing devices	Combining different strategies	Oral and written Examination
260	2theoretical − 2practical	Understanding and assimilation	Programmable interfacing devices	Combining different strategies	Oral and written Examination
261	2theoretical − 2practical	Understanding and assimilation	Programmable interfacing devices	Combining different strategies	Oral and written Examination
262	2theoretical − 2practical	Understanding and assimilation	Interrupts, controller handshaking and interrupts ,methods	Combining different strategies	Oral and written Examination
263	2theoretical − 2practical	Understanding and assimilation	Interrupts, controller handshaking and interrupts ,methods	Combining different strategies	Oral and written Examination
264	2theoretical − 2practical	Understanding and assimilation	Interrupts, controller handshaking and interrupts ,methods	Combining different strategies	Oral and written Examination
265	2theoretical − 2practical	Understanding and assimilation	Interrupts, controller handshaking and interrupts ,methods	Combining different strategies	Oral and written Examination
266	2theoretical − 2practical	Understanding and assimilation	Interrupts, controller handshaking and interrupts ,methods	Combining different strategies	Oral and written Examination
267	2theoretical − 2practical	Understanding and assimilation	DNA, serial interfacing	Combining different strategies	Oral and written Examination
268	2theoretical − 2practical	Understanding and assimilation	DNA, serial interfacing	Combining different strategies	Oral and written Examination
269	2theoretical − 2practical	Understanding and assimilation	DNA, serial interfacing	Combining different strategies	Oral and written Examination

270	2theoretical – 2practical	Understanding and assimilation	DNA, serial interfacing	Combining different strategies	Oral and written Examination

107. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
5	15	5	15	60	100

108. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Debugging: The 9 Indispensable Rules for Finding Even the Most Elusive Software and Hardware Problems by David J Agans, Publisher: AMACOM; ISBN-10: 0814474578
Main references (sources)	Real-Time Systems Development (Paperback) by Rob Williams a. Paperback: 320 pages b.Publisher: Butterworth-Heinemann (December 3, 2005) c. ISBN-10: 0750664711 ISBN-13: 978-0750664714
Recommended books and references (scientific journals, reports…)	Programmable Controller, theory and Implementation
Electronic References, Websites	N/A

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Course Description
Digital Signal Processing

Course Description Form

109.	Course Name:

Digital Signal Processing

110.	Course Code:

CET3106

111.	Semester / Year

Year

112.	Description Preparation Date:

1 / 4 / 2024

113.	Available Attendance Forms:

Weekly attendance

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

120-6 units

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

Name: lecturer. Dr. Amer Kais Obaid
Email: amerkais2010@yahoo.com

116.	Course Objectives

Course Objectives	As illustrated below.

General goal //
At the end of the course, the student will be able to employ a scientific engineering methodology in analyzing systems and representing them with mathematical and computer models.

Special (Behavioral) goals //
Behavioral goals //
1- At the end of the course, will Follow a scientific engineering methodology in analyzing systems and representing them with mathematical and computer models.
2- At the end of the course, using signal processing techniques to solve practical problems and engineering applications that he encounters in his projects and professional work.
3- Creating criteria for evaluating systems performance and developing it using filters and other digital tools

117.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

118. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
27	2theoretical – 2practical	Understanding and assimilation	Introduction to digital signal processing	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	Basic elements of DSP, DSP vs. ASP, application of DSP,	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	Discrete time signals and sequences	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	Unit sample sequence, Unit step sequence,	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	(classification of discrete time signals) system properties	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	Static and dynamic system,	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	shift invariant and shift variant system,	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	Causal and non-causal system,	Combining different strategies	Oral and written Examination
27	2theoretical – 2practical	Understanding and assimilation	linear and nonlinear system, stable and unstable	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Exam-1	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Convolution: Direct form method,	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Convolution: Direct form method,	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Convolution: graphical method	Combining different strategies	Oral and written Examination

28	2theoretical – 2practical	Understanding and assimilation	Correlation of discrete time sequence	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Cross correlation and auto correlation	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Discrete Fourier transform (DFT)	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Discrete Fourier transform (DFT)	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Invers Discrete Fourier transform IDFT	Combining different strategies	Oral and written Examination
28	2theoretical – 2practical	Understanding and assimilation	Invers Discrete Fourier transform IDFT	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Linear convolution using DFT	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Linear convolution using DFT	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Cascaded form of FIR structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Cascaded form of FIR structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Exam-2	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Basic IIR filter structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Direct form of IIR structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Cascaded form of IIR structure. Parallel form of IR structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Cascaded form of IIR structure. Parallel form of IR structure	Combining different strategies	Oral and written Examination
29	2theoretical – 2practical	Understanding and assimilation	Cascaded form of IIR structure. Parallel form of IR structure	Combining different strategies	Oral and written Examination
30	2theoretical – 2practical	Understanding and assimilation	Cascaded form of IIR structure. Parallel form of IR structure	Combining different strategies	Oral and written Examination

119.   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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
10	10	10	20	50	100

120. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	**John G. Proakis, Dimitris G. Manolakis," Digital Signal Processing", 4th Edition. Monson H. Hayes, " Schaum's Outline of Theory and Problems of Digital Signal Processing",**
Recommended books and references (scientific journals, reports...)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description
Fourth stage
2024

Course Description
Smart Systems
Modelling

Course Description Form

121.	**Course Name:**

Smart Systems Modelling

122.	**Course Code:**

CET 4101

123.	**Semester / Year**

(first and second semester , fourth Year)

124.	**Description Preparation Date:**

1   / 4 / 2024

125.	**Available Attendance Forms:**

Weekly attendance

126.	**Number of Credit Hours (Total) / Number of Units (Total)**

120-2 units

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

Name: lecturer. Dr. ghada salim mohammed
Email: **ghaa2090@mauc.edu.iq**

128.	Course Objectives

Course Objectives	**As illustrated below**

Overall goal //
    At the end of the course, the student will be able to know what artificial neural networks are and be able to choose the neural network Artificial materials and working on them through a specific programming language, MATLAB.

Behavioral goals //
    1- At the end of the course, the student will be able to recognize the most important principles of artificial neural networks.
    2- At the end of the course, the student will be able to distinguish between the different types of artificial neural networks.
    3- At the end of the course, the student will be able to determine the type of learning algorithms in artificial neural networks.

	4- At the end of the course, the student will be able to identify the genetic search algorithm, identify the types of algorithms Genetic traits	algorithms in artificial neural networks.
	5- At the end of the course, the student will be able to analyze the results of the programs that are implemented	4- At the end of the course, the student will be able to identify the genetic search algorithm, identify the types of algorithms Genetic traits
		5- At the end of the course, the student will be able to analyze the results of the programs that are implemented

129.   Teaching and Learning Strategies

Strategy
• Brainstorming strategy
• Modeling learning strategy
• Group work or cooperative learning strategy
• Discussion strategy
• Project strategy
• A strategy for problem solving or problem-based learning
• Combining different strategies

130. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
301	2theoretical - 2practical	Understanding and assimilation	Introduction and role of ANNs, fundamentals of biological Neural Network,	Combining different strategies	Oral and written Examination
302	2theoretical - 2practical	Understanding and assimilation	basic principles of ANNs and their early structures	Combining different strategies	Oral and written Examination
303	2theoretical - 2practical	Understanding and assimilation	Properties of ANN,	Combining different strategies	Oral and written Examination
304	2theoretical - 2practical	Understanding and assimilation	advantage, and disadvantage	Combining different strategies	Oral and written Examination
305	2theoretical - 2practical	Understanding and assimilation	network architectures	Combining different strategies	Oral and written Examination
306	2theoretical - 2practical	Understanding and assimilation	network architectures	Combining different strategies	Oral and written Examination

307	2theoretical - 2practical	Understanding and assimilation	network architectures	Combining different strategies	Oral and written Examination
308	2theoretical - 2practical	Understanding and assimilation	Types of learning rules	Combining different strategies	Oral and written Examination
309	2theoretical - 2practical	Understanding and assimilation	learning algorithms	Combining different strategies	Oral and written Examination
310	2theoretical - 2practical	Understanding and assimilation	training styles	Combining different strategies	Oral and written Examination
311	2theoretical - 2practical	Understanding and assimilation	Hub	Combining different strategies	Oral and written Examination
312	2theoretical - 2practical	Understanding and assimilation	Adaline	Combining different strategies	Oral and written Examination
313	2theoretical - 2practical	Understanding and assimilation	Mdaline, delta rule	Combining different strategies	Oral and written Examination
314	2theoretical - 2practical	Understanding and assimilation	Mdaline, delta rule	Combining different strategies	Oral and written Examination
315	2theoretical - 2practical	Understanding and assimilation	Important perception function, neuron model	Combining different strategies	Oral and written Examination
316	2theoretical - 2practical	Understanding and assimilation	perception architecture, learning rules, training (train)	Combining different strategies	Oral and written Examination
317	2theoretical - 2practical	Understanding and assimilation	The back propagation learning procedure, derivation of the BP algorithm, Back propagation training algorithm	Combining different strategies	Oral and written Examination
318	2theoretical - 2practical	Understanding and assimilation	The back propagation learning procedure, derivation of the BP algorithm, Back propagation training algorithm	Combining different strategies	Oral and written Examination

319	2theoretical - 2practical	Understanding and assimilation	Search algorithm, Genetic algorithm	Combining different strategies	Oral and written Examination
320	2theoretical - 2practical	Understanding and assimilation	Search algorithm, Genetic algorithm	Combining different strategies	Oral and written Examination
321	2theoretical - 2practical	Understanding and assimilation	Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Combining different strategies	Oral and written Examination
322	2theoretical - 2practical	Understanding and assimilation	Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Combining different strategies	Oral and written Examination
323	2theoretical - 2practical	Understanding and assimilation	Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Combining different strategies	Oral and written Examination
324	2theoretical - 2practical	Understanding and assimilation	Type of operators, population, selection, crossover, crossover rate, mutation, mutation rate	Combining different strategies	Oral and written Examination
325	2theoretical - 2practical	Understanding and assimilation	Population, selection, crossover, and mutation algorithms	Combining different strategies	Oral and written Examination
326	2theoretical - 2practical	Understanding and assimilation	Population, selection, crossover, and mutation algorithms	Combining different strategies	Oral and written Examination
327	2theoretical - 2practical	Understanding and assimilation	Population, selection, crossover, and mutation algorithms	Combining different strategies	Oral and written Examination
328	2theoretical - 2practical	Understanding and assimilation	Application of genetic algorithms	Combining different strategies	Oral and written Examination
329	2theoretical - 2practical	Understanding and assimilation	Advantage and disadvantage of Genetic algorithms	Combining different strategies	Oral and written Examination
330	2theoretical - 2practical	Understanding and assimilation	Advantage and disadvantage of Genetic algorithms	Combining different strategies	Oral and written Examination

131.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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
					100

132.Learning and Teaching Resources

Required textbooks (curricular books, any)	Nothing
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description
Advanced Computer Technology

Course Description Form

133.	Course Name:
	Computer Interface Circuits Design

134.	Course Code:
	CET 4102

135.	Semester / Year
	(2, 4th Year)

136.	Description Preparation Date:
	1/ 4 / 2024

137.	Available Attendance Forms:
	Weekly attendance

138.	Number of Credit Hours (Total) / Number of Units (Total)
	120 (60 theoretical+60 Practical) **- 6 units**

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

Name: lecturer. Dr. khudhaier. j. kazim
Email: khudhair.j.kazim@Gmail.com

140.	Course Objectives

Course Objectives	

General goal // The course aims to provide students of the 4th stage with information and prepare them to be able to:

- The µP and its architecture and the addressing modes.
- Paging mechanism, Segment translation and Page translation.
- Cache memory, Cache organization, fully associative, Direct mapped and set associative.
- Cache memory used for 80386
  - ✓ Direct Maps
  - ✓ Two-way set associative
- Intel's Pentium and its Features

- Pentium pro, out of order execution
- Other Pentium processors, Core Processor.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to recognize Internal organization of computers, Paging mechanism.

2- At the end of the course, the student will be able to distinguish Protected mode memory addressing, Selectors and descriptors and Descriptor and page table entries

3- At the end of the course, the student will be able to determine Pentium processors.

4- At the end of the course, the student will be able to determine the Major changes in the 80386. And ache memory used for 80386.

5- At the end of the course, the student will be able to analyze Pentium processors.

141.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

142.   Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2,3	2theoretical – 2practical	Understanding and assimilation	Introduction to computers and assembly programing	Combining different strategies	Oral and written Examination
4,5	2theoretical – 2practical	Understanding and assimilation	The µP and its architecture	Combining different strategies	Oral and written

			. Addressing modes		Examination
6,7	2theoretical – 2practical	Understanding and assimilation	Protected mode memory addressing . Selectors and descriptors . Local and global descriptor tables	Combining different strategies	Oral and written Examination
8,9	2theoretical – 2practical	Understanding and assimilation	Descriptor and page table entries	Combining different strategies	Oral and written Examination
10,11	2theoretical – 2practical	Understanding and assimilation	- Memory paging Virtual memory	Combining different strategies	Oral and written Examination
12,13,14	2theoretical – 2practical	Understanding and assimilation	- Paging mechanism . Segment translation . Page translation	Combining different strategies	Oral and written Examination
15,16,17	2theoretical – 2practical	Understanding and assimilation	Major changes in the 80386, Hardware organization of the memory address space	Combining different strategies	Oral and written Examination
18,19,20,21	2theoretical – 2practical	Understanding and assimilation	Cache memory - Cache organization . Fully associative . Direct mapped . Set associative	Combining different strategies	Oral and written Examination
22,23	2theoretical – 2practical	Understanding and assimilation	Cache memory used for 80386 - Direct Maps Two-way set associative	Combining different strategies	Oral and written Examination
24,25	2theoretical – 2practical	Understanding and assimilation	Enhancements of 80386, Pipelining design Techniques	Combining different strategies	Oral and written Examination
26,27	2theoretical – 2practical	Understanding and assimilation	Intel's Pentium . Features of the Pentium	Combining different strategies	Oral and written Examination
28,29,30	2theoretical – 2practical	Understanding and assimilation	Pentium pro . Out of order execution Core processor	Combining different strategies	Oral and written Examination

143. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
5	20	5	20	50	100

144. Learning and Teaching Resources

Required textbooks (curricu books, if any)	***The 80386, 80486 and Pentium Processor*** By: Walter A. Triebel
Main references (sources)	***The 80x86 IBM Pc and Compatible Computers*** ***(Volumes I & II)*** By: Mohammed Ali Mazidi
Recommended books and references (scientific journals, reports…)	***Intel Microprocessors***
Electronic References, Websites	

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Course Description
Computer Interface Circuits Design

Course Description Form

145. Course Name:
Computer Interface Circuits Design

146. Course Code:
CET 4103

147. Semester / Year
(2 Semester, 4th Year)

148. Description Preparation Date:
1/4/2024

149. Available Attendance Forms:
Weekly attendance

150. Number of Credit Hours (Total) / Number of Units (Total)
120 (60 theoretical+60 Practical) **- 6 units**

151. Course administrator's name (mention all, if more than one name)
Name: lecturer. **Dr. khudhaier. j. kazim**   Email: **khudhair.j.kazim@Gmail.com**

152. Course Objectives

Course Objectives	

General goal // Giving the learner information on how to design computer interfacing circuits and using the main computer ports in the interlocking work and the use of signal generation circuits in addition to the protection circuits for the ports.

Special (Behavioral) goals //

Behavioral goals //

1– At the end of the course, the student will be able to recognize the main computer ports and the protocols for each port.

2- At the end of the course, the student will be able to distinguish how to use: (USB to PIC Microcontroller interface), (USB to RS232 interface), (USB to parallel interface), (parallel to serial interface) and (serial to parallel interface), (parallel to serial interface) and (serial to parallel interface).

3- At the end of the course, the student will be able to determine the differentiate between: (serial data transmission) and (parallel data transmission).

4- At the end of the course, the student will be able to

- 4.A- Design (DC Power Supply) to be compatible with the device, designs (Digital and Analog Signal generator), and designs electronic circuits for (I/O Interface) such as (Serial) or (Parallel) and what you need from Components such as (ADC) and (DAC), thus being able to modify any port to suit the device to be connected with the computer.

- Connects the (PIC Microcontroller) or (Arduino) to the computer and knows the components required to complete the connection process.

- And expanding the parallel interfacing and expanding the RS232 interfacing ports.

5- At the end of the course, the student will be able to analyze he protocol used to transfer data to suit the components used in terms of (Baud rate), (number of bits), … etc.

153.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

154. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
331	2theoretical – 2practical	The student is able to understand the principles of DC power supply	DC power supply	Combining different strategies	Oral and written Examination
332	2theoretical – 2practical	The student is able to understand the principles of DC power supply	Voltage convertors	Combining different strategies	Oral and written Examination
333	2theoretical – 2practical	The student is able to design digital and analog signal generator	Digital and analog signal generators	Combining different strategies	Oral and written Examination
334	2theoretical – 2practical	The student is able to describe this type of PC ports and to design there circuits and how to expand its electronic circuit.	Pin configuration of Centronic (parallel) port	Combining different strategies	Oral and written Examination
335	2theoretical – 2practical	The student is able to describe this type of PC ports and to design there circuits and how to expand its electronic circuit.	Internal hardware organization	Combining different strategies	Oral and written Examination
336	2theoretical – 2practical	The student is able to describe this type of PC ports and to design there circuits and how to expand its electronic circuit.	Groups (Status, data, and control)	Combining different strategies	Oral and written Examination
337	2theoretical – 2practical	The student is able to describe this type of	Centronic experiment	Combining different strategies	Oral and written Examination

		PC ports and to design there circuits and how to expand its electronic circuit.	board design		
338	2theoretical – 2practical	The student is able to describe this type of PC ports and to design there circuits and how to expand its electronic circuit.	Expanding the parallel interfacing	Combining different strategies	Oral and written Examination
339	2theoretical – 2practical	The student is able to compare between the Centronic and serial port and describe them as well. Also he can design a suitable interfacing circuit for each port	Serial data transmission	Combining different strategies	Oral and written Examination
340	2theoretical – 2practical	The student is able to compare between the Centronic and serial port and describe them as well. Also he can design a suitable interfacing circuit for each port	RS232 pin configuration and internal organization	Combining different strategies	Oral and written Examination
341	2theoretical – 2practical	The student is able to compare between the Centronic and serial port and describe them as well. Also he can design a suitable interfacing circuit for each port	RS232 experiment board design	Combining different strategies	Oral and written Examination
342	2theoretical – 2practical	The student is able to compare between the Centronic and serial port and describe them as well. Also he can design a suitable interfacing circuit for each port	RS232 to Pic microcontroller interface	Combining different strategies	Oral and written Examination

343	2theoretical – 2practical	The student is able to compare between the Centronic and serial port and describe them as well. Also he can design a suitable interfacing circuit for each port	Expanding the RS232 interfacing	Combining different strategies	Oral and written Examination
344	2theoretical – 2practical	The student to be able to compare between this port and other kinds. He will be able to describe this type and design its interfacing circuits	Universal Serial Bus (USB) Interface	Combining different strategies	Oral and written Examination
345	2theoretical – 2practical	The student to be able to compare between this port and other kinds. He will be able to describe this type and design its interfacing circuits	USB to PIC Microcontroller	Combining different strategies	Oral and written Examination
346	2theoretical – 2practical	The student to be able to compare between this port and other kinds. He will be able to describe this type and design its interfacing circuits	USB to RS232 Converter Design	Combining different strategies	Oral and written Examination
347	2theoretical – 2practical	The student to be able to compare between this port and other kinds. He will be able to describe this type and design its interfacing circuits	USB to Parallel Converter Design	Combining different strategies	Oral and written Examination
348	2theoretical – 2practical	The student to be able to recognize when to use parallel to serial interface and serial to parallel interface	Parallel to serial interface	Combining different strategies	Oral and written Examination

349	2theoretical – 2practical	The student to be able to recognize when to use parallel to serial interface and serial to parallel interface	Serial to parallel interface	Combining different strategies	Oral and written Examination
350	2theoretical – 2practical	The student will have knowledge about A\D convertors and design there interfacing circuits	Types of ADCs	Combining different strategies	Oral and written Examination
351	2theoretical – 2practical	The student will have knowledge about A\D convertors and design there interfacing circuits	Specification of ADCs	Combining different strategies	Oral and written Examination
352	2theoretical – 2practical	The student will have knowledge about A\D convertors and design there interfacing circuits	ADC with Parallel I/O interface	Combining different strategies	Oral and written Examination
353	2theoretical – 2practical	The student will have knowledge about A\D convertors and design there interfacing circuits	ADC with Serial I/O interface	Combining different strategies	Oral and written Examination
354	2theoretical – 2practical	The student will have knowledge about D\A convertors and design there interfacing circuits	Specification of DAC	Combining different strategies	Oral and written Examination
355	2theoretical – 2practical	The student will have knowledge about D\A convertors and design there interfacing circuits	DACs execution using OP-AMP	Combining different strategies	Oral and written Examination
356	2theoretical – 2practical	The student will have knowledge about D\A convertors and design there interfacing circuits	DACs execution using OP-AMP	Combining different strategies	Oral and written Examination
357	2theoretical	The student will be able to connect a PIC	Application Projects	Combining different strategies	Oral and written Examination

		or Arduino with PC			
358	2theoretical – 2practical	The student will be able to connect a PIC or Arduino with PC	Application Projects	Combining different strategies	Oral and written Examination
359	2theoretical – 2practical	The student will be able to connect a PIC or Arduino with PC	Application Projects	Combining different strategies	Oral and written Examination
360	2theoretical – 2practical	The student will be able to connect a PIC or Arduino with PC	Application Projects	Combining different strategies	Oral and written Examination

155. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
5	20	5	20	50	100

156. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	**"PC Interfacing using Centronic, RS232 and Game Ports".**
Recommended books and references (scientific journals, reports…)	**R. E. Vears, "Microprocessor Interfacing", 1990**
Electronic References, Websites	http://www.pyroelectro.com/tutorials/

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Project management

2024

Course Description Form

157.	Course Name:
Project management	

158.	Course Code: 4105

159.	Semester / Year: Yearly Program
Yearly Program	

160.	Description Preparation Date:
7/4/2024	

161.	Available Attendance Forms:
Weekly participation	

162.	Number of Credit Hours (Total) / Number of Units (Total)
120 (60 theoretical+60 Practical)- 6 units	

163.	Course administrator's name (mention all, if more than one name)
Name: Wala'a A. Mahdi Email: walaaa.mahdi@mauc.edu.iq	

164.	Course Objectives
Course Objecti	The course aims to provide students of the fourth stage of computer electronics branch and prepare them to be able to: • study definitions of project management • learn methods to draw network diagrams for projects • The knowledge and understanding of linear programming process • learn methods of inventory models in management • know how to find the break even point • know and understand the maintenance

165.	Teaching and Learning Strategies
Strategy	A- Knowledge and Understanding A1. Learn methods of drawing networking schemes for the project A2. Knowledge to find the critical path of the project overall and float of the project and the early start and late A3. Knowledge and understanding of the distribution of sources of project problems A4. Knowledge and understanding of linear programming for project A5 Knowledge and understand the ways of the project inventory management A6 knowledge and understand the fee break-even point of the project A7 K now and understand the maintenance A8 K now and underset a the Quality control B. Subject-specific skills B1. Drawing networking for the project in a manner critical path

and pert B2. solving equations to reduce the duration of the
project -
B3 Convert the equations to linear programming using the
method of graphical and the simplex
B4 Solving equations to find the breakeven
B5Solving equations to find the cost of inventory
management B6 account maintenance cost
   B 7 Solving equations to calculate the quality control of the project
   Teaching and Learning Methods
Academic lectures: providing a solid foundation upon which to
develop students knowledge
   Laboratory and practical workshops: that provide everything needed
   student's experiences to help develop practical skills side and consolid
   the principles necessary to carry out practical projects correctly a
   follow the occupational safety steps to reduce the damage caused
   people and property
   Assessment methods
Interactive Rating: where it is this evaluation process directly
between the student and teacher and be one of the fundamentals
of feedback upon which faculty members evaluate the teaching
and learning process
Periodic written tests: The availability of these tests to a faculty
member about the extent of follow-up students for the academic
content and how to interact with information and observations given
by teaching students
   Quarterly tests: Episode moderation and be to assess the student's inter
   and its interaction with the scientific article received during the semes
   academic skills Final tests: These are the final episode to assess
   student's interest and its interaction with the scientific article receiv
   during the school year academic skills
C. Thinking Skills
   C1. Planting the spirit of creativity and innovation
   among students C2. develop a sense of responsibility for
   students
   C3. Development diligence and perseverance to get the job
   done to reach satisfactory results values
   C4. scalability students to develop teamwork
   Teaching and Learning Methods
   Ask a scientific problems and the demand of the students to find m
   than a solution to it different scientific methods to stimulate the creat
   side of students Form working groups are evaluating the results of
   work and change their structure periodically to develop a spirit
   cooperation and motivate students to make every effort necessary to w
   under different conditions and with several people

Assessment methods

Direct assessment: Where is this assessment by the teaching directly and through interaction Note students and their application of sentimental value targets and install notes about it

Practical projects is to assess the student's ability to achievement a creativity and to work in teams and get results and solutions to vario scientific problems facing students

D. General and Transferable Skills (other skills relevant to employability and personal development)
D1. Convert the tables of activity of project to network drawing D2. Find the crtical path and total float of project
D3. Linerar programming of project
D4. finding the break – even point

166. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	8		Introduction to project mangement	Lecture , lab	Interactive assessment • Editorial periodic test • Direct assessment
3,4	8		Economics and mangement for engineering	=	=
5,6,7	12		Layoutfor factoriesand workshops productivity	=	=
8,9	8		Networks	=	=
10,11,12	8		Cirtical path Method(cpm)	=	=

13,14,15	12		Pert techique (time and cost)	=	=
16	4		**Theresource allocation problems**	=	
17,18	8		**Linear programming grafical method simplex method**	=	**Interactive assessment Editorial periodic test Direct assessment**
19,20,21	12		**Inventory model(EOQ)**	=	=
22	4		**The break even point**	=	=
23,24,25, 26	12		**The cost of inventory**	=	=
27	4		**Maintenance policy and concepts**	=	=
27,28,29	8		**Quality control**	=	=
30	4		**Employer management**	=	=

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

Learning and Teaching Resources

Required textbooks (curricular books, if any)	S. choudhury" project mangement", tata McGraw hill-2003
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Computer Network

Course Description Form

167. Course Name:
Computer Network

168. Course Code:
CET4106

169. Semester / Year
Year

170. Description Preparation Date:
1 / 4 / 2024

171. Available Attendance Forms:
Weekly attendance

172. Number of Credit Hours (Total) / Number of Units (Total)
120-6 units

173. Course administrator's name (mention all, if more than one name)
Name: lecturer. Dr. Amer Kais Obaid Email: amerkais2010@yahoo.com

174. Course Objectives	
Course Objectives	As illustrated below.

General goal //
At the end of the course, the student will be able to employ the theory of computer networks as well as the practical tools used in the field of networks.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to identify a computer network and its components.

2- At the end of the course, the student will be able to distinguish between computer network diagrams in terms of shape, advantages and disadvantages of each network diagram.

3- At the end of the course, the student will be able to identify network devices and types of devices.

4- At the end of the course, the student will be able to compare

the types of networks according to transmission mode, geographical area and types of management

5- At the end of the course, the student will be able to define the characteristics of the OSI model and TCP/IP.

175.	Teaching and Learning Strategies
Strategy	• Brainstorming strategy • Modeling learning strategy • Group work or cooperative learning strategy • Discussion strategy • Project strategy • A strategy for problem solving or problem-based learning • Combining different strategies

176. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2theoretical – 2practical	Understanding and assimilation	Introduction to Commuter Networks	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Types of computer Networks (clients server, Peer-to-peer,& Wireless networks)	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Classifying the computer networks (Home network, LAN, MAN, WAN, Wireless Networks,& Internet work(	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	The Reference models The OSI model	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Design issues for the layers connection oriented	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Connectionless layers services,	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Service Primitives	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	OSI layers responsibilities	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Signals and Encoding transmission media	Combining different strategies	Oral and written Examination
	2theoretical – 2practical	Understanding and assimilation	Digital to digital encoding	Combining different strategies	Oral and written Examination

2theoretical – 2practical	Understanding and assimilation	TCP/IP Protocol	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	TCP/IP layers responsibilities	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	TCP/IP layers responsibilities	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Analogue to digital encoding	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Digital to analogue encoding Guided & unguided media	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Exam-1	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Multiplexing FDM,	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Multiplexing TDM and WDM	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Data Link controls and protocols	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	framing, flow control,	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Error control, HDLC, PPP protocol	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Types of errors, error detections	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	VRC, CRC, LRC check sum.	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Exam2	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Error correction (code blocks, cyclic codes)	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Circuit Switching	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Message Switching	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Packet Switching	Combining different strategies	Oral and written Examination

2theoretical – 2practical	Understanding and assimilation	Communication Satellites	Combining different strategies	Oral and written Examination
2theoretical – 2practical	Understanding and assimilation	Communication Satellites	Combining different strategies	Oral and written Examination

177. 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.

Daily Preparation Oral Exam	practical Exam	Report	Monthly Exam	Final theoretical + practical exam	Total
10	10	10	20	50	100

178. Learning and Teaching Resources

Required textbooks (curricular books, if any	Nothing
Main references (sources)	Data Communications & Networking, 5th Edition, Behrouz A. Forouzan Computer Networks,5th Edition, Tanenbaum.
Recommended books and references (scientific journals, reports...)	Relevant graduation projects for computer Engineering techniques students, scientific journals and periodicals related to the subject, Engineering Design reports.
Electronic References, Websites	Browse the Google network using the desired subject key.

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Course Description

Professional ethics

Course Description Form

179. Course Name:
Professional ethics

180. Course Code:
CET 41010

181. Semester / Year
The fourth stage

182. Description Preparation Date:
1 / 2 / 2024

183. Available Attendance Forms:
Weekly attendance

184. Number of Credit Hours (Total) / Number of Units (Total)
30 hours first semester

185. Course administrator's name (mention all, if more than one name)
Name: lecturer. Dr. Mustafa Faleh Email: mustafa. faleh@mauc.edu.iq

186. Course Objectives	
Course Objectives	**As illustrated below .**
General goal // **The course contains a group of valuable topics that the student must become familiar with, the concept of professional ethics, a statement between the profession and the job, the sources of professional ethics, the conditions of the profession in society and the status of work in society, general professional ethics for all professions in society and the ethics required of the**	

employer, duties. The professor towards education, the general characteristics of the professor, his rights and behavior, job ethics, and combating financial and administrative corruption.

Special (Behavioral) goals //

Behavioral goals //

1- At the end of the course, the student will be able to learn about professional ethics and its place in the job

2- At the end of the course, the student will be able to realize the importance of professional ethics in the success of work and an individual's life.

3- At the end of the course, the student will be able to possess the personal skills necessary to succeed in his work.

4_ At the end of the course, the student will be able to have the ethics of belonging to his community and strive to achieve satisfactory results.

187.	Teaching and Learning Strategies
Strategy	• A strategy to enhance the student's level of understanding through modern methods. • A strategy for instilling initiative in students in line with practical skills. • Strategy to enhance cooperative education. • The strategy for students to acquire special skills and modern learning theories. • Combining different strategies

188.	**Course Structure**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
391	2	An introductory introduction to the topic	introduction	In presenc	Oral exam, papers, reports, monthly exams
392	2	Defining professional ethics, its importance, goals, and sources that the student must be aware of.	Concept, importance, goals and sources	In presenc	Oral exam, papers, reports, monthly exams
393	2	Classifications of professional ethics that include 9 important classifications.	Category	In presenc	Oral exam, papers, reports, monthly exams
394	2	Means of consolidating professional ethics and the principles and rules of professional ethic.	Methods and principles	In presenc	Oral exam, papers, reports, monthly exams
395	2	The factors that contributed to the emergence of professional ethics and its historical development, which includes several civilizations	Historical development	In presenc	Oral exam, papers, reports, monthly exams
396	2	General rules of	Rules of professional ethics and their	In presenc	Oral exam, papers,

		professional ethics Distinguishing between them and the rules of job conduct, the importance of job behavior and the impact of adherence to it.	relationship to professional behavior		reports, monthly exams
397	**2**	Defining professional ethics, its importance, goals, and sources that the student must be aware of.	The benefit of professional ethics	In presenc	Oral exam, papers, reports, monthly exams
398	**2**	The concept of administrative corruption, its types and treatment.	Professional ethics and its relationship to administrative corruption	In presenc	Oral exam, papers, reports, monthly exams
399	**2**	The concept of conflicts of interest and elements of preventing conflicts of interest.	Conflict of interest	In presenc	Oral exam, papers, reports, monthly exams
400	**2**	Characteristics of professional ethics, characteristics of professional ethics standards, and examples of some theories of	Properties, properties, theoretical models and their practical applications	In presenc	Oral exam, papers, reports, monthly exams

		professional ethics			
401	**2**	The concept of standards, standards management, and professional ethics The four levels of professional ethics	Professional standards, ethics and levels	In presenc	Oral exam, papers, reports, monthly exams
402	**2**	The professor's professional ethics towards his students, the educational process, and his colleagues in the profession	Ethics of the profession of university professor	In presenc	Oral exam, papers, reports, monthly exams
403	**2**	University teaching between professional ethics and the reality of practice and between self- and systemic consolidation	The role of the university in teaching professional ethics	In presenc	Oral exam, papers, reports, monthly exams
404	**2**	Ethics of the faculty member with the nursing and health staff, in scientific research, supervision of scientific theses, and promotion and arbitration committees	Faculty member ethics	In presenc	Oral exam, papers, reports, monthly exams

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405	**2**	The concept of organizatio nal behavior and the role of professiona l ethics in achieving organizatio nal commitmen	The relationship of professional ethics to organizational behavior	In presenc	Oral exam, papers, reports, monthly exams

189. Course Evaluation

25 marks for the first semester, divided as follows: lecture by discussion method, writing reports on the scientific subject, monthly and quarterly exams.

190. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	Amr Darrag, Engineering Professional Ethics, second edition, 2006, p. 4 Written by a group of specialists at King Saud University. Hawa Ibrahim, Al-Marqab University
	Mr. Dr. Malik Shabani, College of Humanities and Social Sciences
Recommended books and references (scientific journals, reports…)	Graduation projects of students in the computer technology engineering branch related to it, scientific journals and periodicals related to the subjec
Electronic References, Websites	Submission of reports by students to explain a specific topic of the professional ethics curriculum

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