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



Navigation and Guidance Engineering Branch Academic Program and Course Description Guide

### 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:**

<u>Academic Program Description</u>: 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.

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

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

**<u>Program Objectives</u>**: 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.

<u>Teaching and learning strategies</u>: 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: University of Technology
Faculty/Institute: Electromechanical Eng. Dept.
Scientific Department: Navigation and Guidance Engineering
Academic or Professional Program Name: Navigation and Guidance Engineering
Final Certificate Name: Electromechanical Eng./ Navigation and Guidance Eng.
Academic System: Engineering
Description Preparation Date: 7/2/2024
File Completion Date: 8/2/2024

Signature: Head of Department Name: Signature: Scientific Associate Name:

Date:

Date:

The file is checked by:

Department of Quality Assurance and University Performance Director of the Quality Assurance and University Performance Department: Date:

Signature:

Approval of the Dean

#### 1. Program Vision

Aiming to build an engineering establishment in the Electromechanical field to be an outstanding one among the top international universities.

#### 2. Program Mission

Preparing an Electromechanical specialist having an outstanding knowledge level, keeping up with the rapid developed trends in this field and complying with the professional moral conduct in serving the work sectors and society.

#### 3. Program Objectives

- Graduating engineers are highly qualified in the Electromechanical field, capable of developing their skills in the engineering knowledge aspects, able to utilize this in the specialized Electromechanical application and mastering the design and implementation of all devices related to this discipline.
- Feeding the society with the specialists, experts and scientific consultants in Electromechanical engineering field.
- Supporting the research scientific center and engineering industrial projects by the highly capable specialists in their fields.
- Strengthening the relation with local and international engineering and scientific establishments.

#### 4. Program Accreditation

The program has accreditation in 2021-2022 from Iraqi Council Accreditation Engineering Education (ICAEE).

#### 5. Program (Navigation and Guidance) Mission

- 1– Prepare our students for successful careers in the Navigation and Guidance profession,
- 2- Conduct high quality and innovative research, and
- 3- Serve the community and industry providing educational and research resources.

#### 6. Other external influences

Is there a sponsor for the program?

7. Program Structure						
Program Structure	Number of Courses	Credit hours	Percentage	Reviews*		
Institution Requirements	3	6	0.05	Basic		
College Requirements	4	16	0.14	Basic		
Department Requirements	35	92	0.8	Basic		
Summer Training	yes	-	-	-		
Other	_	_	_	_		

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

8. Program Description							
Year/Level	Course Code	Course Name	Credit	Hours			
			theoretical	practical			
2nd Year, 1st Semester	UOT200	English Language II	2	-			
2nd Year, 1st Semester	EME202	Advanced Mathematics I	4	-			
2nd Year, 1st Semester	UOT 201	Baath Party Crimes	2	-			
2nd Year, 1st Semester	EMEN206	Navigation Theory I	2	-			
2nd Year, 1st Semester	EMEN208	Fluid Mechanics	2	1			
2nd Year, 1st Semester	EMEN212	Measurements and Instrumentations	2	2			
2nd Year, 1st Semester	EMEN211	Strength of Materials	2	1			
2nd Year, 2 <sup>nd</sup> Semester	UOT201	Human Rights	2	-			
2nd Year, 2 <sup>nd</sup> Semester	EME203	Advanced Mathematics II	4	-			
2nd Year, 2 <sup>nd</sup> Semester	EMEN204	Computer Sciences II	2	1			
2nd Year, 2 <sup>nd</sup> Semester	EMEN207	Navigation Theory II	2	-			
2nd Year, 2 <sup>nd</sup> Semester	EMEN209	Aerodynamic	2	2			
2nd Year, 2 <sup>nd</sup> Semester	EMEN210	Electrical and Electronic Circuits	2	2			

2nd Year, 2 <sup>nd</sup> Semester	EMEN213	Digital Electronics	2	2
3 <sup>rd</sup> Year, 1st Semester	EME301	Numerical Analysis	4	-
3 <sup>rd</sup> Year, 1st Semester	EMEN303	Navigation Systems I	2	2
3 <sup>rd</sup> Year, 1st Semester	EMEN305	Communications I	2	2
3 <sup>rd</sup> Year, 1st Semester	EMEN310	Antennas and Waves Propagation	2	2
3 <sup>rd</sup> Year, 1st Semester	EMEN308	Control and Guidance Theory	2	2
3 <sup>rd</sup> Year, 1st Semester	EMEN309	Hydraulic and Pneumatic Systems	2	2
3 <sup>rd</sup> Year, 1st Semester	EMEN313	Machines Design	2	-
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EME302	Engineering Analysis	4	-
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN304	Navigation Systems II	2	2
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN306	Communications II	2	2
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN307	Radar Theory	3	-
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN311	Control and Guidance Systems	2	2
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN312	Vibration and Noise	2	1
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester	EMEN314	Aircraft Structural Stability	2	-
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN401	Digital Signal Processing	3	-
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN403	Radar Systems	2	2
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN404	Robotics and Automation	3	-
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN407	CAD/CAM	2	2
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN409	Communication Networks	2	-
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN411	<b>Optical Communications</b>	2	-
4 <sup>th</sup> Year, 1 <sup>st</sup> Semester	EMEN413	Air Traffic Management	2	-
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN402	Digital Image Processing	3	-
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN405	Microwave Engineering	2	1
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN406	Theory of Aeroelasticity	2	•
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN408	Electromechanical Systems	2	-
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN410	Microprocessor and Microcontroller	2	2
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN412	Operation Research and Ethics	2	-
4 <sup>th</sup> Year, 2 <sup>nd</sup> Semester	EMEN414	Project	4	-

#### 9. Expected learning outcomes of the program

1. An ability to identify, formulate, and solve engineering in navigation and guidance engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply the engineering design process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline.

3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

4. An ability to communicate effectively with a range of audiences

5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

6. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge.

7. An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative and inclusive environment.

Knowledge	
Learning Outcomes (GO1)	An ability to identify, formulate, and solve engineering in navigation and guidance engineering problems by applying principles of engineering, science, and mathematics.
Learning Outcomes (GO2)	An ability to apply the engineering design process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline.
Learning Outcomes (GO3)	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
Learning Outcomes (GO6)	An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge.
Skills	
Learning Outcomes (GO4)	An ability to communicate effectively with a range of audiences
Learning Outcomes (GO7)	An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative and inclusive environment.
Ethics	
Learning Outcomes (GO5)	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

#### 10. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

#### 11. Evaluation methods

With lab, Mid exam 15%, student activities 15%, lab 10%, final exam 60%. Without lab, Mid exam 15%, student activities 15%, final exam 70%.

12. Faculty							
Faculty Members							
Academic Rank	Specializ	ation	Special Requirement (if applicable	s/Skills )	Number of th staff	ne teaching	
	General	Special			Staff	Lecturer	
Professor (2)	Electrical Eng.	communication	_	_	_	_	
Prof. Assistance (3)	Electrical Eng.	communication	-	_	-	_	
Prof. Assistance (2)	Electrical Eng.	Control	-	_		_	
Prof. Assistance (2)	Mechanical Eng.	Applied					
Prof. Assistance (1)	Mechanical Eng.	Thermal					
Prof. Assistance (1)	Mechanical Eng.	Electromechanical					
Lecturer (2)	Electrical Eng.	communication					

Lecturer (1)	Electrical	Electronic		-	-	-
	Eng.					
	U U					
Lecturer (1)	Mechanical	Applied	-	-	-	_
	Eng.					
	U U					
Lecturer (1)	Mechanical	control	-	-	-	_
	Eng.					
	_					
Lecturer (1)	Science	computer	_	-	_	_
. ,						
Asst. Lecturer (1)	Mechanical	Applied				
	Eng.					
Asst. Lecturer (2)	Electrical	communication				
	Eng.					
	-					

#### **Professional Development**

#### Mentoring new faculty members

The scientific committee in the department mentors the new faculty by:

- 1- Enter the class with previous two faculties for two months as observer.
- 2- Enter a period of training in continuous education center in the university for a month.
- 3- Mentor by the chair of the branch in the first year.

#### Professional development of faculty members

The scientific committee in the department have a plan for developing the faculty:

- 1- Periodically scientific lecture by one of the staff on developing in his professional field for all faculty.
- 2- Periodically lecture in social field for all faculty and students.
- 3- Yearly conference in the department with contributions from all faculty (2020, 2021, 2022 and 2023).
- 4- Contribution in conferences in different universities inside and outside Iraq.
- 5- Contribution in publishing papers in local, regional and international journals (Scopus and Science Direct).
- 6- Participates in different committees in university and ministry.
- 7- Participates in American developing faculty origination (IREX).

- 8- Participate all faculty in workshop for Problem Based Learning (new teaching method).
- 9- All Faculty contribute in getting the accreditation from ICAEE, so the faculty became a professional in accreditation process.

#### 13. Acceptance Criterion

Usually, central enrollment was carried by ministry of higher education based on degree, professional field, location, university requirements.

#### 14. The most important sources of information about the program

The initiative of the program came as a result of Navigation requirements for engineers who can serve as mechanical and electrical workers together. Similar trend was observed globally in airport. The program source information based on Navigation and guidance field. Many international programs were recently created related to Navigation and guidance. Our program intends to cover all requirements in energy sectors, including navigation, communication. It is first and unique program in Iraqi universities. The information of the program were basically from international programs, then with the consultations of industrial advisory board from Electricity Ministry, the information were adopted with Iraqi Navigation and guidance requirements.

#### 15. Program Development Plan

The field of Navigation and guidance is developing with time globally, so some program courses were changed every four years. Four mechanical courses related to Navigation and guidance were added in third and fourth years when the program changed its name from Navigation and guidance. For electrical courses, two new courses were added in the fourth year last years. The contents of the courses reviewed by advisory board every meeting and updated with requirements of Iraqi Navigation and guidan.

Year/Level	Course Code	Course Name	Basic or	Basic or Knowledg		edge			Skills	
			optional	G01	G02	GO3	G06	G04	G07	G05
2 <sup>nd</sup> Year	UOT200	English Language II					•			
	EME202	Advanced Mathematics I		•						
	UOT 201	<b>Baath Party Crimes</b>					•			
	EMEN206	Navigation Theory I		•						
	EMEN208	Fluid Mechanics		•						
	EMEN212	Measurements and Instrumentations					•			
	EMEN211	Strength of Materials		•						
	UOT201	Human Rights								•
	EME203	Advanced Mathematics II		•						
	EMEN204	<b>Computer Sciences II</b>					•			
	<b>EMEN207</b>	Navigation Theory II		•						
	EMEN209	Aerodynamic					•			

	EMEN210	Electrical and Electronic Circuits	•			
	EMEN213	Digital Electronics		•		
3rd Year	EME301	Numerical Analysis	•			
	EMEN303	Navigation Systems I	•			
	EMEN305	Communications I	•			
	EMEN310	Antennas and Waves Propagation		•		
	EMEN308	Control and Guidance Theory		•		
	EMEN309	Hydraulic and Pneumatic Systems		•		
	EMEN313	Machines Design		●		
	EME302	Engineering Analysis	•			
	EMEN304	Navigation Systems II	•			
	EMEN306	Communications II	•			
	EMEN307	Radar Theory		•		
	EMEN311	Control and Guidance Systems		•		
	EMEN312	Vibration and Noise		•		
	EMEN314	Aircraft Structural Stability		•		

4th Year	EMEN401	Digital Signal Processing	•	•				
	EMEN403	Radar Systems			•			
	EMEN404	Robotics and Automation			•			
	EMEN407	CAD/CAM				•		
	EMEN409	Communication Networks		•				
	EMEN411	<b>Optical Communications</b>			•			
	EMEN413	Air Traffic Management				•		
	EMEN402	Digital Image Processing		•				
	EMEN405	Microwave Engineering	•	•				
	EMEN406	Theory of Aeroelasticity			•			
	EMEN408	Electromechanical Systems			•			
	EMEN410	Microprocessor and Microcontroller			•			
	EMEN412	Operation Research and Ethics						•
	EMEN414	Project				•		

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

# **Course Description Form (2<sup>nd</sup> Year)**

## **Course Description Form** (2<sup>nd</sup> Year)

			• `		
1.	Course	e Name:			
			<b>Digital Electronics</b>		
2. (	Course	e Code:			
			EMEN213		
3. 3	Semes	ter / Year:			
			1 <sup>st</sup> / 2 <sup>nd</sup> Year		
4. ]	Descri	ption Preparation D	ate:		
			02-2024		
5. 4	Availa	ble Attendance Forms	S:		
6	Jumb	an of Cradit Hours (T	Attendance lectu	res	
0.	2 hour	rs wookly (20 hours (10	in course) / 2 Units	its (10tal)	
7 (		e administrator's na	me (mention all if	more than or	ne name)
	Name:	Asst. Prof. Dr. Moha	mmed Oasim Moha	mmed	
]	Email:	50033@uotechnolo	gy.edu.iq		
8. (	Course	Objectives			
Course	Objectiv	ves • Teaching studen	ts number systems and	how to convert f	rom one system to
		another due to th	neir importance in the fie	ld of specializati	ion.
		• Teaching studen	ts about logic gates and	how to deal with	h them.
		• Teaching studen	ts logical algebra and lo	gical expression	s and how to simplify
		and design then	n.		
		Teaching studen	ts the concept of logical	expressions of t	the POS and SOP typ
		and how to make	e them standard, and ho	w to convert fror	n one type to anothe
		Using Karnaugh	maps to simplify logical	expressions.	
9	Teachi	ng and Learning Stra	tegies		
Strategy	,		-		
0,		Theoretical lectures	(give the lecture to	students in p	erson)
		Practical lectures (w	ork in the laborato	ry to achieve	the
		practical aspect)			
10. Co	ourse S	Structure			
Week	Hours	Required Learning	Unit or subiect	Learning	Evaluation
		Outcomes	name	method	method
1 st	2	Introduction to	An introduction	Attendance	Question
$\begin{array}{c c c c c c c c c c c c c c c c c c c $					
		•			
			— 15 ———		

2 <sup>nd</sup>	2	What are num systems?	Number systems and their types	Attendance lecture	Homework
- 3 <sup>rd</sup>	2	How to conv between num	Number system conversions	Attendance lecture	Quiz
4 <sup>th</sup>	2	systems How to represent a s with numbers?	Sign and Numbers	Attendance lecture	Question and Answer
5 <sup>th</sup>	2	What are logic gates	logic gates	Attendance lecture	Homework
6 <sup>th</sup>	2	What is Boole algebra?	Boolean algebra	Attendance lecture	Question and Answer
7 <sup>th</sup>	2	Learn about the operations, laws, and rules of Boolean algebra	the operations, laws, and rules of Boolean algebra	Attendance lecture	Quiz
8 <sup>th</sup>	2	How to Simplify Logical Expressions Using Boolean	Simplify Logical Expressions Using Boolean Algebra	Attendance lecture	Question and Answer
Oth	2	Algebra Midterm exam	Midterm exam	Midterm exam	Editorial questions
9	2	What are universal	universal logic gates	Attendence	Question
10 <sup>th</sup>	2	logic gates, and how do you design other logic gates from them?	universuriogie gates	lecture	and Answer
11	2	What is the SOP expression and how to convert it to standard form?	standard form of SOP expression	Attendance lecture	Homework
12	2	What is the POS expression and how to convert it to standard form?	standard form of POS expression	Attendance lecture	Question and Answer
13	2	How to convert the standard SOP to the standard POS form andvice versa?	convert the standard SOP to the standard POS form and vice versa	Attendance lecture	Attendance lecture
14	2	What is a Karnaugh map and how to draw it for different	Karnaugh map and how to draw it for different dimensions	Attendance lecture	Quiz
15	2	dimensions? How to simplify logic expressions using a Karnaugh map	simplify logic expressions using a Karnaugh map	Attendance lecture	Question and Answer

#### 11. Course Evaluation

5% attendance grade; 5% homework; 5% Quizzes; 15% midterm exam;10% Lab; 60% final exam

12. Learning and Teaching Resources					
Required textb	o No				
(curricular books, if any)					
Main references (sources	Floyd, T. L. (2011). Digital fundamentals, 10/e. Pearson Education Inc				
Recommended books	"Digital Design with an introduction to the Verilog HDL", M Morris Ma				
and references (scientific	& Michael D. Ciletti. 5th Edition. Saha, A., & Manna, N. (2009). Digital principles and logic design. Jone				
journals, reports)	Bartlett Learning.				
Electronic Referen	d No				
Websites					

1. Course Name:					
Fluid mechanics					
2. Course Code:					
EMEN	208				
3. Semester / Year:					
1 <sup>st</sup> Seme	ster / 2 <sup>nd</sup> Year				
4. Description Preparation Date:					
18/2/	2024				
5. Available Attendance Forms:					
Attendance le	ctures				
6. Number of Credit Hours (Total) / N	umber of Units (Total):				
30 hours,30 hours pra	actical,2 units				
7. Course administrator's name (m	ention all, if more than one name)				
Nam	e:Ass.prof.Yasser Ahmed Mahmood				
Ema	il:50256@uotechnology.edu.iq				
8. Course Objectives					
Course Objective	To enable students to know the properties of varies				
	fluids and how to calculate them				
9. Teaching and Learning Strategies					
Strategy					
17					

ursOutcomesnamemethodmethod12Learn introductionDimension And unitsQuestion and examplequestion and example22fluid propertiesproperties====32fluid fluidfluid static=====42Static pressurestatic pressure=====52Dynamic fluid fluiddynamic fluid fluid=====52Bernoulli's equationsBernoulli's Equations=====72Application Application===========92Momentum equationsEquations Equations=====102Application Application==========102Application Application==========112Boundary Boundary Layer==========132Application Application==========142Dams and Gates Gates==========11.Curve Evaluation:25 degree mid,10 degree Evoratory,5 degree valuation;=====		Но	Required Learning	Unit or subject	Learning	Evaluation
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3       2       fluid       fluid static       =====       =====         4       2       Static pressure       static pressure       =====       =====         5       2       Dynamic       dynamic       =====       =====         6       2       Bernoulli's       Bernoulli's       =====       =====         6       2       Bernoulli's       Bernoulli's       =====       =====         7       2       Application       Application       =====       =====         8       2       ====       =====       =====       =====         9       2       Momentum       Momentum       =====       =====         9       2       Momentum       Boundary       =====       =====       =====         10       2       Application       Application       =====       =====       =====         11       2       Boundary       Equations       =====       ======       ======       ======       ======       ======       ======       ======       =====       =====       =====       ======       ======       =====       =====       =====       =====       =====       =====       ===== <td< td=""><td></td><td></td><td>properties</td><td></td><td></td><td></td></td<>			properties			
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52Dynamic fluid fluiddynamic fluid fluid==========62Bernoulli's equationsBernoulli's Equations==========72Application equationsApplication Equations===========82===================92Momentum equationsMomentum Equations==========92Momentum equationsEquations==========102Application LayerApplication Layer==========112Boundary LayerBoundary Layer==========132Application Application===========142Dams and Gates Application==========152Application Application==========11.Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6			-	-		
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62Bernoulli's equationsBernoulli's Equations============72ApplicationApplication============82====================92Momentum equationsMomentum Equations==========92Momentum equationsEquations==========102Application ApplicationApplication equations==========102Application ApplicationApplication equations==========112Boundary LayerBoundary Layer==========132Application ApplicationApplication equations===========132Application Gates GatesApplication equation==========152Application Application===============11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6			fluid	fluid		
72 ApplicationEquations ApplicationEquations applicat	6	2	Bernoulli's	Bernoulli's	======	=======
72ApplicationApplication======82==============92MomentumMomentum=====92ApplicationApplications=====102ApplicationApplication=====102ApplicationApplication=====112BoundaryBoundary=====112BoundaryBoundary=====122ApplicationApplication======132ApplicationApplication======142Dams andDams and======152ApplicationApplication======11.Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6			equations	Equations		
8       2       Image: Sector of the	7	2	Application	Application	=======	======
92Momentum equationsMomentum Equations=====102ApplicationApplication=====112Boundary LayerBoundary Layer=====122ApplicationApplication=====132ApplicationApplication Dams and Gates=====142Dams and GatesDams and Application======152ApplicationApplication Application======11.Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	8	2	=====	======	======	=====
102 ApplicationEquations Application===== ========== ====112 Boundary LayerBoundary Boundary Layer===== ========= ====122 Application ApplicationApplication Application====== =========== ====122 Application Gates Gates ApplicationApplication Application====== ========= ====142 Gates ApplicationDams and Gates Application====== ========= ====11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	9	2	Momentum	Momentum		
102ApplicationApplication==========112BoundaryBoundary==========122ApplicationApplication==========132ApplicationApplication===========132ApplicationApplication===========142Dams andDams and==========142ApplicationApplication==========152ApplicationApplication===========11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6			equations	Equations	=====	======
112Boundary LayerBoundary Layer==========122ApplicationApplication==========132ApplicationApplication==========132ApplicationApplication===========142Dams and GatesDams and Gates=========152ApplicationApplication==========11.Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	10	2	Application	Application	=====	======
122LayerLayer122ApplicationApplication======132ApplicationApplication======142Dams andDams and======152ApplicationApplication======11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	11	2	Boundary	Boundary	=====	======
122ApplicationApplication== <td></td> <td></td> <td>Laver</td> <td>Layer</td> <td></td> <td></td>			Laver	Layer		
132ApplicationApplication======142Dams andDams and======152ApplicationGatesGates152ApplicationApplication======11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	12	2	Application	Application	======	======
142Dams and Gates ApplicationDams and Gates Application=====11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	13	2	Application	Application	======	======
152Gates ApplicationGates Application======11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	14	2	Dams and	Dams and	======	=====
152Application============11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6			Gates	Gates		
11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	15	2	Application	Application	======	======
11. Course Evaluation:25 degree mid,10 degree laboratory,5 degree evaluation,6	_		<b>F F</b>	rr		
	11. Co	urse	Evaluation:25 dear	ee mid.10 dearee la	boratory.5 deoree	e evaluation.60
		$a\sigma + b$	a coord out of 100 acc	pording to the tacks of	gigned to the study	الملم مم وامييم طبيب

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	Introduction to fluid
	mechanics

Recommended books and references	
(scientific journals, reports)	
Electronic References, Websites	
12 Course Norse	

13.00	urse Nam	ie:					
	Computer 2						
14. Course Code:							
		EM	EN204				
15. Se	mester / `	Year:					
		2 <sup>nd</sup> Semes	ster / 2 <sup>nd</sup> Year				
16. De	scription	Preparation Date:					
		Februa	ry 7, 2024				
17. Av	vailable At	ttendance Forms:					
		Attendar	nce lectures				
18. Nu	mber of C	Credit Hours (Total) / N	Sumber of Units (Total)				
64 hoi	urs during	g one semester/4 unit	ES.				
19. Co	ourse adn	ninistrator's name (m	ention all, if more than or	ne name)			
Name	: Yaser Al	i 					
Email	: 50111@	uotechnology.edu.iq					
20.Co	ourse Obje	ectives					
Course	Objectives	• To familiarize the	e student with the C++ langu	uage.			
		<ul> <li>Writing program</li> </ul>	S.				
		Learn programm	ing in C++ professionally.				
		<ul> <li>Graduating eng</li> </ul>	gineers with competenc	e, skill a			
		knowledge in the	e field of programming.				
21.Te	aching an	d Learning Strategies					
Strategy	1- Pr	oviding the student w	ith theoretical lectures.				
	2- Pr	oviding the student w	rith laboratory experiment	s.			
	3- Pro	oviding the student v	vith various problems and	d introduci			
	hii	m to the mechanism fo	or solving them.				
22.Co	ourse Strue	cture					
Week	Hours	Required Learning	Unit or subject name	Unit or subjec			
		Outcomes		name			
1	4	Add educational outcomes	Introduction to the C++ language	Giving lectures			

Variables used in the language

Giving lectures

Add educational outcomes

4

3	4	Add educational outcomes		Mathematical operations used in the language	Giving lectures	
4	4	Add educational outcomes		Application programs based on previous lectures	Giving lectures	
5	4	Add educ	ational outcomes	Programming statements	Giving lectures	
6	4	Add educ	ational outcomes	If & Switch instructions	Giving lectures	
7	4	Add educ	ational outcomes	Repetition instructions: for, while, do-while, go to	Open discussions between the student and the lecturer	
<u>8</u> 9	2 4	Add educ	ational outcomes	Different commands: break,	Giving lectures	
10	4	Add educ	ational outcomes	Introduction to language functions.	Open discussions between the student and the lecturer	
11	4	Add educ	ational outcomes	Functions	Open discussions between the student and the lecturer	
12	4	Add educ	ational outcomes	One-dimensional arrays in C++	Giving lectures	
13	4	Add educ	ational outcomes	Two-dimensional arrays in C++	Giving lectures	
14	4	Add educ	ational outcomes	Variables of pointer type	Giving lectures	
15	4	Add educ	ational outcomes	The file	Giving lectures	
23. Co Distribu as o 24. Lea	uting the daily prep arning ar	aluation score out of paration, dat nd Teachin	f 100 according ily oral, monthl ig Resources	g to the tasks assigned to the st y, or written exams, reports	udent such etc	
23. Co Distribu as o 24. Lea Require boo	uting the daily prep arning ar ed textboo oks, if any	aluation score out of paration, dai nd Teachin oks (currice	f 100 according ily oral, monthl og Resources	g to the tasks assigned to the st y, or written exams, reports	udent such etc	
23. Co Distribution 24. Lea Require boot Main re	uting the daily prep arning ar ed textboo oks, if any ferences (	aluation score out of paration, dat nd Teachin oks (curricu ) (sources)	f 100 according ily oral, monthl ig Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++	udent such etc	
23. Co Distribution 24. Lea Require boot Main re Recommon reference	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, repo	aluation score out of paration, dat nd Teachin oks (currice) (sources) (sources) pooks and (scientific orts)	f 100 according ily oral, monthl ig Resources <b>PROGRAM</b>	g to the tasks assigned to the st y, or written exams, reports MING WITH C++	udent such etc	
23. Co Distribution 24. Lea Require boot Main re Recommon reference journe	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, reponic	aluation score out of paration, dat nd Teachin oks (currico ) (sources) pooks and (scientific orts) Referenc	f 100 according ily oral, monthl g Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++	udent such etc	
23. Co Distribution 24. Lea Require boot Main re Recommende jour Electrom	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, repo nic ebsites	aluation score out of paration, dat nd Teachin oks (currice) (sources) pooks and (scientific orts) Referenc	f 100 according ily oral, monthl g Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++ adarma.ac.id/pub/.multimedia/ gramming%20with%20C++.pe	udent such etc Schaum's df	
23. Co Distribution 24. Lea Require boot Main re Recommon reference jour Electrom We	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, repon hic ebsites	aluation score out of paration, dat nd Teachin oks (currice) (sources) pooks and (scientific orts) Referenc	f 100 according ily oral, monthl g Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++ adarma.ac.id/pub/.multimedia/ gramming%20with%20C++.po	udent such etc Schaum's df	
23. Co Distribution 24. Lea Require boot Main re Recommon reference jour Electrom We 1.	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, repon hic ebsites	aluation score out of paration, dat nd Teachin oks (currice) (sources) pooks and (scientific orts) Referenc	f 100 according ily oral, monthl g Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++ adarma.ac.id/pub/.multimedia/ gramming%20with%20C++.pe	udent such etc	
23. Co Distribution 24. Lea Require boot Main re Recommended Flectron We 1.	uting the daily prep arning ar ed textboo oks, if any ferences ( mended b erences rnals, repo hic ebsites	aluation score out of paration, dat nd Teachin oks (currice) (sources) pooks and (scientific orts) Referenc	f 100 according ily oral, monthl g Resources PROGRAM	g to the tasks assigned to the st y, or written exams, reports MING WITH C++ adarma.ac.id/pub/.multimedia/ gramming%20with%20C++.pc	udent such etc	

3.					
4.					
5.					
6					
0.					
7.					
8.					
			The ai	ms which can be	e achieved
			teachi	ng this course p	rogram are
			follows	S:	tudant the
			• Pro	efits of studying	English
			Lan	iguage as Seco	ond languag
			• Giv	ing Knowledge a	about using
			Tec	hnical Terminolo	ogies in the
			• Und	derstanding of u	sing the sci
			Eng	glish language in	the Acade
			Pro	gram	
			Giv     des	ing Knowledge of a cribe, typing the	of how to w e reports in
			Enç	glish	
9.					
10.					
		Unit or s	subject	Learning	Evaluatio
		Introduct	tion:	method	method
		Building	" C]=11-	Examination	Looture
		Sentence	r Skiiis,	,Quizzes	&p.p Sho
	1	Construc	tion		
		(Subject	Verh		

1	Tenses: Present	
	Conjunctive adverbs; Adverb to describe a verb, Adverb to describe an adjective, Adverb to describe another adverb. <b>Possessive</b> <b>Nouns:</b> With singular nouns, with plural nouns ending in s, with plural nouns not ending in s. <b>Plural Nouns,</b> <b>Listening,</b> <b>Speaking,</b> <b>Vocabulary,</b> <b>Exercise 2.</b>	
	Object), Things to remember about subject verb agreement, Irregular Verbs, Vocabulary, Exercise 1. <b>Adjectives:</b> Types of Adjectives = Common Adjectives, Proper Adjectives, Article Adjectives, (Definite, Indefinite). <b>Adverb:</b> Types of Adverbs = Ending with –ly Adverbs, Non-ly Adverbs,	

Tense = Past Simple, Past Continuous, Past Perfect, F Perfect Continuc Listening, Speaking, Vocabulary, Exercise 4.,Tenses:Future Tense = Fut Simple, Fut Continuous, Fut Perfect, Fut Perfect, Fut Perfect Continuc Listening, Speaking, Vocabulary, Exercise 5.		
Conditional: First Conditional, Second Conditional Third Conditional, Mixed Conditional. Using Wish (Present, Past); Even Though Vs Even If; Any Longer Vs Anymore Vs No Longer. Listening, Speaking, Vocabulary, Exercise 6. Midterm Exam	Examinations ,Ques	Lecture &p.p Show
Used To Vs Be Used To Vs Get Used To. Countable or Uncountable: Irregular Plural, Nouns that can be countable, Nouns that can change from	Examinations ,Quizzes	Lecture &p.p Show

	uncountable to		
	countable		
	Listening		
	Sneaking		
	Vocabulary		
	Fyonoiso 7		
	Exercise 7.		
	Think vs Hope,		
	100 VS 100		
	Much vs 100		
	Many, Enough +		
	Noun &		
	Adjective +		
	Enough, Both		
	Vs Either Vs		
	Neither, Dare &		
	Need as		
	Auxiliary Verbs.		
	Listening,		
	Speaking,		
	Vocabulary,		
	 Exercise 8.		
	Verb After		
	Preposition;		
	Subject		
	Questions;		
	Verbs of		
	Feeling.		
	Because		
	Vs Because of.		
	Beside Vs		
	Besides.		
	Listening.		
	Speaking.		
	Vocabulary		
	Exercise 9		
	Writing: Avoid	Examinations	Lecture
	long sentences	Quizzes	&n n Show
	avoid overusing	, 2012200	ap.p Show
	the to be verbs		
	Avoid		
	Avolu		
	amoiguity,		
	English		
	Capitalization		
	Kules.		
	Exercise 10.		
	Writing:		
	English		
	Punctuation		
	Marks = Period,		
	Comma,		

	Applying		
	Tenses, Subject-		
	verb Agreement,		
	and		
	Conjunctions or		
	Connectors on		
	Writing: Who		
	Vs. Whom.		
	Exercise 11.		
	Literature Foc		
	Writing an Essay		
	Agree or Disag		
	Preferences		
	Description Es F	Examinations	Lecture
	Questions., Phone	Ouizzes	&p.p Show
	Symbols:	Zuilles	æp.p sno i
	Consonants Vow		
	Diphthongs (T		
	Vowels Together)		
	Fxam		
	LAdin		
	I	Examinations	Lecture
	,	Quizzes	&p.p Show
11.			
12.			
	Soars, John, and PreIntermediate. 03	Liz Soars. xford Univers	New Headw ity, 2003.
	Soars. John. and	Liz Soars.	New Headw
	PreIntermediate. Ox	xford Univers	itv. 2003.
	Soars John and	Liz Soars	New Headw
	PreIntermediate Ox	xford Univers	ity 2003
	i i cinter inculate. 0/		10,2000.

1. Course Name:
English Language II
2. Course Code:
UOT200
3. Semester / Year:
Second Year / 1 <sup>st</sup> semester
4. Description Preparation Date:
1-2-2024
25

5. Availa	able Atte	endance Forms:		
Attendance				
6. Numb	er of Cre	edit Hours (Total) / Number of Units (Total)		
15 ho	urs / 2 ι	inits		
7. Cours	se admi	nistrator's name (mention all, if more than one name)		
Name	e: Assit. I	Prof. Dr. Mohammed Jawad Mohammed		
Email	: mohan	nmed.j.mohammed@uotechnology.edu.iq		
8. Cours	e Object	ives		
Course Object	ives			
9. Teach	ing and	Learning Strategies		
Stratogy		Locturor procentation and DPI		
Sualegy		Lecturer – presentation and FDL		
10. Course	Structure	9		
Week	Hours	Required Learning Outcomes		
1-2	4	Building grammar skills		
3-5	6	Distinguishing between times		
6-7	4	Applying conditional sentences in writing and verbally		
8-9	4	Using numbers and countable in writing and verbally		
10-12	6	Use verbs of feeling in writing and verbally		
13-14	4	Focus on the literature		
15	2	Exam		
11. Cours	e Evalua	ation		
Mid exam 15%	6, student	activities 15%, final exam 70%.		
12. Learni	ing and <sup>•</sup>	Teaching Resources		
Required textb	ooks (cur	ricular books, if any)		
Main reference	es (source	es)		
Recommended	d books a	nd references (scientific journals, reports)		
Electronic Refe	erences, V	Vebsites		

1 (	Curree N	Jamos				
1. (	Jourse N	Nallit: Moos		and Instru	iments	
2 (		ivieds				
2. (	Lourse (	loae:		NO10		
•				NZIZ		
3. 8	Semeste	r / Year:		<u> </u>		
			First/ S	Second		
4. I	Descript	ion Preparation D	Date:			
-			6/2/2	2024		
5. A	Available	e Attendance Form	<u>IS:</u>	lactura	laboratory	
6. 1	Number	of Credit Hours (T	otal) / Nu	mber of U	Units (Total)301	h/5units
			, , , , , , , , , , , , , , , , , , , ,			
			1		16	
7. (	Jourse :	administrator's na	ame (mei adhim	ntion all,	If more than o	ne name)
F	Email: r	asha.f.nahdim@uc	otechnolo	gy.edu.io	a	
				8,	1	
8. 0	Course C	Objectives				
Course (	Objectives	5		• • De	efinition of the mea	surement process
				units of	measurement	
				•••	Definition of meas	urement errors, f
				causes,	and analysis	indicating devices
				design a	immeters and voltr	neters
				• • Si	udy the types of br	idges used to mea
				resistan	ce and impedance.	
				• • Si	tudy of Transducer	and its types
				• • St	tudy digital measu	ring devices
9. 1	Teaching	and Learning Stra	ategies			
Strategy						
10. Co	ourse Str	ucture				
Week	Hours	Required	Unit or su	ubject	Learning	Evaluation
		Learning	name		method	method
		Outcomes				
			27			

1	2	Understand t definition measurement process The main parts measuring devices	Introduction measurement	Theoretical explanation	An oral a written to and given Duties
		Understand a analyze units measurement Understanding and analyzi measurement errors	Basic a derived units measurement Measurement errors	Theoretical explanation problem solving Theoretical explanation problem solving	Written to and assignments Written to and assignments
		Understanding and studying t basics of analog indicating measuring devic	Analogue measuring devices	Theoretical explanation problem solving	Written to and assignments
		Design voltmeter a ammeter	Analogue curre and volta measuring devices	Theoretical explanation problem solving	Written to and assignments
		Understanding and analyzi bridges, th	Bridges and th applications	Theoretical explanation problem solving	Written to and assignments

	types a applications			
	Understanding and analyzi Transducer, types a applications	Transducer	Theoretical explanation problem solving	Written and assignments
	Signal analysis understanding digital current a voltage measuri	Signal analysis digital devices	Theoretical explanation problem solving	Written and assignments
	Understanding measuring devic for oil and g testing	Measuring devices for and gas testing	Theoretical explanation problem solving	Written and assignments
11. 0	Course Evaluation			
Distribu prepara Exam sc Daily ex Lab 10 c Rating: ∶ Final ex	ting the score out of 100 accor tion, daily oral, monthly, or wri ore of 15 marks am, 5 marks legrees L0 marks am 60 marks	ding to the tasks ass itten exams, reports	signed to the stud	ent such as daily
12. L	earning and Teaching Reso	ources		
	UCALDOURS (CUITICUIAI DOURS, II à	aiiy)		

Main references (sources)	1-Electronic measurement systems U.A.Bakshi 2- Electrical instrument a measurement techniques.W.D.coop
Recommended books and references (scientific journals, reports)	Electronic and electri measurement and instrumentation J.BGupta
Electronic References, Websites	

1. Cc	ourse Nai	me:				
Aerodynamics						
2. Co	ourse Coo	le:				
			EMEN2	09		
3. Se	mester /	'Year:				
		2 <sup>nd</sup> se	mester/	2 <sup>nd</sup> Year		
4. De	escriptio	n Preparation Date	:			
			25/2/2	2024		
5. Av	vailable A	Attendance Forms:				
			in c	class		
6. Ni	umber of	Credit Hours (Total	) / Numb	per of Unit	s (Total)	
				30 hou	rs, 30 hours p	oractical, 2 un
7. Co	ourse ad	ministrator's name	e (menti	on all, if m	nore than on	e name)
Na	ame:Ass.	rof. Yasser Ahmed	Mahmoo	od		
Er	nail:502	56@uotechnology.	edu.iq			
8. Co	ourse Obj	ectives				
Course Ob	ojectives			To enable s	tudents to know	the subject of
				Aerodynam	ics and how to	calculate it
9. Teaching and Learning Strategies						
Strategy						
10. Cou	rse Struc	ture				
Week	Hours	<b>Required Learning</b>	Unit or s	subject	Learning	Evaluation
		Outcomes	name		method	method
1	2	Learn the	The atr	nosphere	Explain+	question
L				•		
			30			
			30			

		atmosphere			Question+	
		1 <sup>-</sup>			Example	
2	2	airfoils		Airfoils	======	======
3	2	======		======	=====	======
4	2	Learn the design		Design of	======	======
		of airfoils		airfoils		
5	2	forces on airplane	Airpl	ane forces	=====	======
6	2	=======	==	=======	======	======
7	2	Types of drag	Туј	pes of drag	=====	=====
8	2	======	=	=======	=====	=====
9	2	Calculate the	Ae	rodynamic	======	=====
		Aerodynamic		center		
		center		_		
10	2	learn the	A	irplane	=====	======
		Airplane	M	oments		
		moments				
11	2	Learn the	Airp	lane parts	=====	=====
		airplane parts				
12	2	Learn and	Т	akeoff and	=====	=====
		calculate the		landing		
		Takeoff and				
		landing				
13	2	======	==	=====	=====	======
14	2	Cruise		Cruise	=====	=====
			pe	rformance		
15	2	Learn the climb	cl	imb phase	======	=====
11. Co	urse Eva	luation: 25 degree	mid,10	degree lab	oratory,5 deg	ree
evalu	uation,60	degree final				
Distributir	ng the sco	re out of 100 accordin	g to the	tasks assigne	ed to the studer	nt such as dailv
preparatio	on, daily o	ral, monthly, or writte	en exam	is, reports e	etc	
12. Lea	arning ar	nd Teaching Resour	ces			
Required te	extbooks (	curricular books, if any	′)	no		
Main refere	ences (sou	urces)		aeroo	dynamic	
Recommer	nded book	s and references (sci	entific			
journals, re	eports)					

1. (	Course I	Name:				
		Adv	vanced Engineer	ing Mathema	tics I	
2. (	Course (	Code:				
			EME	202		
2 (	Somosto	or / Voor:		202		
J. (	Semeste		2 <sup>nd</sup> . 1 <sup>st</sup> S	emester		
4. ]	Descript	tion Preparatio	on Date:			
	<b>i</b>	•	2-20	)24		
5. 4	Availabl	e Attendance F	orms:			
			Attenda	nce Lecture	es	
6. I	Number	of Credit Hours	s (Total) / Nur	nber of Uni	ts (Total)	
	4 units			Cara all Sf.		
/. (	Chasse	administrator's	s name (mer	ition all, if i	more than on	e name)
Name: Email:	Ghassa	II A. BIIAI	av adv ig			
			gy.edu.iq			
8. (	Jourse	Jojectives				-
Course	<ul> <li>Objectives</li> <li>Partial derivative</li> <li>Line Integral.</li> <li>Double Integral</li> <li>Triple integral.</li> <li>Second Order Differential</li> <li>Equations</li> </ul>					
			-		Vector.	
9	Teaching	g and Learning	Strategies			
Strategy	,			PBL		
10. Co	ourse St	ructure				
Week	Hours	Required	Unit or subject	t name	Learning	Evaluation
		Learning			method	method
		Outcomes				
1, 2		G01	Applicat     derivati	Application of partial derivative		Quiz, Mid Exam
3,4			<ul> <li>Application of line integration.</li> <li>Application of double integration.</li> <li>Application of triple</li> </ul>		Final Exam	
56						
5,0			Application of triple     integration.			

9,10 11,12	Lear met ODE Appl vect	n many hods to solve 2 <sup>nd</sup> lication of ors.		
11. Course Evaluation				
Mid exam 15%, student activitie	s 15%, final exa	um 70%.		
12. Learning and Teachir	ig Resources			
Required textbooks (curricular be	ooks, if any)	<ul> <li>Advance Mathem</li> <li>Advance DASS. 2</li> </ul>	ed atics.K.A.Stroud,20 ed Engineering Ma 2009	Engineering 003 athematics, H.K.
Main references (sources)			-	
Recommended books and (scientific journals, reports)	references		-	
Electronic References, Websites			-	

1. Course Name:	
	Advanced Engineering Mathematics II
2. Course Code:	
	EME203
3. Semester / Year:	
	2 <sup>nd</sup> Year, 2 <sup>nd</sup> Semester
4. Description Prepar	ration Date:
	2-2024
5. Available Attendance	ee Forms:
	Attendance Lectures
6. Number of Credit H	ours (Total) / Number of Units (Total)
4 Units	
7. Course administra	tor's name (mention all, if more than one name)
Name: Ghassan A. Bilal	
Email: ghassan.bilal@uotechi	nology.edu.iq
Name: Noora Saleh Ekaal	0
Email: 20112@ uotechno	ology.edu.iq
8. Course Objectives	
Course Objectives	Vectors
	33

			<ul> <li>Laplace Transform</li> <li>Inverse Laplace T</li> <li>Fourier Series</li> <li>Power Series</li> </ul>	ms Transforms		
9. '	Teaching	g and Learning Stra	tegies			
Strategy	,		PBL			
10. Co	ourse St	ructure				
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation	
		Outcomes	name	method	method	
1,2 3,4		G01	<ul> <li>Vectors</li> <li>Laplace Transforms</li> </ul>	PBL	Quizzes, Mid Exam, Final Exam	
5,6			Fourier Series			
7,8 9,10		Power Series				
11.	Course I	Evaluation				
Mid exa	um 15%, s	tudent activities 15%, f	inal exam 70%.			
12.	Learning	and Teaching Res	ources			
Require	d textboo	ks (curricular books, if	any) • Advand Stroud, • Advand DASS.	ced Engineering M 2003 ced Engineering M 2009	lathematics. K.A.	
Main re	ferences	(sources)		-		
Recomm	nended	books and refe	rences	-		
(scientif	ic journals	s, reports…)				
Electron	ic Refere	nces, Websites		-		

1. Course Name:
Strength of Materials
2. Course Code:
EMEN211
3. Semester / Year:
2 <sup>nd</sup> Year, 2 <sup>nd</sup> Semester
4. Description Preparation Date:
2-2024
5. Available Attendance Forms:
34

Attendance Lectures					
0	3 units		ours (Total) / Number of Omits	(10tal)	
7. (	Course	administra	tor's name (mention all, if me	ore than or	ne name)
	Name: N	Auhannad Zai	dan Khalifa		
]	Email: N	Iuhannad Zai	dan Khalifa @uotechnology.edu.iq		
8.	Course	Objectives			
Course 9. <sup>-</sup> Strategy	Objective Teaching	s g and Learn	<ul> <li>Introduces the fundamental materials by study of the beloads and deflections.</li> <li>Study the simple bending the torsion theory for shafts deflection of beams, complex</li> <li>Illustration and discussion the vibrations and definition with</li> <li>Proceeding to the Student free degree of freedom and two definitions are defined and twe defined</li></ul>	l concepts ir ehavior of sol cory for beam (circular) an x stresses, cor h and without e & forced vib egree of freed	n mechanics o id bodies unde s and the simple ad non-circular npounds beam. of free & forced damping. prations of single lom.
10. Co	ourse St	ructure			
Week	Hours	Required	Unit or subject name	Learning	Evaluation
		Learning		method	method
		Outcomes			
1 2 3 4 5		G02	<ul> <li>Simple stress and strain</li> <li>Shearing force and bending moment diagrams</li> <li>Bending Theory of the beam</li> <li>Deflection of beams</li> <li>Torsion Theory for Circle Shaft.</li> <li>Free vibration of single degree of freedom system</li> <li>Forced vibration of single</li> </ul>	PBL	Quiz, Mid Exam, Final Exam
5 7 8 9 10			<ul> <li>Free vibration with damping</li> <li>Forced vibration two degree of freedom</li> <li>Forced vibration with damping</li> </ul>		
7 8 9 10 11.	Course	Evaluation	<ul> <li>Free vibration with damping</li> <li>Forced vibration two degree of freedom</li> <li>Forced vibration with damping</li> </ul>		
12. Learning and Teaching Resource	S				
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Required textbooks (curricular books, if any)	<ul> <li>Mechanics of Materials I., E. J. HEARN, THIRD EDITION, 2007.</li> <li>Strength of materials, G. G. Jon, 2009.</li> <li>Mechanical vibration by S.S. Rao.</li> </ul>				
Main references (sources)	-				
Recommended books and references (scientific journals, reports)	-				
Electronic References, Websites	-				

Navigation Theory I         EMEN206         Semester / Year:         First Semester/2 <sup>nd</sup> Year         Attendance Forms:         2 hours weekly         5. Available Attendance Forms:         Course of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives       • Knowing the purpose and objectives of navigation         Course Objectives         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	1. Course Name:					
2. Course Code:       EMEN206         EMEN206         3. Semester / Year:         First Semester/2 <sup>nd</sup> Year         4. Description Preparation Date:         2 hours weekly         5. Available Attendance Forms:         Attendance Lectures         6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives       • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the dostacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	Navigation Theory I					
EMEN206         Semester / Year:         First Semester / 2 <sup>nd</sup> Year         4. Description Preparation Date:         2 hours weekly         5. Available Attendance Forms:         Attendance Lectures         6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives       • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	2. Course Code:	2. Course Code:				
3. Semester / Year:         First Semester/2 <sup>nd</sup> Year         4. Description Preparation Date:         2 hours weekly         5. Available Attendance Forms:         Attendance Lectures         6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives         • Knowing the purpose and objectives of navigational systems         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically         and in multiple ways         9. Teaching and Learning Strategies	EMEN	206				
First Semester/2" <sup>d</sup> Year         4. Description Preparation Date:         2 hours weekly         5. Available Attendance Forms:         Attendance Lectures         6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives       • Knowing the purpose and objectives of navigation         Course Objectives       • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems       • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies       • Learning Strategies	3. Semester / Year:					
4. Description Preparation Date:       2 hours weekly         2 hours weekly       5. Available Attendance Forms:         Attendance Lectures       6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units       7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez Email: 50067@uotechnology.edu.iq       8. Course Objectives         Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems       • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways       9. Teaching and Learning Strategies	First Semeste	er/2 <sup>nd</sup> Year				
2 hours weekly 5. Available Attendance Forms: Attendance Lectures 6. Number of Credit Hours (Total) / Number of Units (Total) Two hours per week / two units 7. Course administrator's name (mention all, if more than one name) Name: Prof. Dr. Sameir Abd Al-khalik Aziez Email: 50067@uotechnology.edu.iq 8. Course Objectives Course Objectives Course Objectives · Knowing the purpose and objectives of navigation · Knowing the fundamental theory operation of navigational systems · Learn how to find the desired location mathematically and in multiple ways 9. Teaching and Learning Strategies	4. Description Preparation Date:					
<ul> <li>5. Available Attendance Forms:         <ul> <li>Attendance Lectures</li> <li>Number of Credit Hours (Total) / Number of Units (Total)</li> <li>Two hours per week / two units</li> </ul> </li> <li>7. Course administrator's name (mention all, if more than one name)         <ul> <li>Name: Prof. Dr. Sameir Abd Al-khalik Aziez</li> <li>Email: 50067@uotechnology.edu.iq</li> <li>8. Course Objectives</li> <li>Knowing the purpose and objectives of navigation                 <ul> <li>Knowing the fundamental theory operation of navigational systems</li> <li>Knowing the obstacles to the operation of navigational systems</li> <li>Learn how to find the desired location mathematically and in multiple ways</li> <li>9. Teaching and Learning Strategies</li></ul></li></ul></li></ul>	2 hours v	veekly				
Attendance Lectures         6. Number of Credit Hours (Total) / Number of Units (Total)         Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives         Course Objectives         • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	5. Available Attendance Forms:					
6. Number of Credit Hours (Total) / Number of Units (Total) Two hours per week / two units 7. Course administrator's name (mention all, if more than one name) Name: Prof. Dr. Sameir Abd Al-khalik Aziez Email: 50067@uotechnology.edu.iq 8. Course Objectives Course Objectives Course Objectives	Attendan	ce Lectures				
Two hours per week / two units         7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives         Course Objectives         • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	6. Number of Credit Hours (Total) / Number of Units (Total)					
7. Course administrator's name (mention all, if more than one name)         Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives         Course Objectives         • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	Two hours per week / two units					
Name: Prof. Dr. Sameir Abd Al-khalik Aziez         Email: 50067@uotechnology.edu.iq         8. Course Objectives         Course Objectives         • Knowing the purpose and objectives of         navigation         • Knowing the fundamental theory operation of         navigational systems         • Knowing the obstacles to the operation of         navigational systems         • Learn how to find the desired location         mathematically         and in multiple ways	7. Course administrator's name (mention	on all, if more than one name)				
Email: 50067@uotechnology.edu.iq         8. Course Objectives         Course Objectives         • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems         • Knowing the obstacles to the operation of navigational systems         • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies	Name: Prof. Dr. Sameir Abd Al-khalik	Aziez				
8. Course Objectives       • Knowing the purpose and objectives of navigation         Course Objectives       • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems       • Knowing the obstacles to the operation of navigational systems         • Knowing the obstacles to the operation of navigational systems       • Learn how to find the desired location mathematically and in multiple ways         9. Teaching and Learning Strategies       • Strategies	Email: <u>50067@uotechnology.edu.iq</u>					
Course Objectives       • Knowing the purpose and objectives of navigation         • Knowing the fundamental theory operation of navigational systems       • Knowing the obstacles to the operation of navigational systems         • Knowing the obstacles to the operation of navigational systems       • Learn how to find the desired location mathematically         9. Teaching and Learning Strategies       • Strategies	8. Course Objectives					
<ul> <li>navigation</li> <li>Knowing the fundamental theory operation of navigational systems</li> <li>Knowing the obstacles to the operation of navigational systems</li> <li>Learn how to find the desired location mathematically and in multiple ways</li> </ul>	Course Objectives	<ul> <li>Knowing the purpose and objectives of</li> </ul>				
<ul> <li>Knowing the fundamental theory operation of navigational systems</li> <li>Knowing the obstacles to the operation of navigational systems</li> <li>Learn how to find the desired location mathematically and in multiple ways</li> </ul>		navigation				
<ul> <li>navigational systems         <ul> <li>Knowing the obstacles to the operation of navigational systems</li> <li>Learn how to find the desired location mathematically</li> <li>and in multiple ways</li> </ul> </li> <li>9. Teaching and Learning Strategies</li> </ul>		• Knowing the fundamental theory operation of				
Knowing the obstacles to the operation of navigational systems     Learn how to find the desired location mathematically and in multiple ways     9. Teaching and Learning Strategies		navigational systems				
navigational systems         •Learn how to find the desired location         mathematically         and in multiple ways         9. Teaching and Learning Strategies		<ul> <li>Knowing the obstacles to the operation of</li> </ul>				
•Learn how to find the desired location mathematically and in multiple ways     9. Teaching and Learning Strategies		navigational systems				
9. Teaching and Learning Strategies		•Learn how to find the desired location				
9. Teaching and Learning Strategies		mathematically				
9. Teaching and Learning Strategies		and in multiple ways				
	9. Teaching and Learning Strategies					

Strategy	<b>y</b>	Enabling students of the Navigation and Guidance Engineering branch to know the theoretical and mathematical foundations On which various navigational devices operate, with the possibi of developing some of them as much as possible					
10. C	ourse \$	Structure					
Week	Hour	Required	Unit or subject name	Learning	Evaluatio		
	s	Learning		method	n method		
		Outcomes					
1	2	Fundamentals of AVIONICS (Aviation Electronics)	Navigation Functions, Definition of Navigation	Attendance lecture	Question and Answe		
2	2	Learn the concept of Avionics	Purpose of Navigation	Attendance lecture	Question and Answe Homewo		
3	2	Learn the types of Craft that can be navigated	Craft and Environment (Craft, Land Vehicles, Marine Vessel)	Attendance lecture	rk		
4	2	Learn the types of Craft that can be navigated	Aircraft, Space Craft	Attendance lecture	Question and Answer		
5	2	Study the effect of Environment on different Craft Navigation	Environment; Winds, Weather, Forecasting	Attendance lecture	Question and Answer		
6	2	Study of the effect of Geometry of The Earth on different Craft Navigation	Geometry of The Earth and Coordinate Frames: (Geometry of Earth)	Attendance lecture	and Quiz Question		
7	2	Learn the different types of Coordinate Frames and its Transformation	Coordinate Frames (Geocentric Spherical Coordinates, Generalized spherical coordinates, Transverse –Pole spherical coordinates)	Attendance lecture	Answer		
8	2	Learn the different types of Coordinate Frames and its Transformation	Tangent plane coordinates, Tangent cylinder coordinates, Tangent plane coordinates, Map-grid coordinates.	Attendance lecture	Question and Answer and Homewo rk		

9	2	Mid-course exam	Mid-course exam	Attendance		
10	2	Learn calculation of finding the course and distance to the observation point	Navigation Quantities (Attitude and Heading, The Space- Triangle)	Attendance lecture	Written questions Question and Answer	
11	2	Learn the meaning and calculations of different Navigation angles	Navigation Quantities (the Bearing and relative Bearing, Altitude, the Route, Routing)	Attendance lecture	Question and Answer	
12	2	Study the different types of Navigation Aids	Navigation Aids (Fundamental Aids, Radio Aids, Inertial Aids, Satellite Aids)	Attendance lecture	and Answer and Homewo	
13	2	Learn the concept of Kinds of Navigation	Kinds of Navigation (Dead- Reckoning, Position Fixing)	Attendance lecture	rk	
14	2	Learn the concept of different terms of Navigation	Phase Vertical Navigation	Attendance lecture	Question and Answer, and Quiz	
15	2	Learn the types of Navigation surveillance and Communication	Navigation surveillance and Communication	Attendance lecture	Question and Answer	
					Question and Answer	
					Question and Answer	
					Question and Answer	
11.	11. Course Evaluation					
5% atte	endance	grade; 5% homewor	k; 5% Quizzes; 15% midterm ex	am; 70% final	exam	
12.	Learnin				OVETEME	
Require	a textbo	oks (curricular books,	IT any) AVIUNICS	NAVIGATION	1 2 1 2 1 E M 2	
38						

	By: Myron Kayton	
Main references (sources)	AVIONICS NAVIGATION SYSTEMS	
· · · · · ·	By: Myron Kayton	
Recommended books and references (scientific	Navigation and Guidance of	
iournals reports)	Orbital Transfer Vehicle	
	(By: Xuefeng Li)	
Electronic References, Websites	Next-Generation GNSS Signal	
	Design	
	&	
	Global Navigation Satellite System	
	and Inertial Navigation	

1. Course Name:			
Navigation Theory II			
2. Course Code:			
EMEN	1207		
3. Semester / Year:			
First Semest	er/2 <sup>nd</sup> Year		
4. Description Preparation Date:			
2 hours	weekly		
5. Available Attendance Forms:			
Attendar	nce Lectures		
6. Number of Credit Hours (Total) / Numb	er of Units (Total)		
Two hours per week / two units			
7. Course administrator's name (mention	on all, if more than one name)		
Name: Prof. Dr. Sameir Abd Al-khalik	Aziez		
Email: <u>5006/@uotechnology.edu.iq</u>			
8. Course Objectives			
Course Objectives	•Knowing the location of the radio broadcast		
	•Knowing the theoretical foundations of		
	navigational systems for finding the location		
	•Knowing different ways to find the location usi		
	signal parameters		
	<ul> <li>Identify the various types of errors in finding th</li> </ul>		
	desired location		
	Solve different mathematical problems using		
	multiple methods to find the location		

9.	9. Teaching and Learning Strategies						
Strategy		Theoretical lectures (delivering the lecture to students in person) and using (Data show), to enable students of the Navigation and Guidance Engineering Branch to know the theoretical and mathematical foundations					
		On which various n basics and concept direction and dista	avigational devices operate is necessary to find the loca nce.	e, in addition tions and det	to knowing t cermine their		
10. Co	ourse	Structure	Γ	1			
Week	Hour	Required	Unit or subject name	Learning	Evaluation		
	S	Learning		method	method		
1	2	OutcomesLearning the fundamentals of Radio position fixing	Radio Position Fixing (General Principles, Position Fixing)	Attendance lecture	Question and Answer		
2	2	Learning the principles of Direction- Determination From Radio station	Principle of Direction- Determination	Attendance lecture	Question and Answer Homework		
3	2	Study the principles of Direction- Beacons by using method of (Amplitude- Direction Finding)	Principles of Direction-Beacons (Amplitude-Direction Finding)	Attendance lecture	Question and Answer		
4	2	Study the principles of Direction- Beacons by using method of (Phase-Direction Finding)	Phase-Direction Finding	Attendance lecture	Question and Answer and Quiz		
5	2	Study the principles of Direction- Beacons by using method of	Frequency(Doppler)-Direction Finding	Attendance lecture	Question and Answer		
		1	40	1	1		

		(Phase-Direction Finding)			
6	2	Study the principles of Direction- Beacons by using method of	Principles of Direction- Beacons (Amplitude- Direction Finding(	Attendance lecture	Question and Answe and Homework
7	2	(Amplitude- Direction Finding) Study the principles of Direction- Beacons by using method of (Phase-Direction Finding)	Phase-Direction Beacons	Attendance lecture	Written questions Question and Answe
8	2	Study the principles of Direction- Beacons by using method of (Phase-Direction Finding)	Frequency(Doppler)- Direction Beacons	Attendance lecture Attendance	Question and Answ
9	2	Mid-course exam	Summers of Macaurements	Attendance	Question
10	2	Learn calculation of finding the course and distance to the observation point	in Direction Beacons	lecture	Question and Answ and Quiz
11	2	Learning to solved problems for finding a required position	Solved different problems	Attendance lecture Attendance	Question and Answ and
12	2	Learning analysis of different errors in navigation measurements	Measurements (Types of Errors)	lecture Attendance	Homewor Question and Answ and Ouiz
13	2	Learning analysis errors in position	EITOL OF FOSICIOII-FIXING	lecture	Question
14	2	fixing Study the effects of Measuring Time-Duration errors	Measuring Time-Duration Effect Effect of The Angle of Cut	Attendance lecture	and Answ Question and Answ

2				Attendance	
	Study the effects			lecture	Question
	or Angle of Cut				and Answer
Course	Evaluation				
endance	grade; 5% homewor	k; 5% Quiz	zes; 15% midterm ex	am; 70% final	exam
Learnin	g and Teaching Re	esources			
ed textbo	oks (curricular books,	if any)	AVIONICS NAVIGATION SYSTEMS		
	Υ.	,	By: Myron K	ayton	
ferences	s (sources)		AVIONICS	NAVIGATION	SYSTEMS
	· · ·		By: Myron K	ayton	
Recommended books and references (scientific			Navigation	and Guidanc	e of
, reports	s)		Orbital Tra	nsfer Vehicle	è.
, -1	····)		(By: Xuefe	ng Li)	
Electronic References, Websites			Next-Generation GNSS Signal		
		Design			
				&	
			Global Na	avigation Sat	ellite System
			and	d Inertial Nav	vigation
	2 Course endance Learnin d textbo ferences mended s, reports	2 Study the effects of Angle of Cut error Course Evaluation endance grade; 5% homewor Learning and Teaching Re ed textbooks (curricular books, ferences (sources) mended books and references s, reports) hic References, Websites	2       Study the effects of Angle of Cut error          Course Evaluation            Learning and Teaching Resources         ed textbooks (curricular books, if any)         ferences (sources)         mended books and references (scientific 5, reports)         hic References, Websites	2       Study the effects of Angle of Cut error         Course Evaluation       Evaluation         endance grade; 5% homework; 5% Quizzes; 15% midterm ex         Learning and Teaching Resources         ed textbooks (curricular books, if any)       AVIONICS I         by: Myron K         ferences (sources)       AVIONICS I         mended books and references (scientific 5, reports)       Navigation Orbital Tra (By: Xuefe nic References, Websites         Next-G       Global Na and	2       Study the effects of Angle of Cut error       Attendance lecture         Course Evaluation       endance grade; 5% homework; 5% Quizzes; 15% midterm exam; 70% final         Learning and Teaching Resources       AVIONICS NAVIGATION By: Myron Kayton         Id textbooks (curricular books, if any)       AVIONICS NAVIGATION By: Myron Kayton         ferences (sources)       AVIONICS NAVIGATION By: Myron Kayton         nended books and references (scientific 5, reports)       Navigation and Guidance (By: Xuefeng Li)         nic References, Websites       Next-Generation G Design & Global Navigation Sate and Inertial Navigation

## Course Description Form (3<sup>rd</sup> Year)

1. Course Name:
Communication I
2. Course Code:
EMEN305
3. Semester / Year:
1 <sup>st</sup> / 3 <sup>rd</sup>
4. Description Preparation Date:
02-2024
5. Available Attendance Forms:
Attendance lectures
2 hours weekly (30 hours in course) / 2 Units
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Mohammed Qasim Mohammed
Email: 50033@uotechnology.edu.iq
8. Course Objectives
Course Objectives • Teaching students the basic concepts of analogue communication
<ul> <li>Study the analysis of signals, their types, useful signals, and the useful</li> </ul>
operations for signals
Study Fourier analyses and their types
<ul> <li>Study the modulation and demodulation techniques and their type in datail</li> </ul>
9. Teaching and Learning Strategies
Strategy Theoretical lectures (give the lecture to students in person) Practical lectures (work in the laboratory to achieve the practice
aspect)
10. Course Structure
Week Hours Required Learning Unit or subject Learning Evaluation
Week         Hours         Required Learning         Unit or subject         Learning         Evaluation           Outcomes         name         method         method
WeekHoursRequired LearningUnit or subjectLearningEvaluation0utcomesnamemethodmethod12An introduction toFundamentalsofAttendanceQuestion
WeekHoursRequired LearningUnit or subjectLearningEvaluation00utcomesnamemethodmethodmethod12An introduction to understanding the basics of analogueFundamentals analogueofAttendance lectureQuestion and Answer
WeekHoursRequired LearningUnit or subjectLearningEvaluation00utcomesnamemethodmethodmethod12An introduction to understanding the basics of analogueFundamentals analogueofAttendance lectureQuestion and Answei12An introduction to understanding the basics of analogueFundamentals communicationsofAttendance lectureQuestion and Answei
WeekHoursRequired LearningUnit or subjectLearningEvaluation00utcomesnamemethodmethodmethod12An introduction to understanding the basics of analogue communicationsFundamentals analogueof analogue communicationsAttendance and Answer and AnswerQuestion and Answer22Learn the concept of and and analoguesignal analysisAttendance AttendanceQuestion
WeekHoursRequired LearningUnit or subjectLearningEvaluation0Outcomesnamemethodmethodmethod12An introduction to understanding the basics of analogue communicationsFundamentals analogue communicationsof analogue communicationsAttendance lectureQuestion and Answer22Learn the concept of signal analysissignal analysisAttendance lectureQuestion and Answer32Learn the types ofsignal analysisAttendance lectureUnestion and Answer
WeekHoursRequired LearningUnit or subjectLearningEvaluation0utcomesnamemethodmethod12An introduction to understanding the basics of analogue communicationsFundamentals analogue communicationsof analogue communicationsAttendance lectureQuestion and Answe22Learn the concept of signal analysis Learn the types of signals, usefulsignal analysis lectureAttendance lectureQuestion and Answe lecture
WeekHoursRequired LearningUnit or subjectLearningEvaluation0Outcomesnamemethodmethodmethod12An introduction to understanding the basics of analogueFundamentals analogueof analogueAttendance lectureQuestion and Answe22Learn the concept of signal analysis Learn the types of signals, useful signals, usefulsignal analysis lectureAttendance lectureQuestion and Answe Attendance lecture

4	2	Learn some	signal analysis	Attendance	Question
		operations on		lecture	and Answer
5	2	Study of Fourier analyzes and their	Fourier analyzes and their types	Attendance lecture	Quiz
6	2	types Applying Fourier analyzes to	Fourier analyzes and their types	Attendance lecture	Question and Answer
7	2	Applying Fourier analyzes to complex functions	Fourier analyzes and their types	Attendance lecture	Question and Answer
8	2	Learn Fourier transforms for discontinuous signals	Fourier transforms	Attendance lecture	Homework
9	2	Mid-course exam	Mid-course exam	Attendance lecture	Written questions
10	2	An introduction to embedding and de- embedding techniques and their types	embedding and de- embedding techniques	Attendance lecture	Question and Answer
11	2	Learn the concept of amplitude	amplitude modulation & Domodulation	Attendance lecture	Question and Answer
12	2	Learn the concept of amplitude	amplitude modulation &	Attendance lecture	Quiz
13	2	Learn the types of amplitude- modulated signals	amplitude modulation &	Attendance lecture	Question and Answer
14	2	Learn the concept of angular modulation and its types (frequency	angular modulation	Attendance lecture	Homework
15	2	modulation) Learn the concept of angular modulation and its types (phase modulation)	angular modulation	Attendance lecture	Question and Answer
11 (	Course	Evaluation			
50% atta	ndance	grado: 506 homowork	506 Auizzaa, 1504 midt	0 m $0$ m $100/$	I ab 6006 final
yyo alle ayam	inualice	graue, 570 HOIHEWOLK;	5 70 Quizzes; 15 70 illiut	er III exalli; 10%	uau, 00% iiiiai

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	No
Main references (sources	B. P. Lathi, "Modern Digital And Analog Communications Systems", 3rd Edition, (The Oxford Series in Electrical and Computer Engineering).
Recommendedbooksandreferences(scientificjournals,reports)	<ul> <li>Bruce Carlson, Paul Crilly, Janet Rutledge "Communication Systems", 4th Edition, - McGraw Hill</li> <li>Simon Haykin, Barry Van Veen, "Signals and Systems", 2nd Edition-Wiley.</li> </ul>
Electronic Reference Websites	No

1. Course Name:							
Communications II							
2. Course Code:							
	EMEN306						
3. Semester /	Year:						
	2 <sup>nd</sup> / 3 <sup>rd</sup> Year						
4. Description	Preparation Date:						
	02-2024						
5. Available A	ttendance Forms:						
	Attendance lectures						
6. Number of <b>(</b>	Credit Hours (Total) / Number of Units (Total)						
	2 hours weekly (30 hours in course)/ 2 Units						
7. Course a	administrator's name (mention all, if more than one name)						
Name: Asst	. Prof. Dr. Mohammed Qasim Mohammed						
Email: 5003	33@uotechnology.edu.iq						
8. Course Obje	ectives						
Course Objectives	Teaching students the basic concepts of digital communications						
	and its advantages						
	• Study the performance of the digital communications system and						
	the factors affecting it						
	Studying the types of communications systems models, methods						
	of transmission, and data selection techniques						
	• Study the concept of information theory and probabilities and						
	their importance in digital communications systems						

9.	Teachin	<ul> <li>Studying the their types</li> <li>Study the optimized signal to optimized processes.</li> <li>g and Learning Strate</li> </ul>	in digital communications concept of pulse modulat digital through sampling, egies	s systems ion and conve quantization	rt the analogue
Strategy	, 1   H   2	Theoretical lectures Practical lectures (waspect)	(give the lecture to s ork in the laboratory	tudents in p to achieve t	erson) the practica
10. Co	ourse St	tructure			
Week	Hours	Required Learning	Unit or subject name	Learning	Evaluation
		Outcomes		method	method
1	2	An introduction to understanding the basics of digital communications	Fundamentals of digital communications	Attendance lecture	Question and Answer
Z	2	Learn the concept of the performance of digital communications systems and the factors affecting them	digital communications systems	Attendance lecture	Question and Answer
3	2	Learn the types of communication models and ways to transfer information	types of communication models and types to transmit information	Attendance lecture	Homework
4	2	Learn the concept of data selector, its types, advantages and disadvantages	Multiplexing Techniques	Attendance lecture	Question and Answer
5	2	Study of information theory and its importance in digital	information theory	Attendance lecture	Quiz
6	2	Studying the concept of probability and its importance in digital	probability and its importance in digital communications	Attendance lecture	Question and Answer
7	2	Studying the types of modulation and the importance of pulse modulation to convert the signal	types of modulation	Attendance lecture	Question and Answer

		from analogue to				
8	2	digital Learn the concept of sampling and quantification	sampling and quantification	Attendance lecture	Homework	
9	2	Mid-course exam	Mid-course exam	Attendance	Written	
10	2	Learn the concept of line coding and how to draw various signals	line coding	Attendance lecture	Question and Answer	
11	2	Study of the types of modulation (BAFK & BFSK)	modulation (BAFK & BFSK)	Attendance lecture	Question and Answer	
12	2	Study of the types of modulation (BPSK& DBPSK)	modulation (BPSK& DBPSK)	Attendance lecture	Quiz	
13	2	Study of QPSK modulation and its	QPSK modulation	Attendance lecture	Question and Answer	
14	2	Learn the concept of type modulation (M- ray ASK)	modulation (M-ray ASK)	Attendance lecture	Homework	
15	2	Learn the concept of type modulation (M- ray FSK & PSK)	modulation (M-ray FSK & PSK)	Attendance lecture	Question and Answer	
11. 0	Course	Evaluation	I			
5% atte exam	ndance	grade; 5% homework; S	5% Quizzes; 15% midter	rm exam;10%	Lab; 60% final	
12. L	earnin	g and Teaching Reso	ources			
Required	d t	extbooks No				
(curricula	ar books	s, if any)				
Main ref	erences	(sources) B. P. Lathi, "M 3rd Edition, Engineering)	Iodern Digital And Analo (The Oxford Series i	og Communica in Electrical	tions Systems", and Computer	
Recomm	nended	books John-J	• John-Proakis "Digital Communications", 4th Edition, -			
and refe	rences (	scientific McGra	aw Hill Proakis & Masoud Salak	ni "Digital Con	munications"	
journals,	, reports	) 5th Eq	dition, - McGraw Hill		iniunications ,	
Electronic Referenc No						
Websites	S					
1.	Cour	se Name:				
		N	umerical Analysis			
			- 48			

			EME301		
	3. Seme	ester / Yea	r:		
	4 5		3 <sup>rd</sup> Year, 1 <sup>st</sup> Semester		
	4. Desc	ription Pre	eparation Date:		
			2-2024		
	5. Avai	lable Atten	dance Forms:		
		han of Cuo	Attendance Lecture	es Luita (Tatal)	
4 IInit	6. Num	ber of Cred	iit Hours (10tal) / Number of	Units (Total)	
+ OIIIt	<u>.</u> 7. Coui	rse admini	strator's name (mention all.	if more that	n one name)
	Name: I	Hayder Qasin	1		
	Email: I	Javder Oasim	Quotechnology edu ja		
		se Objectiv			
<ul> <li>principles of advanced numerical and the ability to analysis and solve the numerical problems.</li> <li>Illustration and discussion the main the application of numerical methods for the solution of equation(s) - linear, non-linear (algebraic) that occur in most numerical of electromechanical field.</li> <li>The student may also go beyond the subject and perform grid sensitivity, parametric study and stability analysis.</li> </ul>					
	9. Teac	ning and L	earning Strategies		
Strategy	/		PBL		
10. Co	ourse St	ructure			
Week	Hours	Required	Unit or subject name	Learning	Evaluation
		Learning		method	method
123		CO1	Solution of non –linear equations by	DRI	ΟυίΖ
4,5,6	GO1 4,5,6		<ul> <li>Solution of non-inical equations by numerical methods:</li> <li>Simple Iteration Method</li> <li>Bisection method</li> <li>Newton -Raphson iterative</li> <li>Curve fitting &amp;Interpolation <ul> <li>a) Curve fitting :</li> <li>Least square method</li> <li>b) Interpolation :</li> </ul> </li> </ul>	PBL	Mid Exam Final Exam

7,8 9,10	Lagrange I Polynomia Numerical Solution equations systems: Direct met	Interpolation l of linear hod ethod		
11,12	Numerical integrati Trapezoida Simpson's Solution of differen numerical methods: Modified H Runge-Kur	Euler's method tta method		
11. (	Course Evaluation			
Mid exa	m 15%, student activities 15%, final exa	m 70%.		
12. l	earning and Teaching Resources			
Require	d textbooks (curricular books, if any)	• Chapra, Steven C., and Raymond P. Canale., "Numerical methods for engineers," Vol. 2, New York: <i>McGraw-Hill</i> , 2012.		
Main ref	erences (sources)	-		
Recommended books and references (scientific		-		
journals,	reports)			
Electron	ic References, Websites	-		

1. Course Name:
Engineering Analysis
2. Course Code:
EME301
3. Semester / Year:
3 <sup>rd</sup> Year, 2 <sup>nd</sup> Semester
4. Description Preparation Date:
2-2024
5. Available Attendance Forms:
Attendance Lectures
6. Number of Credit Hours (Total) / Number of Units (Total)
4 Units
7. Course administrator's name (mention all, if more than one name)
Name: Hayder Qasim
Email: Hayder Qasim @uotechnology.edu.iq
8. Course Objectives
50

Course Objectives	• Aims of the course are to graduates qualified engineers who they have theoretical experience in advanced engineering in electromechanical field.
	• This unit of study aims to provide theoretical knowledge and principles of advanced numerical and the ability to analysis and solve the engineering problems.
	• Illustration and discussion the main the application of engineering methods for the solution of ordinary differential equation(power series), differentiation of complex function that occur in most engineering of electromechanical field.
	• The student may also go beyond the subject and perform grid sensitivity, parametric study and stability analysis.

## 9. Teaching and Learning Strategies

Strategy		PBL						
10. Co	ourse S	Structure						
Week	Hours	Required	Unit or subject	name	Learning	Evaluation		
		Learning			method	method		
		Outcomes						
1,2 3,4 5,6		G01	<ul> <li>Complex a</li> <li>Complex a</li> <li>Differenti complex f</li> <li>Harmonic</li> </ul>	analysis mapping: ation of unction: functions	PBL	Quiz Mid Exam Final Exam		
7,8			Power series solution of					
9,10 11,12			<ul><li>ordinary differential</li><li>equation</li><li>Power series solutions:</li></ul>					
11. (	Course	e Evaluation						
Mid exa	m 15%	, student activiti	es 15%, final exa	m 70%.				
12. L	earnir	ng and Teach	ing Resources					
Required textbooks (curricular books, if any)				• Stroud, Ke "Advanced <i>Macmillan</i>	enneth Arthur, and D d engineering mathe 9, 2011.	Dexter J. Booth., matics," <i>Palgrave</i>		
Main references (sources)					-			
Recomm	Recommended books and references -							
(scientifi	c journa	als, reports…)						
Electron	ic Refe	rences, Website	es		-			

 1. Course Name:
 RADAR Theory

 2. Course Code:
 EMEN307

 3. Semester / Year:
 51

			So	cond 3 <sup>rd</sup>				
1	4 Decemination Decomposition Deter							
4.	Descripti	ion Preparation Date	e: 	2-2024				
5	5 Available Attendance Forms: In person							
5.	Attendance Lectures							
6.	Number of	of Credit Hours (Total	l) / Number	r of Units (To	tal)			
	3 3H(2H th	H eory +1 H tutorial)	lours		/			
7.	7. Course administrator's name (mention all, if more than one name)							
	Name: Ja Email: Ja	faar Mohammed Dai afar.M.Dhaif@uotech	if mology.edu	u.iq				
8.	Course C	bjectives						
				most common monitoring of when they at airplane or a used to detect addition to the and its charan sensing. The overview of operational p basics include resolution, at available in know how to to the nature	on sensor systems to of people, machine re placed on a platf satellite, they are et stationary and m he formation of pic acteristics, which is a aim of this course the theory of typic principles, starting de wave propagation nd specifications. I signal-receiving sy o derive the radar e of its work.	used for automatic s, and nature. And form, such as an dominant. It is oving targets in ctures of the Earth called remote is to provide an al radar and its with concepts. Th on, types of It is required to be restems and then to equation according		
9.	Teaching	and Learning Stratec	gies					
Strateg	у	Theoretical lect .exams, homewo	ures (givin ork, reports	g the lecture s, and assignm	to students in pers nents	on) and including		
10. Co	ourse Stru	Jcture						
Week	Hours	Required	Unit or s	ubject	Learning	Evaluation		
		Learning	name		method	method		
		Outcomes						
1	3	<ul> <li>Acquire- basic knowledge</li> <li>The concept radar</li> <li>Understanding basic principles</li> <li>To make radar</li> </ul>	Introduction to the nat of radar,maxim unambiguous range, ra waveforms, the sim form of radar, in addit .to radar applications		Giving the le+cture Discussion and exercises	The extent of student's inter with the lectur the extent of understanding through it Questions and a		

		• Get to know the main parts of a syste .Radar				
2	3	<ul> <li>The student will le :about</li> <li>Frequency bea of the radar syst</li> <li>The studer understanding the types systems Radar a problems according to package Freque:</li> <li>The student vacquire conce Basics of ratheory</li> </ul>	•	Classify ra according to the tr of operating signa Radar classificat according to frequency level Recognize maximum detect range and the fact .involved	Giving the le+cture Discussion and exercises	The extent of student's interact with the lecture the extent of understanding through it Questions and answ
3	3	The student wil understand the mos important factor that are associate with proces detection, includin and the exten accuracy of detection Also, t he studen will be able t visualise th technologies used i .scanning operations The student wil learn about the type of signals used b .radar systems	•	Classification radar according to type of signal Classification radar according to frequency band Maximum detect range and the fact .involved	Giving the le+cture Discussio and exercises	The extent of student's interact with the lecture the extent of understanding through it Questions and answ
4	3	<ul> <li>The student v understand most crit factors associa with a detect process, includ the extent accuracy .detection</li> <li>The student will able to recogn the technolog used in ra</li> </ul>	•	Continuing with topic of maxim detection range factors associa .with it Prediction of Rat ,Performance Minimum Detecta ,Signal Recei .Noise, and SNR	Giving the le+cture Discussio and exercises	The extent of student's interact with the lecture the extent of understanding through it Questions and answ

·					
		scanning			
		.operations			
		• The student v			
		learn about			
		types of sign			
		used in ra			
		.systems			
5	2	First month Exam	First month Exam	First month	First
	0		TT1 , 1 , '11	Exam	month Exam
6	3	<ul> <li>Advantages</li> </ul>	• The student will g	Giving the	The extent of atudant's interact
		disadvantages	advantages	and	with the lecture
		of each type	disadvantages	exercises	the extent of
		of scanning	.scanning methods		understanding
		method.	C		through it
		Advantages	• The student		Questions and answ
		and	understand the ty		
		disadvantages	of transmitters		
		methods	each kind		
7	3	Radar Horizon	The student v	Giving the	The extent of
	-		understand some physi	le+cture Discussion	student's interact
		• Weather fact	phenomena and th	and	with the lecture
		and their imp	.impact on radar operat	exercises	the extent of
		on the detection			understanding
		• Dhygiaal			through it
		• Physical			Questions and answ
		that impact			
		detection proces			
8	3	:Radar range equat	The student will le	Giving the	The extent of
		,simple mo	Basic ideas of the proc	le+cture Discussion	student's interact
		,detection predict	of Derivation of the ra	and .	with the lecture
		.noise at the receiver	equation,	exercises	the extent of
			relevant factors		through it
					Questions and answ
9	3	,Signal-to-noise ra	The student will have	Giving the	The extent of
		Integration of ra	more accur	le+cture Discussion	student's interact
		pulses, Cross sect	understanding of the ra	and	with the lecture
		, of the target, its ty	,equation. In addit	exercises	the extent of
		and the characteris	targets		through it
			.urgeto		Ouestions and answ
10	2	Second	Second month Exam	Second month	Second
		month Exam		Exam	month Exam
11	3	,Transmission po	The impact of	Giving the	The extent of
		frequency, pu	student's ability will	le+cture Discussion	student's interact
		,repetition freque	understood in	and .	with the lecture
			transmitted signal and	exercises	the extent of
			Γ4		

		and losses wl	effect	of value freque		understanding
		.propagation	pulse a	s a result of natu	l	through it
		-	.propag	gation		Questions and answ
12	3	Types of modulat	The stu	ident will know	Giving the	The extent of
		signals in the radar	advanta	ages, modulat	le+cture Discussio	student's interact
		understanding	type, a	and characteris	and .	with the lecture
		Doppler freque	of 1	the Dopp	exercises	the extent of
		effect	.pneno	menon		through it
						Questions and answ
13	3	Radar systems t	The	student v	Giving the	The extent of
15	5	work with continu	underst	and how the ra	le+cture Discussion	student's interact
		signals and the	system	s work w	and	with the lecture
		.characteristics	.contin	uous waves	exercises	the extent of
						understanding
						through it
						Questions
						answers
14	3	The separat	The st	udent will real	Giving the	The extent of
		between transmi	separat	ion betw	le+cture Discussion	student's interact
		and receiver,	,transm	itter and recei	and	with the lecture
		requirements	the	requireme	exercises	the extent of
		frequency,	frequer	icy,		understanding
		applications of (	.applic	ations of CW Ra		through it
		Kadar				Questions
15	2	Final Somostor	Final S	omostor Evam	Final	Final
15	5	Filial Selliester	rillai S		Fillal Somostor	Filldi Somostor
		LAIII			Fyam	Fyam
11 Co		Justion			Lixam	LXdill
11.00			1.	, <u>,</u>		
Distribu	iting the	e score out of 100 ac	cording	to the tasks as	ssigned to the stu	dent such as daily
activity	, daily or	al, monthly, or writt	en exan	is, reports et	C	
12.Le	arning ar	nd Teaching Resource	es			
Require	d textboo	oks (curricular books,	if any)	Not ava	ailable	
Main ret	ferences	(sources)		Intr	oduction to Radar	Systems – Merrill I.
				Skolı	nik, SECOND EDI	TION, McGraw-Hill
					198	1.
Recomm	nended	books and refe	rences	Not ava	ailable	
(scientif	ic journal	s, reports)				
Electron	ic Refere	ences, Websites		Introdu	uction to Radar Sys	tems – Merrill I.
					SKolnik, THIF	RD EDITION, T
				McGrav	w-Hill, 2001.	

 1. Course Name:

 Structural stability

 2. Course Code:

EM	EN314
3. Semester / Year:	
<u>2nc</u>	<sup>1</sup> / 3 <sup>rd</sup>
4. Description Preparation Date:	
02-	-2024
5. Available Attendance Forms:	
Atten	dance lectures
6. Number of Credit Hours (Total) / N	umber of Units (Total)
2 hours weekly (30 hours in cour	se)/ 2 Units
7. Course administrator's name (m	ention all, if more than one name)
Name: <b>Asst. Prof. Dr. hatam kare</b> Email: <b>hatam.k.kadhom@uotec</b>	em kadhom hnology.edu.iq
8. Course Objectives	
Course Objectives	<ol> <li>Stability of structures : definition of stability ,typ of stability</li> <li>Basic principles of structures: idealization of structures, free body diagrams</li> </ol>
	<ul> <li>3. The work of equation: work of externally applied forces (linear spring, virtual work, the principal superposition of mechanical work), work of internation forces (strain energy).</li> <li>4. Energy theorems of elasticity system: potential energy, total potential energy of a deformable body</li> <li>5. Stability analysis of beam – columns: beam – column with concentrated load, beam – column with an interior moment, beam – column subjected to enamoments, beam – column subjected distributed loads, rotationally restrained beam – column.</li> <li>6. Structural design for stability of members : local plate buckling of structural members , stiffeners</li> <li>7. Structural analysis of frames and truss :classical approach, rigid –frames, stiffness method, criterion for determination of critical load , stiffness matrix including axial force effects , stability of truss internal stability, geometric stability</li> <li>8. Stability analysis of arches , stability of truss internal stability of arches , stability of thin shells</li> <li>9. Stability of floating structures: static stability of floating body</li> </ul>
9. Teaching and Learning Strategies Strategy	
Theoretical lecture	es (give the lecture to students in person)

10. Cour	10. Course Structure						
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method		
1 <u>st</u>	2	Stability of structures	<ul><li> definition of stability</li><li> type of stability</li></ul>	Attendance lecture	Question and answer and homework		
2 <u>nd</u>	2	Basic principle of structures	<ul><li> idealization of structures</li><li> free body diagrams</li></ul>	Attendance lecture	Question and answer and homework		
<u>3rd</u>	2	The work of equation:	<ul> <li>work of externally applied forces (linear spring, virtual work, the principle superposition of mechanical work),</li> <li>work of internal forces (strain energy).</li> </ul>	Attendance lecture	Question and answer and homework		
4 <u>th</u>	2	Energy theore of elasticity system	<ul> <li>potential energy,</li> <li>total potential energy of a deformable body.</li> </ul>	Attendance lecture	Question and answer and homework		
5 <u>th</u>	2	tutorial	tutorial	Attendance lecture	Question and answer and homework		
6 <u>th</u>	2			1 <sup>st</sup> Quiz	1 <sup>st</sup> Quiz		
7 <u>바</u>	2	Stability analy of beam – columns	<ul> <li>beam –column with concentrated load,</li> <li>beam –column with an inter moment,</li> </ul>	Attendance lecture	Question and answer and homework		
8 <u>th</u>	2	Stability analy of beam – columns	<ul> <li>beam –column subjected to end moments,</li> <li>beam –column subjected distributed loads, rotation restrained beam – column.</li> </ul>	Attendance lecture	Question and answer and homework		
9 <u>th</u>	2	Structural desi for stability of members	<ul> <li>local plate buckling of structural members,</li> <li>stiffeners</li> </ul>	Attendance lecture	Question and answer and homework		
10 <u>th</u>	2	Structural analysis of fran and truss	<ul> <li>classical approach</li> <li>rigid –frames ,</li> <li>stiffness method ,</li> </ul>	Attendance lecture	Question and answer and homework		

<b></b>	1		[			1	
			• crite criti	erion for determinatior ical load			
11 <u>th</u>	2				Mid -exam	Mid –exam	
12 <sup><u>th</u></sup>	2	Structural analysis of fran and truss	<ul> <li>stiffness matrix including axial force effects,</li> <li>stability of truss,</li> <li>internal stability,</li> <li>geometric stability</li> </ul>		Attendance lecture	Question and answer an homework	
13 <sup>th</sup>	2	Stability analy of arches ,ring and shells	<ul> <li>Stability of arches ,</li> <li>stability of rings and tubes,</li> <li>stability of elastic instability of thin shells</li> </ul>		Attendance lecture	Question and answer and homework	
14 <sup>th</sup>	2	Stability of floating structures	static stability of floating body		Attendance lecture	Question and answer an homework	
15 <u>th</u>	2				2 <sup>nd</sup> Quiz	2 <sup>nd</sup> Quiz	
11. Co	urse Ev	aluation					
Two q	uizzes (c	one hour: 10%)	), Mid ex	xam (2 hours: 15%), 1	Design projec final	t (4 weeks: 5%), and exam (3 hours 70%)	
12. Lea	arning a	and Teaching	g Reso	urces			
Required t	extbooks	(curricular bo	oks, if a	No			
Main references (sources)			STABILITY OF STRUCTURES Principles and Applications CHAI H. YOO & SUNG C. LEE 2011				
Recommended books and references			Ziemian, RD. Guide to stability design criteria for metal				
(scientific journals, reports)		Bazant, Z., and Cedolin, L. Stability of structures Chen, WF., Him, EM. Structural stability: Theory and Implementation		structures ty: Theory and			
Electronic	Referenc	es, Websites		No			

1. Course Name:
Hydraulic and Pneumatic systems
2. Course Code:
EMEN309
3. Semester / Year:
First/ 3 <sup>rd</sup>
4. Description Preparation Date:
58

		4/2/2024			
5 Availa	ble Attendance Form	s.			
J. Trana	sie 7 teendanee 1 omit	Attendance Lectures			
6. Numbe	er of Credit Hours (To	otal) / Number of Units (7	Total)		
30 Hoi	urs / 3 Units		,		
	,				
7. Course	e administrator's na	ame (mention all, if mor	e than on	e name)	
Name:	Waleed Yousif Sheh	ıab			
Email:	50195@uotechnolo	<u>ogy.edu.iq</u>			
8. Course	Objectives				
Course Objectiv	'es • • • •	Defining the principle of <b>F</b> systems systems concepts. Defining the construction coincided with a laboratory of Defining the <b>Hydraulic</b> pumps: Theory of pumping- with a laboratory experimen Defining the controlling va valve- Pressure control valve Defining the actuators (hy laboratory experiment. Defining the auxiliary accumulators.	<b>Iydraulic a</b> n of hydr experiment. <b>and Pneur</b> Types of pu t. lves like Di e- Flow cont ydraulic cy hydraulic	nd Pneumatic aulic systems natic systems umps coincided rection control rol valve. linder) with a systems like	
9. Teachi	ng and Learning Stra	itegies			
StrategyTeaching Hydraulic and Pneumatic systems as theory and mathematically, the constructions of hydraulic systems as pumps, control valves, and actuators with accessories devices like accumulators. Exams (Mid. Exam, quiz, and other activities for evaluation, Lab with exam and three hours final exam).					
10. Course S	Structure				
Week Hours	Required Learning Unit or subject name Learning Evaluation				
	Outcomes		method	method	
3 6		Principles of <b>Hydraulic</b> and <b>Pneumatic systems</b> specification- Principle of hydraulic systems- Construction of hydraulic systems- Advantages and			

3 3 3	6 6	An ability to identify, fundamental, formulate, and solve hydraulic system engineering problems by applying principles of engineering, science, and mathematics.	PneumaticsystemsSymbolsofhydrauliccircuits-Examplesandapplication.Hydraulic pumps:Theoryofpumping-Typesofpumps-Gearpumps-Bladespumps-Screwpumps-Piston pumps.Controllingvalves:Directioncontrol valve-Pressurecontrol valve-Flowcontrol valve.Actuators:Hydrauliccylinder(typesandefficiency-Outputperformanceandefficiency-Mutiliaryhydraulicsystems:Pipes-Filters-Measurementgauges-Heatexchangers-Accumulators.	Attendant Scientific lectures with method of problem- based learning (Pbl) and lectures video	Quizzes, exams, and other activities.
11.	Course	e Evaluation			
Exams hours f	(Mid. E final exar	xam and quiz and other ac n 60%).	ctivities 25%, lecturer evalua	tion 5%, Lab	10% and three
	Learnir	ng and Teaching Reso	ources		
12.		ooks (curricular books if	any)	None	
12. Requir	ed textbo		,		

Recommended books and (scientific journals, reports)	references	<ul> <li>Practical hydraulic system, Ravi Doddannavar. Elsevier Science &amp; Technology Books, 2005</li> <li>International Journal of Fluid Power</li> </ul>
Electronic References, Websites		ALL academic Publications in Scopus and Web of Science.

1. Course Nan	ne:	
	Navigation s	systems I
2. Course Cod	e:	
	EMEN	303
3. Semester /	Year:	
	1 <sup>st</sup> Semester	/ 3 <sup>rd</sup> year
4. Description	Preparation Date:	
	2-202	24
5. Available A	ttendance Forms:	
6 Number of (	Attendan	ce Lectures
o. Number of V	20 theor	$\frac{1}{2} \frac{1}{2} \frac{1}$
		y · 50 Lub
7. Course adr	ministrator's name (mention	all, if more than one name)
Name:Dr.El	kbal Hussein Ali	
Eman: ekba	n.n.an@outechnology.edu.iq	
8. Course Obje	ectives	
Course Objectives		• Learn about the types of navigational systems.
		• How to deal with each other…
		<ul> <li>Learn about the factors affect</li> </ul>
		performance
0 Teaching an	nd Learning Strategies	
9. Teaching an		
Strategy	Th branch use a problem I The m	based learning which new and student active meth aethod help the student getting the program outcor
	1	

Week	Hou	Required	Unit or su	ibject name	Lear	Evaluation
	rs	Learning			ning	method
		Outcomes			meth	
					od	
Week1			Intr	oduction to Navigation Syste		
Week2 Week3				Doppler Radar		
Week4 Week5				Airborne Doppler Radar Relative Navigation Systems		
Week6				Nondirection Beacon (NDB)		
Week7 Week8			г	Automatic Direction Finder		
Week9			Adv	antage and disadvantage of I		
Week10			VI	HF Omni direction Range (VO		
Week11 Week12			Adv	Hyperbola methods		
Week13			Inst	rument Landing System (ILS		
Week14 Week15			Inst	rument Landing System (ILS) Radar altimeeter		
11. Course E	valuat	ion				
Distributing the	score	out of 100 acco	rding to th	e tasks assigned to t	he stu	dent such as daily
preparation, daily	y oral, 1	nonthly, or writ	ten exams,	reports etc		
12. Learning	and T	eaching Resou	irces			
Required textbook	s (curri	cular books, if ar	ıy)	Avionics Navigation	Syster	ms, 2nd Edition
				Kayton Myron Et.Al, 20	)10	
Main references (	sources	)		Electronic N	laviga	tion Systems
Recommended b	ooks	and references	(scientific	NAVIGATION S	YSTEM	S
journals, reports	.)					
Electronic Referer	ices, W	ebsites		https://ww	w.wil	ey.com/en-
				gb/Avionics	s+Nav	igation+Systems
				C+2nd+Edit	ion-p	-978047154795
1. Course N	lame:		Noviaction	Sustama II		
2 Course (	odor		Navigation	Systems II		
2. Course C	oue:			N304		
2 Compate	n / Va			11304		
5. Semester	r / rea	ar: 2	nd Compat	or 1 2 <sup>rd</sup> year		
4		2	Semest			
4. Descript	ion Pr	eparation Dat	e:	0.0.1		
2-2024						

5. Available	Atter	ndance Forms:				
			Attendan	ce Lectures		
6. Number of	of Cre	dit Hours (Tot	al) / Number	of Units (Total)		
			30 theor	ry + 30 Lab		
7. Course a	admin	nistrator's nan	ne (mention	all, if more than	one r	name)
Name:Dr	Ekba	l Hussein Ali				
Email: el	kbal.h	.ali@outechno	ology.edu.iq			
8. Course C	bjecti	ves				
Course Objectives				•Learn about the ty	pes of s	satellite navigation
				systems		
				•How to interact wi	th each	other in determining
				location		
				• Learn about the f	actors	affecting performanc
				determining location	n accura	acy.
9. Teaching	and L	_earning Strate	egies			
10. Course Str	ucture	1	The m	hethod help the stude	nt gettir	ng the program outco
Week	Hou	Required	Unit or subj	ect name	Lear	Evaluation
	rs	Learning			ning	method
		Outcomes			meth	
					od	
Week1 Week2 Week3 Week4 Week5 Week5 Week6 Week7 Week8 Week9 Week10 Week11 Week12 Week13 Week14 Week15		Weather RadarIntroduction for satelliteSatellite Coordinate SystemSatellite Weight and OrbitalGlobal Position System (GPS)Determining Satellite To-User RaGPS coordinateGPS Navigation SignalsGPS Navigation MessageFactors Affecting on GPSAccuracError Correction In GPSDifferential GPS DGPS)GNSS NavigationOther Satellite Navigation Systemster				
11. Course E	valuat	tion	<u> </u>			<u> </u>
Distributing the	score	out of 100 acco	ording to the	tasks assigned to t	the stu	dent such as daily
preparation, daily	y oral, i	monthly, or writ	tten exams, rej	ports etc		
			· · · ·			

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Understanding GPS Principles and Applications Sec Edition 2006 Elliott D. Kaplan Christopher J. Hegarty
Main references (sources)	Global Positioning System: Theory and Applicatic Volume I James J. Spilker Jr., Penina Axelrad, Bradford Parkinson and Per Enge
Recommended books and references (scientific journals, reports)	erstanding GPS/GNSS: Principles and Applicati Third Edi
Electronic References, Websites	https://onlinelibrary.wiley.com/do book/10.1002/04717125822

1. Course Name:	
	Machine Design
2. Course Code:	
	EMEN313
3. Semester / Ye	ar:
	1 <sup>st</sup> / 3 <sup>rd</sup>
4. Description P	reparation Date:
	02-2024
5. Available Atte	ndance Forms:
	Attendance lectures
6. Number of Cre	edit Hours (Total) / Number of Units (Total)
	2 hours weekly (30 hours in course)/ 2 Units
7. Course admini	strator's name (mention all, if more than one name)
Name: Asst. P	rof. Dr. Bassam Ali Ahmed
Email: <b>10480</b>	@uotechnology.edu.iq
8. Course Object	ives
Course Objectives	<ul> <li>Introduction of the Machine Design and Selection of Materials: Mechanical Design Definition, Knowledge of Mechanical Design, Classification of Mechanical Design, Design Process Steps, Mechanical Properties of Materials, Stress-Strain Diagram, Designation Systems, and Using Tables and Figures.</li> <li>Simple Stresses: Types of the Stresses, Tensile and Compressive Stresses, Direct Shear Stress, Crushing or Bearing Stress, Torsion Stress, Bending Stress, Vertical Shearing Stress, and Concentration Stress.</li> <li>Combined Stresses: Procedure for Analyzing Combined Stresses, Maximum Normal Stresses: (Principal stresses), Maximum Shear Stress, Combined Stresses Cases, Axial Load only, Bending only, Torsion only, Bending &amp; Torsion, Bending &amp; Axial Load, Torsion &amp; Axial Load, Bending, and Axial Load &amp; Torsion.</li> <li>Variable Stresses: Types of Cycles, Stresses used, Endurance Strength, Actual Endurance Strength, Sections, Combined Variable Stresses, Bending and Axial, Bending or Axial and Torsion, Bending, Axial &amp; Torsion, and Predictions of Failure.</li> <li>Power Screw Design: Power Screw Definition, Power Screw Applications, Types of Power Screw Threads, Torque Calculations, Collar Friction Torque, Design of Power</li> </ul>

## 9. Teaching and Learning Strategies

Strate	gy
	55

Theoretical lectures (give the lecture to students in person)

## 10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluation
		Outcomes	name	method	method
1 <sup>st</sup>	2	Introduction of the Machine Design and Selection of Materials	Introduction	Attendance lecture	Question and Answer
2 <sup>nd</sup>	2	How to compute the simple stresses	Simple Stresses	Attendance lecture	Question and Answer
3 <sup>rd</sup>	2	How to compute the simple stresses	Simple Stresses	Attendance lecture	Homework
4 <sup>th</sup>	2	How to compute the combined stresses	Combined Stresser	Attendance lecture	Question and Answer
5 <sup>th</sup>	2	How to compute the combined stresses	Combined Stresses	Attendance lecture	Homework
6 <sup>th</sup>	2	1 <sup>st</sup> Quiz	$(1^{st} to 5^{th})$	1 <sup>st</sup> Quiz	1 <sup>st</sup> Quiz
7 <sup>th</sup>	2	How to compute the variable stresses	Variable Stresses	Attendance lecture	Question and Answer
8 <sup>th</sup>	2	How to compute the variable stresses	Variable Stresses	Attendance lecture	Homework
9 <sup>th</sup>	2	Power Screw Analysis and Design	Power Screw Design	Attendance lecture	Question and Answer
$10^{\text{th}}$	2				Homework

		Power Screw	Analysis	Power Screw	Attendance			
		and Des	sign	Design	lecture			
$11^{\text{th}}$	2			(1st 1 oth)		Midterm exam		
		Midtama		$(1^{3n} \text{ to } 10^{3n})$	Midterm			
		Milderin	exam		exam	Question		
12 <sup>th</sup>	2			Columns Design	Attendance	and Answer		
	_	How to Colum	ns Design	e or writing 2 congri	lecture			
13 <sup>th</sup>	2	And Ana	lysis			Question		
10	-			Flywheel Design	Attendance	and Answer		
		How to Flywhe	eel Design		lecture	II.		
<b>14</b> ,th	2			Flywheel Design	Attendance	Homework		
	-	How to Flywhe	eel Design	T Ty wheel Design	lecture			
15th	2					2 <sup>nd</sup> Quiz		
15				$(12^{th} to 14^{th})$	2 <sup>nd</sup> Quiz			
		2 <sup>nd</sup> Qu	iz					
11. (	Course	Evaluation						
Two qu	izzes (or	ne hour: 10%), N	Aid exam (2	2 hours: 15%), Design	n project (4 weel	xs: 5%), and final		
		U70)						
12. 1	Learnin	g and Teachir	ig Resour	ces				
Require	d textboo	oks s. if any)	No					
Main re	ferences	(sources)	Robert	L. Mott. Edward M	I. Vavrek, and	Jyhwen Wang.		
		```	"Machin	e Elements in Mechar	nical Design", Pe	earson 2018.		
Recomm	Recommended books and •			• Robert C. Juvinall, and Kurt M. Marshek, "Fundamentals of				
referenc	references (scientific journals,			Machine Component Design", Wiley sixth edition.				
reports)			• Robert	L. Mott, "Machine I	Element in Mec	chanical Design",		
			Pearson	2014.				
	• R.S. Khurmi, and J.K. Gupta, "Machine Design", 2005							
Electron	nic Refer	ences, Website	No					

1.	Course Name:
	Antenna and Wave propagation
2.	Course Code:
	EMEN310
3.	Semester / Year:
	First, 3 <sup>rd</sup>
4.	Description Preparation Date:
	2-2024
5.	Available Attendance Forms: In person
	Attendance Lectures
6.	Number of Credit Hours (Total) / Number of Units (Total)
	2 Hours in Week / 30 total
7.	Course administrator's name (mention all, if more than one name)
	Name: Jafaar Mohammed Daif
	Email: Jaafar.M.Dhaif@uotechnology.edu.iq

Course O	bjectives		To provide	the student with a	n understanding o
0 7	Taashina	and Learning Strategies	antennas, EN	l wave propagation	
9. trategy	reaching	It will be evaluated b	ased on research projects. I	n addition the class y	will utilise the "inter
uncey		learning" concept. s	uch as discussions in clas	s, question and ans	wer during lecture
		.interaction between s	students with homework as	signment presentation	15
0. Co	urse Stru	cture			
Veek	Hours	Required Learning	Unit or subject name	Learning method	Evaluation metho
		Outcomes			
1	2	Understanding the b	:Basic antenna conc	Giving the	The extent o
		principles and radiation	Definition and functions	le+cture Discussion	student's inte
		.antennas	& between an ante	and exercises	extent of
			transmission line.		understanding thr
			communication link		Questions and ans
			transmitting antenna an		
			receiving antenna, radia		
			patterns of antennas-field		
			power patterns, all ante		
2	2	Recognizing fundame	.uypes Potential functions and	Giving the	The extent o
-	2	.parameters of anter	electromagnetic	le+cture Discussion	student's inte
		Overview of antennas types	Oscillating elec	and exerci	with the lecture
		applications in wire	dipolederivations for E an		extent of
		systems.	field components in sphere		understanding thr
			coordinate systems, Po		Questions and ans
			Radiated by a cur		
			antennas Radiation f		
			quarter wave monopole		
			half wave dipoles, Deriva		
			,for radiation resista		
			application of recipro		
			of directional patterns		
			effective lengths		
			transmitting and receiv		
			antennas, directi		
			,properties of dipole anter		
_			antenna feeding methods		
3	2	To understand the variou	beam area, beam width- H	Giving the	The extent o
		measurement of antenn	(HPRW)and First Null D	and everai	with the lecture
		parameters	width(FNBW) .Polarisa		extent of
		•	Radiation Intensity ,B		understanding thr
			Efficiency, Directivity		Questions and an
			directive gain, radia		
			resistance, radia		
			Antenna 5 10% apert		
			physical and effect		
			,apertures, effective he		
			,transmission form		
			,antenna field zo		
			Transmission loss as		
			.iunction of freque		
			signal to noise ratio		
4	2	To introduce the stud	: Arrays of point sou	Giving the	The extent o
	1	variana trimas of antonnas	Expression for electric fi	le+cture Discussion	student's inte

I		4		1 •	
		their performa .Characteristics	trom two, three and element arrays- linear ar Broad-side array and H Fire array- Method of pat multiplicationBinomial ar Horizontal and Ver	and exerci	with the lecture and extent of understanding throug Questions and answe
			Antennas above the gro plane, Effect of ground ,ungrounded ante Schelkunoff theorems linear arrays, Do		
			Tchebysheff distribution .linear arrays		
5	2	First month Exam	First month Exam	First month Exam	First month Exam
6	2	To understand the various methods involved in the measurement of antenna parameters	Loop Antenna: Small I ,short magnetic di comparison of far field small loop and short di loop antennas, field patter & circular loop anter radiation resistance of I antenna, directivity circular loop antennas .uniform current	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
7	2	Explain the structure of b .antenna and Helical antenn	Helical antenna: He geometry, transmis radiation modes, pract design considerations, v band characteristics of he .antenna	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
8	2	To understand var antennas, arrays and radia .pattern of antennas	& Arrays of dip apertures: 3 element di Array with para elements, Yagi-Uda ar ,function and its de Phased arrays, freque scanning arrays, si ,antennas, long wire anter location methods of feed antennas, folded di antennas, match	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
9	2	Explain the structure of b .antenna and Reflector anter	Reflector antennas: Parab reflector, parabolo reflector, aperture Pattern large circular apertures uniform illumination, off operation of parabolo reflectors, Cassegrain system	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
10	2	Second month Exam	Second month Exam	Second month Exam	Second month Exam
11	2	Explain the structure of b .antenna and antenna array	:Slot patch & Horn anter ,Slot antenna, its pat Babinet's principle ,complementary anter ,impedance of slot anter and horn antenna-func .and types	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe

10	r	Explain the structure of L	Miana	atrin ( note	h) onto	Giving the	The extent of
12	L	explain the structure of b	: IVIICIO	suip ( pato	d oir	leteture Discussion	student's interes
		antenna	types fi	ulai all	u chu faat	and everei	with the lecture on
		antenna	analysis	, inction,	de		extent of
			conside	rations	,ue		understanding throu
			conside				Quastiana and answ
10	2		applicat	lons		0	Questions and answe
13	2	Graduates are effec	:Antenn	as mo	easurem	Giving the	The extent of
		problems-solvers, able to a	Experin	nental se	t ups	le+cture Discussion	student's intera
		critical, creative and evide	measure	ement of	radia	and exerci	with the lecture and
		based thinking to conc	patterns	, gain	i, p		extent of
		innovative responses to fu	polarıza	ition,	term		understanding throug
		.challenges	.1mpeda	nce			Questions
							answers
14	2	Knowing the basic propaga	: Radio	o wave	propaga	Giving the	The extent of
		models and propaga	,Modes	of	propaga	le+cture Discussion	student's interac
		mechanisms/impairments	,Ground	Wave	Propaga	and exerci	with the lecture and
		.radio waves Identify	Structur	e of tropo	osphere		extent of
		atmospheric and terres	ionosph	ere, Chara	acteristi		understanding through
		effects on radio w	Ionosph	eric layer	s, Sky v		Questions
		propagation.	propaga	tion, Def	initions		answers
			Virtual	height,	MUF		
			,Skip di	istance, O	WF, Fa		
			ionospl	neric	absorpt		
			.Multi-l	nop	propaga		
			Space v	vave prop	agation		
			Superr				
			.Super I	refraction			
15	3	Final Semester	Final Se	efraction emester Ex	am	Final	Final
15	3	Final Semester Exam	Final Se	effraction emester Ex	am	Final Semester	Final Semester
15	3	Final Semester Exam	Final Se	efraction emester Ex	am	Final Semester Exam	Final Semester Exam
15 11. Cor	3 urse Eval	Final Semester Exam uation	Final Se	effraction emester Ex	am	Final Semester Exam	Final Semester Exam
15 11. Con ,The co	3 urse Eval urse grad	Final Semester Exam uation e is based upon attendance ar	Final Se	pation, ho	am mework	Final Semester Exam	Final Semester Exam sentations, midterms
15 11. Cou ,The co and the	3 urse Eval urse grad e final exa	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan	Tinal Se	pation, ho	am mework ical Rep	Final Semester Exam assignments and preport" and it will be we	Final Semester Exam sentations, midterms eighted more heavily
15 11. Cou ,The co and the	3 urse Eval urse grad e final exa	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan	nd partici	pation, ho	am mework ical Rep	Final Semester Exam assignments and pre port" and it will be we	Final Semester Exam sentations, midterms eighted more heavily .in the final exam
15 11. Con ,The co and the 12. Lea	3 urse Eval urse grad e final exa arning an	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan d Teaching Resources	nd partici	pation, ho	am mework ical Rej	Final Semester Exam assignments and pre port" and it will be we	Final Semester Exam sentations, midterms eighted more heavily .in the final exam
15 11. Con ,The co and the 12. Lea Required	3 urse Eval urse grad final exa arning an textbook	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan d Teaching Resources s (curricular books, if any)	nd partici	pation, ho de "Techn	mework ical Rep Not ava	Final Semester Exam assignments and pre port" and it will be we	Final Semester Exam sentations, midterms eighted more heavily .in the final exam
15 <u>11. Con</u> ,The co and the <u>12. Lea</u> <u>Required</u> Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas	mework ical Rep Not ava	Final Semester Exam assignments and pre port" and it will be we vilable fave Propagationintro	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar System
15 <u>11. Con</u> ,The co and the <u>12. Lea</u> <u>Required</u> Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Editi	mework ical Rep Not ava s and W ion, 200	Final Semester Exam assignments and pre port" and it will be we vilable ave Propagationintro 2. K.D. Prasad, Sat	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I
15 <u>11. Con</u> ,The co and the <u>12. Lea</u> <u>Required</u> Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Editi Publicati	mework ical Rep Not ava s and W ion, 200 ons, Ne	Final Semester Exam assignments and pre- port" and it will be we ilable fave Propagationintro 02. K.D. Prasad, Sat w Delhi, 2001.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I
15 11. Cou ,The co and the 12. Lea Required Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Editi Publicati	mework ical Rep <u>Not ava</u> s and W ion, 200 ons, Ne	Final Semester Exam assignments and pre port" and it will be we hilable fave Propagationintro 02. K.D. Prasad, Saty w Delhi, 2001.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I
15 <u>11. Cor</u> ,The co and the <u>12. Lea</u> <u>Required</u> Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Editi Publicati	mework ical Rep Not ava and W ion, 200 ons, Ne	Final Semester Exam assignments and pre port" and it will be we ilable ave Propagationintro )2. K.D. Prasad, Saty w Delhi, 2001.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I
15 11. Cou ,The co and the 12. Lea Required Main refe	3 urse Eval urse grad e final exa arning an textbook prences (s	Final Semester Exam uation e is based upon attendance ar am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Edit Publicati Transmis A. Baksh	mework ical Rep Not ava s and W ion, 200 ons, Ne ssion Li i, Techi	Final Semester Exam assignments and pre- port" and it will be we ilable ave Propagationintro 02. K.D. Prasad, Saty w Delhi, 2001. nes & Waveguides, L nical Publication.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I .ate Ajay V. Bakshi, U
15 11. Con ,The co and the 12. Lea Required Main refe	3 urse Eval urse grad e final exa arning an- textbook erences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antenna: 3rd Editi Publicati A. Baksh	mework ical Rep Not ava s and W ion, 200 ons, Ne ssion Li ii ,Techi	Final Semester Exam assignments and pre- bort" and it will be we dilable ave Propagationintro 2. K.D. Prasad, Sat w Delhi, 2001. mes & Waveguides, L nical Publication.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Sys ya Prakashan, Tech I ate Ajay V. Bakshi, U
15 11. Con ,The co and the 12. Lea Required Main refe	3 urse Eval urse grad e final exa arning an textbook erences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici	pation, ho de "Techn Antennas 3rd Editi Publicati Transmis A. Baksh	mework ical Rep Not ava s and W ion, 200 ons, Ne ssion Li i, Tech rip Ante	Final Semester Exam assignments and pre port" and it will be we ilable ave Propagationintro 2. K.D. Prasad, Saty w Delhi, 2001. nes & Waveguides, L nical Publication.	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Sys ya Prakashan, Tech I ate Ajay V. Bakshi, U k ", Artech House (20
15 <u>11. Con</u> ,The co and the <u>12. Lea</u> <u>Required</u> Main refe	3 urse Eval urse grad e final exa arning an textbook rences (s	Final Semester Exam uation e is based upon attendance an am. Take home the final exan d Teaching Resources s (curricular books, if any) ources)	nd partici n to inclu	pation, ho de "Techn Antenna: 3rd Editi Publicati Transmis A. Baksh "Microst Garg, R.	mework ical Rep Not ava s and W ion, 200 ons, Ne ssion Li i, Tech rip Anto Bhartia	Final Semester Exam assignments and pre- port" and it will be we dilable ave Propagationintro 2. K.D. Prasad, Saty w Delhi, 2001. mes & Waveguides, L nical Publication. enna Design Handboor a, P., Bahl, I. and Ittip	Final Semester Exam sentations, midterms eighted more heavily .in the final exam duction to Radar Syst ya Prakashan, Tech I ate Ajay V. Bakshi, U ate Ajay V. Bakshi, U
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1. Course Name:	
	Control and Guidance Theory
2. Course Code:	
	EMEN308
	69

		Outcomes					
		Learning	name	method			
Neek	Hours	Required	Unit or subject	Learning	Evaluation method		
10. Cou	urse Stru	cture		Γ			
		and atter each topic tutorial hours the stud problems in electror vocabulary of contr	, examples and titorial w dents will be able to apply nechanically field. Prese ol and guidance system	fill be provide the theories a entation of se	to the student , and duri and principles for solving t eminars on all curriculu		
Strategy		The course in Engine	ering control and guidan	ice theory is c	covered by classical lectu		
<u>о</u> т	eaching a	and Learning Stra	iteaies				
		- Understanding the	above subject and using	the theoretica	ai principies		
		the principle of state	e space solutions.				
		space representation	of systems . and finding	transfer func	tion by using		
		- Illustration and disc	ussion the Main Theoret	tical Principles	ical Principles of state		
		theory					
		state-space analysis of control systems which is used in modern control					
		second order systems and block diagram reduction laws moreover, the					
		of with the ability to understand the theoretical principles for a first order					
		- This unit of study a	ims to provide theoretics	e system theo	ry and principles		
Course O	bjectives	Aims of the course ai	re to graduates a qualifie	ed engineers v	who they have		
8. C	ourse Ob	ojectives					
E	mail: 50	071@uotechnolo	ogy.edu.iq				
<u>7. C</u>	OUISE a	aministrator's na	ame (mention all, i	t more that	an one name)		
6. N	umber of	f Credit Hours (To	tal) / Number of Ui	nits (Total)	30H		
			Attendance lect	ures			
5. A	vailable A	Attendance Forms	5:				
2024-2-8							
4. D	escriptic	on Prenaration D	ate:				
			1 <sup>st</sup> course/3 <sup>rd</sup> Yea	ar			

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8       2       Knowledge under stand       examples       lecture       Homework, report, exam         9       2       Knowledge under stand       Transient steady state       lecture       Homework, report, exam         10       2       Knowledge under stand       Servo system with velocity F.B.       lecture       Homework, report, exam         11       2       Knowledge under stand       Steady state errors       lecture       Homework, report, exam         11       2       Knowledge under stand       Steady state errors       lecture       Homework, report, exam         11       2       Knowledge under stand       Steady state errors       lecture       Homework, report, exam         12       2       Knowledge under stand       State space       lecture       Homework, report, exam         13       2       Knowledge under stand       Solution of state space       lecture       Homework, report, exam			under stand	systems		exam
under standunder standexam92Knowledge under standTransient steady state analysislectureHomework, report, exam102Knowledge under standServo system with velocity F.B.lectureHomework, report, exam112Knowledge under standSteady state errorslectureHomework, report, exam112Knowledge under standSteady state errorslectureHomework, report, exam122Knowledge under standState space erpresentation of control and guidance systemlectureHomework, report, exam132Knowledge under standSolution of state spacelectureHomework, report, exam	8	2	Knowledge a	examples	lecture	Homework, report,
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12       2       Introviced of state space under stand under stand representation of control and guidance system       representation       exam         13       2       Knowledge and under stand under stand under stand guidance system       Solution of state space system       Homework, report, exam	12	2	Knowledge a		la atuma	
13     2     Knowledge under stand     Solution of state space     lecture     Homework, report, exam	14	۷	under stand	State space	lecture	Нотемогк, героп,
13     2     Knowledge aunder stand     Solution of state space     lecture     Homework, report, exam				representation		exam
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132Knowledge aunder standSolution of state spacelectureHomework, report, exam				guidance		
13 2 Knowledge Solution of state lecture Homework, report, under stand space exam	10	2	Vreuladaa	system		
space exam	13	2	under stand	Solution of state	lecture	Homework, report,
				space		exam
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			matrix	and		
			block	diagram		
14	2	Knowledge a	Examp	oles	lecture	Homework, report,
						exam
15	2	Knowledge a under stand	exam		lecture	Homework, report, exam
11. Course Evaluation						
Distributin preparation	g the score n, daily ora	out of 100 accordi l, monthly, or writte	ng to tl en exan	he tasks as 1s, reports	signed to th etc	ne student such as daily
12. Lea	rning and	Teaching Resour	ces	r		
Required te	xtbooks (cu	rricular books, if any	′)	Сс	ontrol syst	em"katsuhiko ogata
Main refere	nces (sourc	es)				
Recommen	ded books	and references (so	ientific			
journals, rep	oorts)			C1-		1
Electronic Refe	rences, Website	25		file	:///E:/%D9Gui	dance%20and%20Control.html
1. Cou	ırse Name	2:				
		Control	and G	uidance S	System	
2. Cou	Irse Code					
			EME	N311		
3. Sen	nester / Y	ear:				
	•	$2^{nd}$	Cours	se/3 <sup>rd</sup> Yea	ar	
4. Des	cription I	Preparation Date	•	•		
11 200			2-2	2024		
5. Ava	ilable Atte	endance Forms:		-		
			Attend	dance lect	ures	
6. Nur	nber of Cr	edit Hours (Total)	) / Nun	nber of Ui	nits (Total)	30H
7 Co	urse adm	inistrator's name	) (mor	tion all i	if more the	an one name)
<u> </u>	ne: Iman	Saleh Kareem		nion an, i		
Email: 50071@uotechnology.edu.iq						
8. Cou	irse Objec	tives				
			70			
			12			

Course Objectives	Aims of the course are to graduates a
	qualified engineer's who they have
	theoretical experience in modern control
	systems and guidance system like autopilot
	in electromechanical field
	- This unit of study aims to provide
	theoretical knowledge and principles of
	with the ability to understand the
	theoretical modern control system and
	structure of the autopilot
	- Illustration and discussion the main
	component of autonilot with maintenance
	the overall system.

### 9. Teaching and Learning Strategies

#### The course in Engineering control and guidance systems is covered by classical lecture and after each topic, examples and simulator will be provide to the student, and during tutorial hours the students will be able to apply the theories and principles for solving the problems in electromechanically field. Presentation of seminars on all curriculum vocabulary of control and guidance systems.

### 10. Course Structure

Strategy

Week	Hours	Required	Unit or subject	Learning	Evaluation method
		Learning	name	method	
		Outcomes			
1	2		Introduction in	Lecture	Homework and
		Knowledge a under standi	control system		discussion
2	2		concepts		
		Knowledge a under standi		Lecture	Homework and
			Basic concept in PID controller		discussion
	2	Knowledge a		Lecture	
3	Z		PID tunning methods		Exam, Homework
4	2	Knowledge a under standi	methods		Exam, Homework
				lecture	
			examples		
5	2	Knowledge a	Guide aircraft	lecture	Homework, report,
		under standl			exam

6	2	Knowledge a	Fundamentals	lecture	Homework,report,exam
		under standt.	of guidance		
			System		
7	2	Knowledge a	sensors	lecture	Homework, report,
		under standl			exam
8	2	Knowledge a	examples	lecture	Homework, report,
		under standl			exam
9	2	Knowledge a	Categories of	lecture	Homework, report,
		under standl	guidance		exam
10	2	Knowledge a	Type of	lecture	Homework, report,
		under standl	autopilot		exam
11	2	Knowledge a	Basic autopilot	lecture	Homework, report,
		under standi	operation		exam
12	2	Knowledge a	aircraft autopilot	lecture	Homework, report,
		under standl	components		exam
13	2	Knowledge a	Flight	lecture	Homework, report,
		under standl	management		exam
			Automatic		
			director systems		
14	2	Knowledge a	Autopilot	lecture	Homework, report,
		under standi	maintenance		exam
15	2	Knowledge a	exam	lecture	exam
		under standi			
11. Cou	irse Evalu	ation	L	I	1
Distributin	g the score	out of 100 accordin	ng to the tasks as	signed to th	e student such as daily
preparation	n, daily ora	l, monthly, or writte	n exams, reports	etc	
12. Lea	rning and	Teaching Resource	ces		
Required te	xtbooks (cu	ırricular books, if any)	) 1. " Lite	ratures in diff	erent kinds of aircraft
			autop	ilot and cont	rol"
			2-"Mode	ern Control En	igineering" by Ogata,
Main refere	nces (sourc	æs)			
			74 ———		

Recommended books and references (scientific	
journals, reports)	
Electronic References, Websites	Internet web sites.

# **Course Description Form (4<sup>th</sup> Year)**

# **Course Description Form** (4<sup>th</sup> Year)

1. (	1. Course Name:					
	Communication Networks					
2. (	Cours	e C	ode:			
				EMEN409		
3. 1	Seme	stei	r / Year:			
			First	Semester / Year Fo	ur	
4. ]	Descr	ipti	ion Preparation Da	ate:		
		1 1		4-Feb-2024		
5	Availa	able	e Attendance Forms	· · · · · · · · ·		
	NT 1			Attendance Lectur	es	
6.	$\frac{1}{20}$	er (	of Credit Hours (10	tal) / Number of Un	its (10tal)	
7			administrator's na	mo (montion all if	more then a	
1.	Namo		r Waidi Pashood I			ne name)
	Fmail	· 5(	132@uotechnolog	ov edu ja		
8. (	Cours	e C	bjectives	Syleading		
Course	Obiecti	ives	Explaining	wired and wireless co	mmunications.	
			Explaining	g wired networks archit	ectures.	
			Explaining	, g digital linking media t	ypes.	
			Explaining	g network OSI layers an	d their function	s.
			Explaining	gerror detection and co	orrection techni	ques.
9	Teach	ing	and Learning Strat	egies		
Strategy	,	1-	Provide the student	theoretical lectures an	d practical exp	eriments.
		2-	Asking students to an	nalyze and solve differ	ent problems r	elated
10.0		to	networks.			
10. Co	ourse	Stri	ucture			
Week	Hour	s	Required Learning	Unit or subject	Learning	Evaluation
			Outcomes	name	method	method
1	2		Add educational outcomes	Digital communication techniques.	Giving lectures	Students' interaction within the lecture
2	2	2 Add educational outcomes		Evaluating digital communication techniques.	Giving lectures	Students' interaction within the lecture
3	3 2 Add educational outcomes		Presenting different network architectures.	Giving lectures	Students' interaction within the lecture	
4	2		Add educational outcomes	What are the OSI layers of the networks.	Giving lectures	Students' interaction within the lecture
5	2		Add educational outcomes	Functions of the OSI layers.	Giving lectures	Students' interaction within the lecture

6	2	Add educational outcomes	Protocols acting in networks	Giving lectures	Students' interaction within the lecture
7	2	Add educational outcomes	Terminals addressing in networks.	Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
8	2		Mid-Term Exa	m	
9	2	Add educational outcomes	Study of serial communication techniques	Giving lectures	Students' interaction within the lecture
10	2	Add educational outcomes	Multiplexing and de- multiplexing techniques.	Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
11	2	Add educational outcomes	Switching and routing in networks.	Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
12	2	Add educational outcomes	Ethernet cables and optical fibers.	Giving lectures	Students' interaction within the lecture
13	2	Add educational outcomes	Switching Techniques optimization.	Giving lectures	Students' interaction within the lecture
14	2	Add educational outcomes	Error detection and correction in digital communications.	Giving lectures	Students' interaction within the lecture
15	2	Add educational outcomes	Signals in Ethernet networks.	Giving lectures	Students' interaction within the lecture
16	2		End of the ter	m Exam	
11.	Course	Evaluation			

The final score is out of 100, collected according to the different tasks assigned to the student such as daily preparation, oral presentations, daily quizzes, monthly exams, reports.... etc.

# 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Non
Main references (sources)	<b>DATA COMMUNICATIONS AND</b> <b>NETWORKING</b> , McGraw-Hill, Forouzan Networking Series, 2007
Recommended books and references (scientific journals, reports)	Non
Electronic References, Websites	Non

1. Course Name:	
	Microprocessors
2. Course Code:	

			EMEN410		
3	Somosta	or / Vear:			
5.	Semeste	Second	Semester / Fourth	Year	
1	Decerint	tion Dronaration D			
4.	Descrip	uon Preparation D	$\frac{1}{4}$		
5	Availabl	a Attandanca Form	4 1 60 2024		
5.	Availabi	e Allendance Form	Attendance Lectur	res	
б.	Number	of Credit Hours (To	otal) / Number of Un	its (Total)	
	30 Hour	s through one sem	ester /2 Units		
7.	Course	administrator's na	me (mention all, if	more than o	ne name)
	Name: E	Or. Wajdi Rasheed	Ismaeel		
Q		<u>Disz@uotechnold</u>	<u>igy.euu.ių</u>		
9. Strategy	Objectives Teaching y 1 2 m ourse St	<ul> <li>Revising hybrid no</li> <li>Explainin</li> <li></li></ul>	the common numbering umbering systems. Ing microprocessors arch ing internal registers of the org assembly language in ocessor. designing and programm J. itegies ent theoretical lecture to analyze and solve	g system then go itectures. he 8086 micropr structions I of th ming small syste ures. e different pr	eneralizing to occessor. ne 8086 m based on oblems relate
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation
1	2	Add educational outcomes	name Reviewing basic and	Giving lectures	Students'
-	_		hybrid numbering systems.	String rootures	interaction within the lecture
2	2	Add educational outcomes	8086 Microprocessor	Giving lectures	Students' interaction within
					the lecture
3	2	Add educational outcomes	Why assembly language is important	Giving lectures	the lecture Students' interaction within the lecture
3	2 2 2	Add educational outcomes Add educational outcomes	Why assembly language is importantExplain the registers of the 8086	Giving lectures Giving lectures	the lecture Students' interaction withir the lecture Students' interaction withir the lecture
3 4 5	2 2 2 2	Add educational outcomes Add educational outcomes Add educational outcomes	Why assembly language is importantExplain the registers of the 8086Review of the addressing modes	Giving lectures Giving lectures Giving lectures	the lecture         Students'         interaction within         the lecture

7	2	Add educational outcomes	Reviev instruc	v of logical tion	Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
8	2			Mid-Term Exar	n	
9	2	Add educational outcomes	Multip multip technic	lexing and de- lexing lues.	Giving lectures	Students' interaction within the lecture
10	2	Add educational outcomes	Review of conditional and jump instructions		Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
11	2	Add educational outcomes	Review of the loop instructions		Open discussions between the student and the lecturer	Giving the student an incentive reward (grades) and urging him to excel
12	2	Add educational outcomes	Practical example (1) to design and program 8086		Giving lectures	Students' interaction within the lecture
13	2	Add educational outcomes	Practic to desi 8086	al example (2) gn and program	Giving lectures	Students' interaction within the lecture
14	2	Add educational outcomes	Practical example (3) to design and program 8086		Giving lectures	Students' interaction within the lecture
15	2		End of the	e term Exam		In class, paper based exam
11.	Course	Evaluation				
The fir such a	al score i: s daily pr	s out of 100, collected a eparation, oral present	ccordin ations,	g to the differe daily quizzes, 1	nt tasks assigne nonthly exams,	d to the student reports etc.
12.	Learning	g and Teaching Reso	ources			
Require	ed textboo	oks (curricular books, if a	any)	Non		
Main references (sources)				The Intel microy 80286, 80386, 80 processor, Penti Core2 with 64-b programming, a By: Barry B. Br	processors 8086/808 1486, Pentium, Pent um II, Pentium III, it extensions: Arch nd interfacing / ey—8th edition, 20	88, 80186/80188, ium Pro Pentium 4, and itecture, 09
Recom	mended	books and refe	rences	Non		
(scient	ific journal	s, reports…)				
Electro	nic Refere	ences, Websites		Non		

13.	Course Name:
	Electromechanical Systems
14.	Course Code:
	00

			EMEN408		
15.	Se	emester / Year:	4-		
		2 <sup>nd</sup>	semester / 4 <sup>th</sup> year		
16.	De	escription Preparat	ion Date:		
			1-2-2024		
17.4	Availabl	e Attendance Forms	:		
181	Number	of Credit Hours (To	Attendance Lecture	es ts (Total)	
10.1	30  hrs.	<sup>2</sup> credits		is (10tal)	
	,				
19.	C	ourse administrato	r's name (mention	all, if more th	nan one
<u>ا</u> ۱	Name <sup>,</sup> A	ssist Prof Dr Moh	ammed Jawad Moh	ammed	
]	Email: n	iohammed.j.mohan	nmed@uotechnolog	gy.edu.iq	
20.	Сс	ourse Objectives			
Course	Objective	5	<ul> <li>Identify the second seco</li></ul>	e basics of me	echanical and
			electrical	parts and conv	vert electrical
			circuits ir	nto mechanical	systems and
				/draulic_systems	
			<ul> <li>Identify</li> </ul>	sensors, m	otors, and
			electroche	mical controllers	5
21.	Te	eaching and Learning	g Strategies		
Strategy	Le	cturer and presentation			
22. Co	ourse St	ructure			
Week	Hours	Required Learning	Unit or subject	Learning	Evaluation
		Outcomes	name	method	method
1-2	4	Learn about	-Connecting series	lecturer	quiz
		and electrical circuits	mechanical systems.		
			- Connecting series and parallel electrical		
<u> </u>		Comment of the last	circuits	ı.	
3-4	4	symmetry between mechanical and	-converting mechanical systems	lecturer	quiz
		electrical systems	into electrical ones		
			systems to mechanical		
			ones		

5-6	4	Applications of electromechanical devices	- Finding the transfer function for hydraulic systems	lecturer	quiz
7-8	4	Applications of electromechanical devices	AC and DC motors	lecturer	quiz
9-10	4	Identify signal conditioning functions	- op-Amp - Filters	lecturer	quiz
11-12	4	Applications of electromechanical devices	Sensors	lecturer	quiz
13-14	4	Applications of electromechanical devices	Actuators and Controllers	lecturer	quiz
15	2	Exam	Exam	Exam	Exam
23. 0	Course E	Evaluation			
15% mi	d exam –	15% student activitie	s – 70% final Exam		
24. L	earning	and Teaching Reso	ources		
Require	d textbool	ks (curricular books, if a	any) Lyshev: control Press, 2	ski, Sergey Edwar of electromecha 2017.	rd. Mechatronics a anical systems. (
Main ref	erences (	(sources)	Raven, enginee	Francis H. ering. McGraw-Hil	Automatic con ll, Inc., 1995.
Recomn	nended	books and refer	rences Ogata,	Katsuhiko.	Modern con
(scientifi	c journals	s, reports)	enginee	ering mun eartion.	2010.
Electron	ic Refere	nces, Websites			

1. Course Name:
AUTOMATION AND ROBOTICS
2. Course Code:
EMEN404
3. Semester /
4 <sup>th</sup> Year:1 <sup>st</sup> semester
4. Description Preparation Date:
2-2024
5. Available Attendance Forms:
Actual classroom learning- interactive Full Hours
6. Number of Credit Hours (Total) =45H / Number of Units (Total)
<ol> <li>Course administrator's name (mention all, if more than one name)</li> </ol>

Na Er	ame: A nail:50	ssist Prof. Dr 1071@uotecl	r. Iman S.Kareem nnology.edu.iq		
8. Co	ourse C	Dbjectives			
Co	urse Obj	ectives -Aims who t princi electr the th used robot	of the course are: to graduat hey have theoretical knowle ples of automation control sy omechanical field, with the eoretical principles for the in in control production syst ics with motion analysis.	tes qualifie dge and ex ystems and ability to telligent to tem and s	d engineers perience in robotics in understand ols which is structure of
		- Illus Princi produ Hardv Intelli classi ANAL plann	stration and discussion the ples of Basic elements of action system, Advanced ware components for autom gent control system, introduction fication and structure, YSIS, TRAJECTORY INTERPO ing.	ne Main automation ation proc uction of ro ROBOTIC DLATORS,	Theoretical on &control n function, ess control, obotics with MOTION and path
9. Te	The cou lecture and du princip Preser autom	and Learning urse in Enginee and after each uring tutorial ho les for solving the utation of seminated systems	g Strategies ring automation and robotics topic , sample problem will be urs the students will be able to e maintenance problems in el nars on all curriculum voca	is covered provide to to apply the ectromecha bulary wit	by classical the student , theories and anically field. h videos of
10. Cou	rse Str	ucture			
Week	Hour	Required	Unit or subject name	Learnin	Evaluatio
	S	Learning Outcomes		g method	n method
1	3	Knowledge and under standing	Introduction to automation technology and Basic elements of automation	lecture	homewor k
2	3	Knowledge and under standing	control production system and Advanced automation functions	lecture	Discussio n and

15	3	evaluation	Fyam	lecture	, exam exam
14	3	Knowledge understanding	robot task planning	lecture	Seminar discussion
13	3	Knowledge understanding	- inverse kinematics examples	lecture	Seminar discussion , exam
12	3	Knowledge understanding	Forward kinematics examples	lecture	Seminar discussion , exam
11	3	Knowledge understanding	robot joint- specification-robot drives systems	lecture	Seminar discussion , exam
10	3	Knowledge understanding	Study of- robot links, and joints with Autonomy of robot system	lecture	Seminar discussion , exam
9	3	Knowledge understanding	robotic classification- robotic applications.	lecture	Seminar discussion , exam
8	3	Knowledge and understandin g	Robotics:INTRODUCTI ON:	lecture	homewor k
7	3	knowledge of using of automation control	PLC architecture	lecture	Seminar discussion , exam
6	3	knowledge of using of automation control	PLC architecture	lecture	homewor k
5	3	knowledg e of using of of automatio n control	Description of the PLC SOFTWARE	lecture	Seminar discussion
4	3	knowledge of using of of automation control	Introduction to programmable logic controller(PLC)	lecture	Seminar discussion
3	3	concepts, theory and application of of automation control system	Hard ware component in automation systems	Lecture	Homewor k and exam
					homewor k

## 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 Seminar or report (10), daily preparation(5), written exams(15)

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	no
Main references (sources)	automation production system &computer intecrated manufacturing " by Mikell P.Groover book3 <sup>rd</sup> Prentice Hall 2008
Recommended books and references (scientific	Internet web sites.
journals, reports)	
Electronic References, Websites	Internet web sites.

1.	Course	Na	me:				
				RA	DAR Systems		
2.	Course	Co	de:		-		
				]	EMEN403		
3.	Semeste	er /	Year:				
				1 <sup>st</sup> se	mester/ 4th year	•	
4.	Descrip	tio	n Preparation Date:				
					2/11/2024		
5.	Availab	le	Attendance Forms:				
				ŀ	Attendance Lec	tures	
6.	Number	r of	Credit Hours (Total) / N	Number of U	Inits (Total)		
	2 Hours	s / 1	Week				
7	Course	adı	ministrator's name (ment	ion all if m	ora than one na	ma)	
/.	Name	aui Iaf	ar Mohammed Daif	.1011 all, 11 110			
	Email:	Jaa	far.M.Dhaif@uotechnol	ogv.edu.ia			
	2			8 <i>5</i> , 19 and 19			
8.	Course	Ob	jectives				
Course (	Objective	es			The primary	objective of this cours	e is to introduce radar
					concepts, tecl	hnologies, challenges,	and applications that
					.address the ir	ncreasingly complex of	perational environment
					,Lectures wil	ll be based on rece	nt research activities
					presentations,	and publications to ga	in an understanding of
					technology i	apabilities and continu	al improvements to the
9	Teachin	ισε	and Learning Strategies		.teennology, n	neruding modern tirea	t systems
Strategy	Touchin	5.	It will be evaluate	ed based on	research projec	ts. In addition, the clas	s will utilise the "interac
Stategy			learning" concep	ot, such as	discussions in	class, question and a	inswer during lectures,
			.interaction betwe	een students	with homeworl	k assignment presentat	ions
10. Co	ourse Sti	ruc	ture				
Week	Hours	3	Required Learning	Unit or sub	ject name	Learning method	Evaluation method
			Outcomes				
1	3		The moving ta	Moving tar	get indicator ra	Giving the	The extent of the stude
			indicator radar type			le+cture Discussion	interaction with the lec
			be reviewed. It			and exercises	and the extent of
			most important feat				Questions and answers
			which include the met				Questions and answers
			of operation, its ty				
			blind speed, and				
			.method of mitigating i				
2	3		The student will l	• Doub	ole delay-	Giving the	The extent of the stude
			:about	cance	ller	le+cture Discussion	interaction with the lec
					85 —		

		<ul> <li>Double delay- canceller</li> <li>Staggered P Repetition Frequencies.</li> <li>Pulse Doppler Ra</li> <li>MTI and Dop RADAR compari</li> <li>Range and Dop ,Ambiguities Resolving Ra ,Ambiguity Resolving Dop Ambiguity</li> </ul>	<ul> <li>Staggered P Repetition Frequenci</li> <li>,Pulse Doppler Ri .Working</li> <li>MTI and Dop RADAR comparison</li> <li>Range and Dop Ambiguities, Resolving, Range Ambig Resolving Dop Ambiguity</li> </ul>	and exercise	and the extent of understanding through Questions and answers
3	3	The student wi understand th importance of puls compression in rada systems. Beside, th match filter is a essential part of th ;detection sid therefore, it will enabl the students t recognise the purpos of using the pusl compression. And how the pulse compressio can be applied to frequency modulatio .signal	<ul> <li>Pulse Compression RADAR</li> <li>Motivation for P Compression</li> <li>The Matched Filter</li> <li>Pulse Compres Process</li> <li>Frequency Modula In Pulse Compression</li> <li>Matched Filter Anal of LFM P Compression</li> </ul>	Giving the le+cture Discussion and exercise	The extent of the stude interaction with the lec and the extent of understanding through Questions and answers
4	3	<ul> <li>The students gain knowledge how to make derivation based certain type of r according to operation</li> </ul>	• T he RADAR Equa with Pulse Compress	Giving the le+cture Discussion and exercise	The extent of the stude interaction with the lec and the extent of understanding through Questions and answers
5	2	First month Exam	First month Exam	First month Exam	First month Exam
6	3	<ul> <li>Active Processing in LFM Pulse Compression</li> <li>Correlation Processing</li> <li>Stretch Processing</li> <li>Synthetic Aperture Radars</li> <li>Resolution along the XLOS Axis</li> <li>Redar Equation</li> </ul>	• The student will knowledge on how different types of p compression work understand the r differences betw .them	Giving the le+cture Discussion and exercise	The extent of the stude interaction with the lec and the extent of understanding through Questions and answers
	3	• Radar Equation the Sar System	derivation of the SAR range equation and the rel .parameters	le+cture Discussion and exercise	interaction with the lec and the extent of understanding through Questions and answers
8	3	Tracking Radars	The student will learn a how this type of trac	Giving the le+cture Discussion	The extent of the stude interaction with the lec

				-		
			radar	system works,	and exercise	and the extent of
			addition	n to the factors		understanding through
			.affect i	ts calculations	~	Questions and answers
9	3	Tracking Ra	In more	e detail, the student	Giving the	The extent of the stude
		calculations	be abl	e to understand	le+cture Discussion	interaction with the lec
			busines	s rule of track	and exercise	and the extent of
			objectiv	es as well as the er		Questions and ensure
			that an	and based		Questions and answers
			calcula	and Dased		
10	2	Second	Second	month Exam	Second month	Second
10	2	month Exam	becond		Exam	month Exam
11	3	Over-the-Horizon	The stu	dent learns about o	Giving the	The extent of the stude
	-	Radar	the-hor	izon radars and	le+cture Discussion	interaction with the lec
			they	work, along	and exercise	and the extent of
			mathem	natical calculat		understanding through
			.based o	on their operations		Questions and answers
12	3	Skywave OTHR	In t	this lesson,	Giving the	The extent of the stude
		System	environ	mental effects of	le+cture Discussion	interaction with the lec
		(Environmental effect	sky wi	ll be covered on	and exercise	and the extent of
		the sky)	signals	throughout r		understanding through
	-		.operati	on		Questions and answers
13	3	Secondary Surveilla	The stu	udent will unders	Giving the	The extent of the stude
		Radar	the ba	sic operation of	le+cture Discussion	interaction with the lec
			Beder	its applications	and exercise	and the extent of
			.Radar,	its applications		Questions
						Questions
14	3	Secondary Surveilla	Starting	t from the b	Giving the	The extent of the stude
14	5	Radar Equation	nrincin	le of derivation	le+cture Discussion	interaction with the lec
		Rudui Equation	students	s will be able	and exercise	and the extent of
			recogni	se how to start mal		understanding through
			the der	ivation into the r		Questions
			equation	n of the Second		answers
			.Surveil	llance Radar Equa		
			This	comes with s		
			.mather	natical examples		
15	3	Final Semester	Final Se	emester Exam	Final	Final
		Exam			Semester	Semester
					Exam	Exam
II. Col	urse Eval	uation			1	
,The co	urse grad	e is based upon attendand	ce and pa	articipation, homew	ork assignments and p	resentations, midterms
and the	e final exa	im. Take nome the final of	exam to 1	nclude "Technical	Report" and it will be	weighted more heavily
12 L ~	rning or	Teaching Descurees				.m me mai exam
Required	textbook	a reaching Resources		Notava	lable	
Main rofo	rences (a	ources)	y)	Radar Systems	nd Components 2022	
Iviani Tele	1011005 (50	ources		Radar and Comm	nu components, 2022	aring 2018
				introduction to R	adar Systems 3rd Editio	on. 2002.
Recomme	ended bo	oks and references (so	cientific	Not avai	lable	,
journals	reports)			1101 4741		
Electronic	c Referen	ces, Websites		https://radar-engi	neer.com/pages/resourc	ces.html
		,			1 0	
				An interactive int	roduction to Radar - ht	tp://media.thales-
				nederland.nl/thisi	sradar/ThisIsRadar.htm	<u></u>
				Radar Tutorial no	otes with diagrams	
				- <u>http://www.rada</u>	artutorial.eu/index.en.h	tml
				87 —		

			IET, Ra <u>RSN</u>	dar Sonar and Navig	ation <u>http://wy</u>	ww.ietdl.org/IET-
			IEEE, A - <u>http://i</u>	erospace and Electro eeexplore.ieee.org/x	onic Systems Ma pl/RecentIssue.j:	agazine sp?punumber=62
1. (	Course I	Name:				
			Ethics in Er	ngineering		
2. (	Course (	Code:		0 0		
2	<b>.</b>	137	EMEN	N412		
3. 9	semeste	er / Year:	th x ord	<u>.</u>		
4			4" Year, 2"	semester		
4.	Jescript	tion Prepara	tion Date:	)24		
F	A '1 1 1	- 1 +++ 1	2-20	JZ4		
5. /	Availabl	e Attendance	Forms: Attenda	nce Lectures		
6. 1	Number	of Credit Ho	urs (Total) / Nur	nber of Units (	Total)	
2 units	5					
7. (	Course	administrato	or's name (mer	ntion all, if mo	re than on	e name)
I	Name: Ja	alal M. Jalil	-h			
0 (	2mail: 5	<u>0003@uotec</u>	chnology.edu.iq			
0.				• Moral 6	Concitivity	
Course	Objectives	5		<ul><li>Moral I</li></ul>	Reasoning	
				• Ethical	Theories	
				• Increase	ed knowledg	e of the
				Eulical	Coues	
9	Feaching	g and Learnin	ig Strategies			
Strategy			Proble	m Based Lear	ning	
10. Co	ourse St	ructure				
Week	Hours	Required	Unit or subject r	name	Learning	Evaluation
		Learning			method	method
4		Outcomes			DD	
1		GO5	Moral Re	easoning,	PBL	Keport, Mid Evam
2			Being a F	Protessional		Seminar.
			Codes of	Ethics,		Final Exam

3 4	• Ethica Solvir	al Problem 1g Techniques		
5	<ul> <li>Ethica</li> <li>Relate</li> </ul>	ed to		
	Engin	eering		
	Organ	nizations		
6	<ul> <li>Confli</li> </ul>	cts of interest		
7	<ul> <li>Safety</li> </ul>	, Risk and		
8	accide	ents nod Concont		
9	• Inform ● Legal	liability		
10	• Whist	leblowing		
11	• Resea	rch Ethics		
12	• Globa	l Issues		
13	<ul> <li>Emerginand F<sup>2</sup></li> </ul>	ging Technology		
14	• Envire	onmental Ethics		
11. Course Evaluation				
Mid exam 15%, student activities	15%, final exa	ım 70%.		
12. Learning and Teaching	g Resources			
Required textbooks (curricular bo	oks, if any)	Engineering Ethics, Fo University of New Me	ourth Edition, C	harles B. Fledderm
Main references (sources)		2	-	
Recommended books and	references		-	
(scientific journals, reports)				
Electronic References, Websites			-	
1. Course Name:				
	Aero	elasticity		
2. Course Code:				
	EM	EN406		
3. Semester / Year:				

2<sup>nd</sup> Semester / 4<sup>th</sup> Year

4. De	escription	Preparation Da	te:		
			2-2024		
5. Av	vailable A	ttendance Forms.			
0.11	vunuene m		Attendance Lectures		
6. Ni	umber of <b>(</b>	Credit Hours (Tot	al) / Number of Units (To	otal)	
2	Hours /W	eek Theoretical	, 30 Hours (Total)	,	
2	Units (Tot	cal)			
7. Co	ourse adr	ninistrator's nar	ne (mention all, if more	than one	name)
Na	ame: Akee	el Abdulkareem	Abtan		
Er	nail: Akee	el.A.Abtan@uote	chnology.edu.iq		
8. Co	ourse Obje	ectives			
Course Ob	ojectives	<ul> <li>–Introduces th</li> </ul>	ne fundamental concepts in A	eroelasticity	
	-	• – Understand	d the concepts of flutter (self	-excited os	cillations) and
		divergence (u	unbounded structural deformat	tion) and the	, ir significance
		in aircraft des	sign and safety.	,	U
		Learn analyt	ical methods used to model	and analy	ze aeroelasti
		systems			
9. Te	eaching an	d Loarning Strat			
		iu Leanning Shak	egies		
Strategy		Problem Base	egles ed Learning (PBL)		
Strategy		Problem Base	ed Learning (PBL)		
Strategy 10. Cou Week	rse Struct	Problem Base ure Required	ed Learning (PBL)	Learning	Evaluation
Strategy 10. Cou Week	rse Struct	Problem Base ure Required	ed Learning (PBL) Unit or subject name	Learning	Evaluation
Strategy 10. Cou Week	rse Struct	Problem Base ure Required Learning	egles ed Learning (PBL) Unit or subject name	Learning method	Evaluation method
Strategy 10. Cou Week	rse Struct Hours	Problem Base ure Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Strategy 10. Cou Week 1,2	rse Struct Hours 2 Hours /Week	Problem Base ure Required Learning Outcomes An ability to identify.	ed Learning (PBL) Unit or subject name Mechanics Fundamentals	Learning method PBL	Evaluation method Quiz Mid Evan
Strategy 10. Cou Week 1,2	rse Struct Hours 2 Hours /Week	Problem Base ure Required Learning Outcomes An ability to identify, formulate, and	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam
Strategy 10. Cou Week 1,2	rse Struct Hours 2 Hours /Week	Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4	TSE Struct Hours 2 Hours /Week	Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Nation of Stability</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7 8	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering,	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Accelesticity</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8 8,9	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> <li>Wall-Mounted Model</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8 8,9	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> <li>Wall-Mounted Model</li> <li>Sting-Mounted Model</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 1,2 3,4 5 6 7,8 8,9 10,11	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	ed Learning (PBL) Unit or subject name Mechanics Fundamentals Modeling the Dynamics of Strings Elementary Beam Theory Composite Beams The Notion of Stability Static Aeroelasticity Wind-Tunnel Models Wall-Mounted Model Sting-Mounted Model Strut-Mounted Model	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8 8,9 10,11	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> <li>Wall-Mounted Model</li> <li>String-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Wall-Mounted Model</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8 8,9 10,11	rse Struct Hours 2 Hours /Week	Problem Base Problem Base ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> <li>Wall-Mounted Model</li> <li>Sting-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Mall-Mounted Model</li> <li>Mall-Mounted Model</li> <li>Mall-Mounted Model</li> <li>Mall-Mounted Model</li> <li>Mall-Mounted Model</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar
Strategy 10. Cou Week 1,2 3,4 5 6 7,8 8,9 10,11 12,13	Is a struct Hours	Problem Base Problem Base Ure Required Learning Outcomes An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>ed Learning (PBL)</li> <li>Unit or subject name</li> <li>Mechanics Fundamentals</li> <li>Modeling the Dynamics of Strings</li> <li>Elementary Beam Theory</li> <li>Composite Beams</li> <li>The Notion of Stability</li> <li>Static Aeroelasticity</li> <li>Wind-Tunnel Models</li> <li>Wall-Mounted Model</li> <li>Sting-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Strut-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Wall-Mounted Model</li> <li>Mall-Mounted Model</li> <li>Wall-Mounted Model</li> </ul>	Learning method PBL	Evaluation method Quiz Mid Exam Final Exar

14,15		<ul> <li>Ster</li> <li>The</li> <li>Div</li> <li>Aile</li> </ul>	ady-Flow Strip eory rergence eron Reversal	
11. Cou	rse Evaluation			
Mid exam 1	5%, student activities 1	5%, Final ex	am 70%.	
12. Lea	rning and Teaching R	Resources		
Required tex	xtbooks (curricular books	s, if any)		
Main referer	nces (sources)		<ol> <li>Introduction to St Aeroelasticity, Dewe Pierce, 2011</li> <li>Introduction to Ai and Loads, Jan R. Wi</li> </ol>	ructural Dynamics and ey H. Hodges, G. Alvin ircraft Aeroelasticity right, 2007
Recommend	led books and reference	es (scientific		
journals, rep	oorts)			
Electronic R	eferences, Websites			

1. Course Name:	
Comput	er Aided Design and Manufacturing (CAD/CAM)
2. Course Code:	
	EMEN407
3. Semester / Year	•
	1 <sup>st</sup> Semester / 4 <sup>th</sup> Year
4. Description Pre	paration Date:
	2-2024
5. Available Attend	lance Forms:
	Attendance Lectures
6. Number of Credi	t Hours (Total) / Number of Units (Total)
2 Hours /Week	Theoretical, 1 Hours /Week Practical, 45 Hours (Total)
3Units (Total)	
7. Course adminis	strator's name (mention all, if more than one name)
Name: Akeel Ab	dulkareem Abtan
Email: Akeel.A.A	Abtan@uotechnology.edu.ig
8. Course Objective	es
Course Objectives	-Introduces the fundamental concepts in CAD/CAM systems
L I	
	91

9. Tea Strategy 10. Cours Week	Se Struct	-Transferring of a CNC-read -Use CAD/CA d Learning Strate Problem Base ure Required Learning Outcomes An ability to	<ul> <li>part geometry from CAD to only program.</li> <li>M software</li> <li>gies</li> <li>d Learning (PBL)</li> <li>Unit or subject name</li> <li>The Design Process</li> </ul>	CAM for the Learning method	development Evaluation method
1,2 3,4,5 6,7,8 8,9 10,11,12	3 Hours /Week	An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	<ul> <li>The Design Process</li> <li>The Product Cycle and CAD/CAM</li> <li>Benefits of Computer in Industry</li> <li>Geometrical Transformations</li> <li>Mathematical elements in 2-D graphics</li> <li>Mathematical elements in 3-D graphics</li> <li>Finite Element Method</li> <li>Spring Element</li> <li>Bar Element</li> <li>System Design and Manufacture</li> <li>Manufacturing Production Cycle</li> <li>Method of Workpiece Transport</li> <li>An Automation Block Building</li> <li>Fundamental of Numerical Control</li> <li>Basic Component Of</li> </ul>	PBL	Quiz Mid Exam Final Exam
13,14,15			<ul> <li>Classification of Numerical Control</li> <li>CNC Machines Part Programming</li> <li>Automatic Tool Changer</li> <li>Coordinate Systems</li> </ul>		

			<ul> <li>An</li> <li>Pro</li> </ul>	Introduction to Part gramming		
11. Cou	irse Eval	uation				
Mid exam 1	5%, stud	ent activities 15%, I	LAB 10 <sup>o</sup>	%, final exam 60%.		
12. Lea	rning and	d Teaching Resou	urces			
Required te	xtbooks (c	curricular books, if an	ıy)			
Main referer	nces (soui	rces)		1.Computer Aided Richard and Wang, 2.CAD/CAM Princ Pnrao, 2010	Manufact 2006 iples and	uring, Chien, applications,
Recommend	ded books	and references (sc	ientific			
journals, rep	oorts…)					
Electronic R	eferences	, Websites				

1.	Course	Nan	ne: Micro	wave and R	ADAR Engine	erina	
2.	Course	Cod	e:				
				EM	EN405		
3.	Semeste	er / `	Year:				
				Seco	ond, 4 <sup>th</sup>		
4.	Descrip	tion	Preparation Date:				
				2-	2024		
5.	Availab	le A	ttendance Forms:	<b>4</b>			
<u> </u>	NT	C.		Atte	ndance Lecture	S	
6.	Number	$\frac{10}{10}$	Credit Hours (Total) / Num	iber of Units	s (Total)		
	2 Hours	5 / VV	eek				
7.	Course	adm	inistrator's name (mention	all, if more	than one name)		
	Name: .	Jafaa	ar Mohammed Daif				
	Email:	Jaata	ar.M.Dhaif@uotechnology	.edu.1q			
8.	Course	Obj	ectives				
Course O	bjectiv	es 🧳			,This course	introduces the bas	sics of microwaves
					devices, circu	its, and passive devic	es. These are used in
					the front-end	of all telecommunica	tion transmitters and
					.receivers and	are thus extensively	used in the industry
					hasic device r	used in military and o	vivil applications and
					has a large ma	rket. This course mak	tes students industry-
					.ready in the	microwave field	5
9. '	Teachin	ig ar	nd Learning Strategies				
Strategy			It will be evaluated b	based on rese	earch projects. I	In addition, the class	will utilise the "interac
			learning" concept, s	such as disc	cussions in cla	ss, question and and	swer during lectures,
10 0	C.		.interaction between	students wit	th homework as	ssignment presentatio	ns
10. Co	urse Sti	ucti	Paguirod Learning	Unit or gal	niact name	Loorning method	Evolution method
Week	nouis	5	Outcomes	Unit of sut	oject name	Learning method	Evaluation method
1	2		Microwaves: frequency	Describe E	EM wave	Giving the	The extent of
			band, EM waves,	frequency	bands and	le+cture Discussion	student's interac
			General	spectrum		and exercises	with the lecture and
			applications of				extent of
			microwaves				understanding throug
				- 93			

			State the strengths and limitations of microwave communication		Questions and answe
2	2	Transmission lines: Parameters, general line equation, lossless line, $\lambda/4$ line, standing waves, VSWR, reflection coefficient, stub matching (single and double), skin effect	Explain the equivalent circuit of a two wire transmission line. Obtain the general equation for a two wire transmission line. State characteristics of lossless transmission line. Explain impedance matching using stub Using design equations solve example	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
3	2	Waveguides: Wave propagation through guided medium, reflections of waves	of single stub matchingDescribe propagation of microwavesthrough waveguide and explain cutoff wavelength.Differentiate between transmission line and waveguide.Calculate cut off wavelength, group and phase velocities, characteristics wave impedance of any waveguide parameters.	Giving the le+cture Discussion and exerci	The extent of student's intera with the lecture and extent of understanding throu Questions and answ
4	2	Rectangular waveguide : structure , cut off wavelength , group and phase velocities, characteristic wave impedance , TE ,TM modes , field patterns , examples, S Parameters basics	Distinguish the following: cut off wavelength, group and phase velocities, characteristics wave impedance, TE, TM modes, S Parameters.	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
5	2	First month Exam	First month Exam	First month	First month Exam
6	2	Circular waveguide: structure, cut off wavelength, modes, examples, comparison with rectangular waveguide	. Compare the working of rectangular waveguide and circular waveguide.	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe

7	2	Microwave Components: Tees, hybrid ring , directional coupler , Duplexer , isolator , circulator , cavity resonators	State the applications of the following microwave components: Tees, hybrid ring , directional coupler , Duplexer, isolator, circulator , cavity resonators, Explain the workings of the directional coupler, isolator, and circulator with sketches.	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
			Explain the workings of cavity resonators with sketches		
8	2	Microwave Accessories: corners and bends, twist and taper	Describe working of bends, corner, and twist taper with sketches. Describe the frequency limitation of vacuum tubes at microwave frequency.	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
9	2	Limitations of vacuum tubes at microwave frequency	Explain function of reflex klystron with the help apple gate diagram. Explain structure and effects of various fields' acts on electron moving in the magnetron tube. Describe working of Travelling Wave Tube as an amplifier. Explain $\pi$ mode oscillation and define frequency pushing and pulling. Explain two cavity klystron with apple gate diagram. Describe working of Backward Wave Oscillator.	Giving the le+cture Discussion and exerci	The extent of student's interact with the lecture and extent of understanding throug Questions and answe
10	2	Second month Exam	Second month Exam	Second month Exam	Second month Exam
11	2	Microwave tubes	Explain microwave power	Giving the le+cture Discussion	The extent of student's interact

		amplifiers: Klystron -	measur	ement methods.	and exerci	with the lecture and
		cavity and multi cavity, Travelling Wave Tube Microwave tubes	.Explain VSWR measur	n significance of ement.		understanding throug Questions and answe
		klystron, Magnetron, Backward Wave Oscillator	Explain measur method	attenuation ement s.		
			Describ measur	e Q ement technique.		
12	2	Explain hazards due to microwave radiation.	Microw hazards HERO, protecti	vave radiation types (HERP, HERF), and ton from hazards	Giving the le+cture Discussion and exerci	The extent of student's interac with the lecture and extent of understanding throug Ouestions and answe
13	2	Microwave measurement: power, frequency, wavelength (free space, guided and cutoff), VSWR, attenuation, 'Q'.	Explain amplifie diagram Explain up and convers parame amplifie	a the parametric er with as. a the frequency down sion concepts for tric er	Giving the le+cture Discussion and exerci	The extent of student's interac with the lecture and extent of understanding throug Questions answers
14	2	The student will knowledge of how the b design is established with aid of mathemat.expressions	Filter D Passive Circuits Passive Equival Meanin Elemen	Design, RC Filters Equiva RLC Filters Equiva RLC Filter lent Circuits ag of Distributs	Giving the le+cture Discussion and exerci	The extent of student's interac with the lecture and extent of understanding throug Questions answers
15	3	Final Semester Exam	Final S	emester Exam	Final Semester Exam	Final Semester Exam
11. Cou	urse Evalua	ation				
,The con and the	urse grade final exan	is based upon attendance an n. Take home the final exam	nd partic n to inclu	ipation, homework 1de "Technical Rep	assignments and pre port" and it will be we	sentations, midterms eighted more heavily .in the final exam
12. Lea	towthool	Teaching Resources		Nat a	ilabla	
Main refe	textbooks ( rences (sou	(curricular books, if any) irces)		Not avai Kulkarni M. M Publications, Ne Chaturvedi PK. M Singapore; 2018 Belous A. Hand Springer Nature;	Itable icrowave and rada w Delhi; 2009. dicrowave, Radar & 3. book of Microwave 2021 Jan 4.	ar engineering. Um RF Engineering. Sprir and Radar Engineer
Recomme journals, r Electronic	ended boo reports) c Reference	oks and references (sc es, Websites	eientific	Not avai	ilable	

1.	Course	Name:			
			Digital Signal Processing		
2.	Course	Code:			
			EMEN401		
3.	Semest	er / Year:			
			First Semester / 4 <sup>th</sup> Year		
4.	Descrip	otion Prepar	ation Date:		
			2024-3		
5.	Availat	ole Attendanc	e Forms:		
6	Marcala	n of Cuodit II	Attendance Lecture		1-( <b>)</b> II
0.	Theory	+ 1 H Tutori	al $\langle 2 \text{ Units} \rangle$ (10tal) / Number of Units (10tal): 3H	ours \ wee	ек(2 Н
	J				
7.	Course	e administra	tor's name (mention all, if more than or	ne name)	
	000.00	Na	me: Asst. Prof. Dr. Ahmed Abdulqader H	ussein	
			Email: 50045@uotechnology.edu.iq		
0	Course	Objectives			
0.	Objective		The primary objective of this course is to provid	le a thorough	understanding
course	Objective	5	and working knowledge of design, implementation	ion and analy	sis DSP syster
9.	Teachir	ng and Learn	ing Strategies		
Strateg	у     Тh	e teaching st	trategy of the course is divided into three	a sactions	••
	cla	assroom leai	rning, home works and quizzes and final	lly	).
	stu	idents repor	ts.	5	
10 0		tructure			
Week	Hours	Required	Unit or subject name	Learnin	Evaluation
WEEK	nouis	Learning		a	method
		Outcomes		method	mothou
		Theory	Introduction to DSP, Real time DSP System,	Lecture	Quiz,
1	3	Tutorial	Applications of DSP,		Homework
			Sampling Theorem and ADC	-	
	3	Theory, Tutorial	Discrete-time signals and systems Modeling	Lecture	Quiz, Homework
	_			1	
			97		

2			Properties of Discrete-Time systems, Linearity,		
			Causality, Time Variant\Invariant, Stability		
		Theory,	DSP Operations: Convolution Linear	Lecture	Quiz,
3	3	Tutorial	and Circular Convolution, Correlation,		Homewor
			Autocorrelation and Cross-correlation		
			Z Transform: Definition and Properties	Lecture	Quiz,
4	3	Theory,	Convergence Theorems		Homewor
		Tutorial	Inverse Z Transform:		
			Computation based on residue theorem and		
			Partial Fraction Method		
	_	Theory,	Difference equations and time-domain response,	Lecture	Quiz,
, )	3	Tutorial	Solving difference equations		Homewor
			Impulse response and step response	-	
6	~	Theory,	Transfer Functions:	Lecture	Quiz,
,	3	Tutorial	first, second, and Higher order TF		Homewor
			Frequency response		
	-	Theory	Introduction to Fourier Transform:	Lecture	Quiz,
_	3	Tutorial	Discrete Time Fourier Transform DTFT,		Homewor
7		1 utoriui	Discrete Fourier Transform DFT: Definitions and		
			calculations		
			Twiddle factor Matrix	Lecture	Quiz,
	3	Theory	Discrete Fourier Transform DFT by using		Homewor
8		Tutorial	Matrix Formulation,		
		Tutoriai	DFT Properties, Time-shift theorem,		
			Correlation, Complex conjugation,		
			Real and imaginary sequences		
9			Fast Fourier Transform FFT Algorithms,	Lecture	Quiz,
	3	Theory,	Decimation in Time FFT,		Homewor
		Tutorial	Decimation in Frequency FFT Algorithm,		
			Inverse Fast Fourier Transform		
10		701	IFFT Algorithms	<b>T</b> .	
10	2	Theory,	Introduction to Digital Filters Types of Digital	Lecture	Quiz,
	3	I utorial	ritters		Homewor
11			Digital Filters Realization	Lecture	01117
**	3	Theory,	FIR Filters Realization	Decture	Homewor
	5	Tutorial	Direct form . Cascade structure		
			linear phase structures		
12			Digital Filters Realization	Lecture	Quiz.
	3	Theory,	IIR Filters Realization		Homewor
		Tutorial	Direct form, Direct canonic form,		
			Cascade structure		
			parallel structures		
13		Theory,	FIR Filters Design: Window Technique	Lecture	Quiz,
	3	Tutorial	Types of windows		Homewor
14		Theory,	IIR Filters Design: Analog to Digital Filter	Lecture	Quiz,
	3	Tutorial	Transformation,		Homewor
			Bilinear Transformation Method		
		Theory	Midterm Exam	Lecture	Exam
15		meory,	Wildterin LAan	Decture	Linain

_										
	3	Tutorial								
11	Course	Evaluation								
Distrih	iting the		f 100	) accor	ding to	the tasks	assigned to	o the	student si	ich as dails
prepara	ation, da	ily oral, month	hly, or	r writte	en exams	s, reports .	etc	o the	Student St	
12.	earning	g and Teachi	ing R	Resour	rces					
Require	d textboo	oks (curricular l	book							
any)										
Main re	ferences	(sources)			1 Jol	- Oppenhein hn R. Buck. ed 2- Monson "sc	m, Alan V., R Discrete-tim lition, Pearson H.Hayes "dig chaums outlin	Ronald he signa n Educ gital sig he series	W. Schafer, al processing ation. gnal processi s 2007	and a, 2nd ing
Recomr	nended	books	and							
referenc	es (so	cientific journ	nals,							
reports.	)									
Electron	ic Refere	ences, Website	es							
<b>-</b>										
25.	С	ourse Name	9:							
				Dig	gital Ima	ige Proce	essing			
26.	С	ourse Code:								
					EMEN4	402				
27.	S	emester / Ye	ear:							
			Se	econd	Semest	er / 4 <sup>th</sup> Y	′ear			
28.	D	escription P	Prepa	aratio	n Date:					
					20	)24-3				
29.	Availab	le Attendanc	ce Foi	orms:						
					Atter	ndance Le	ecture			
30.1	Number Theory	r of Credit Ho + 1 H Tutori	ours ( ial $\setminus 2$	(Total 2 Units	l) / Num s	iber of U	nits (Total)	): 3Ho	ours \ wee	ek(2H
			_							
31.	C	Course admi	inistr	rator's	s name	(mentio	n all, if mo	ore th	nan one r	name)
		Na	ime: I	Asst. I Email:	: 50045	anmed S@uotecl	hnology.ed	du.iq	ussein	
32.	С	course Object	tives	5						
					- 99					

Course	Objectiv	es	To learn the fundamental concepts of	of Digital Ima	age Processin
			To study basic image processing op	erations.	
			• To understand image analysis algori	tnms.	
33	٦ .	Feaching and	Learning Strategies		
Strateg 34. C	Th cl stu	e teaching s assroom lea idents repor Structure	trategy of the course is divided into thre rning , home works and quizzes and fina ts .	e sections lly	5:
Week	Hours	Required	Unit or subject name	Learnin	Evaluation
		Learning		g	method
		Outcomes		method	
1	3	Theory , Tutorial	<ul> <li>Introduction And Digital Image Fundamentals:</li> <li>The origins of Digital Image Processing</li> <li>Examples of Fields that Use Digital Image Processing</li> </ul>	Lecture	Quiz, Homework
			<ul> <li>Fundamentals Steps in Image Processing</li> <li>Elements of Digital Image Processing Systems</li> </ul>		
2	3	Theory , Tutorial	<ul> <li>Fundamentals Steps in Image Processing</li> <li>Elements of Digital Image Processing Systems</li> <li>Image Sampling and Quantization,</li> <li>Some basic relationships like Neighbors Connectivity, Distance Measures between pixels</li> <li>Translation, Scaling, Rotation and Perspective Projection of image</li> </ul>	Lecture	Quiz, Homework

**Image Enhancement Methods** 

Contrast Stretching, thresholding

Gray - Level Slicing

Histogram Equalization

Histogram definition

Histogram Processing

Bit - Plane Slicing

3

3

Theory,

Tutorial

Theory,

Tutorial

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4

5

Piecewise Linear Transformation Functions

Lecture

Lecture

Quiz,

Quiz,

Homework

Homework

			<del></del> _		<del>т</del>
			<ul> <li>Image Enhancement using Histogram</li> <li>Equalization</li> </ul>		
6	3	Theory , Tutorial	<ul> <li>Image Enhancement in the Spatial Domain         <ul> <li>Basics of Spatial Filters</li> <li>Smoothening and Sharpening Spatial Filters</li> <li>Types of Smoothing Filters (Low Pass Filters)</li> <li>Types of Sharpening Filters (High Pass Filters)</li> </ul> </li> </ul>	Lecture	Quiz, Homework
7	3	Theory , Tutorial	<ul> <li>Image Enhancement in the Frequency Domain         <ul> <li>Introduction to Fourier Transform and             the frequency Domains</li> </ul> </li> <li>Computing Fourier Transform of the Image</li> <li>Phase, Magnitude Power Spectra of an Image</li> </ul>	Lecture	Quiz, Homework
8	3	Theory , Tutorial	<ul> <li>Image Enhancement in the Frequency Domain</li> <li>Smoothing Frequency Domain Filters</li> <li>Sharpening Frequency Domain Filters</li> <li>Homomorphic Filtering</li> </ul>	Lecture	Quiz, Homework
9	3	Theory , Tutorial	<ul> <li>Image Restoration:</li> <li>A model of The Image Degradation / Restoration Process</li> <li>Noise Models</li> <li>Restoration in the presence of Noise Only Spatial Filtering</li> </ul>	Lecture	Quiz, Homework
10	3	Theory , Tutorial	Image Restoration (cont.):         Periodic Noise Reduction by Frequency Domain         Filtering         Linear Position-Invariant Degradations         Estimation of Degradation Function	Lecture	Quiz, Homework
11	3	Theory, Tutorial	Image Restoration (cont.):         • Geometric Mean Filter         • Geometric Transformations	Lecture	Quiz, Homework
12	3	Theory , Tutorial	Image Compression:         Coding       Interpixel and Psychovisual Redundancy         Image Compression models       Compression standards	Lecture	Quiz, Homeworł
13	3	Theory, Tutorial	Image Compression:         Image Compression Methods         Huffman Coding	Lecture	Quiz, Homeworł
14	3	Theory, Tutorial	Image Segmentation:         • Detection of Discontinuities         • Edge linking and boundary detection         • Thresholding	Lecture	Quiz, Homeworl
15	3	Theory, Tutorial	Midterm Exam	Lecture	Exam
35.	Course	• Evaluation			

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

# 36. Learning and Teaching Resources

<b>0 0</b>	
Required textbooks (curricular book	
any)	
Main references (sources)	1- Gonzalez, Rafael C. <i>Digital image processing</i> . Pearson education india, 2009
	2- Solomon, Chris, and Toby Breckon. Fundamentals of Digital Image Processing: A practical approach with examples in Matlab. John Wiley & Sons, 2011.
Recommended books and	
references (scientific journals,	
reports)	
Electronic References, Websites	