Ministry of Higher Education and Scientific Research

Scientific supervision and evaluation device

Department of Quality Assurance and Academic Accreditation

International Accreditation Department

Academic program description form for colleges for the academic year 2021-2022

University Name: University of Anbar

College Name: Engineering

File filling date: 25/11/2021

Head of the Mech. Eng. Dept.
Asst. Prof. Saad M Jalil
Date: 29/11/2020

Dean Assistant for Scientific Affairs
Asst. Prof. Mohamed A Ahmed
Date: 29/11/2020

Dean of the College
Asst. Prof. Amir A Hilal
Date: 29/11/2020

Academic program description form

Reviewing the performance of higher education institutions ((academic program review))

This academic program description provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available opportunities. It is accompanied by a description of each course within the program

1.	Educational institution	University of Anbar
2.	University department/center	Engineering/Mechanics
3.	Name of the academic program	Bachelor's
4.	Name of the final certificate	Bachelor of Engineering
5.	School system	quarterly
6.	Accredited accreditation program	ABET
7.	Other external influences	
8.	Date the description was prepared	17/11/2021

9- Objectives of the academic program:

1. Preparing graduates with high theoretical and practical skills to meet the needs of industry, technological development and community service in the field of mechanical engineering.
2. Providing graduates with the applied practical skills and engineering background necessary in accordance with scientific developments in methodological vocabulary and modern teaching methods to pursue postgraduate studies in various mechanical engineering specializations.
3. Preparing graduates to participate effectively in building and rebuilding the country and achieving economic and social benefits for society.

10. Required learning outcomes and teaching, learning and assessment methods

1. A. Knowledge and understanding:

- The student will have the ability to know and understand the physical, theoretical and fundamentals of mechanical engineering.
- The student will have the ability to master the most important modern and advanced scientific topics in the field of mechanical engineering.
- The student will be able to understand mathematics and the equipment required to study his specialty.
- The student will be able to solve engineering problems, design mechanical parts, and establish the theoretical foundations of their applications.
- The student will be able to understand the operation of laboratory equipment that is used in the examination and evaluation of mechanical parts

. Methods of assessing knowledge and understanding

- Monthly written exams.
- rapid exams (Quizzes).
- Homework (HomeWorks).
- Writing scientific reports.

. Teaching and learning methods:

- Daily theoretical lectures:
- Practical lectures in laboratories.
- Graduation projects for final stage students and their discussion.

B. Subject-specific skills

thinking skills:

- Description and analysis of mechanical applications.
- Analyze problems related to mechanical engineering and discuss possible solutions.
- Using mechanical engineering computer programs to analyze these problems.

Professional and practical skills:

- Preparing engineering designs for mechanical parts and systems.
- Analyzing and discussing the results of engineering tests for use in design and evaluation processes.
- The ability to write and draft engineering technical reports on the results of practical examinations

9. Program structure

First Year (Freshman)														
Semester I							**Semester II**							
Course Code	Category	Subject	Weekly Hours			Credit Hours	Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoreti	Tutorial	Practica					Theoretic	Tutorial	Practical	
ME 1201	CR	Calculus-I	3	1	-	3	ME 1207	CR	Calculus-II	3	1	-	3
ME 1202	CR	Physics	3	-	2	4	ME 1302	DR	Applied physics	2	1	2	3
ME 1204	CR	Computer Science	2	1	2	3	ME 1205	CR	Engineering Mechanics)Static(I	3	1	-	3
ME 1203	CR	Chemistry	3	-	2	4	ME 1208	CR	Engineering Drawing	2	2	2	3
ME 1301	DR	Principles of Manufacturing Process	2	1	2	3	ME 1206	CR	Fundamentals of Electrical Engineering	2	1	2	3
ME 1101	UR	English Language-I	2	-	-	2	ME 1103	UR	Arabic Language	2	-	-	2
ME 1102	UR	Human rights	1	-	-	1	ME 1104	UR	Democracy	1	-	-	1
Total Hours and Credit Hours			16	3	8	20	Total Hours and Credit Hours			15	6	6	81
			27							27			

First Year (Freshman)

Semester I

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoreti	Tutorial	Practica	
ME 1201	CR	Calculus-I	3	1	-	3
ME 1202	CR	Physics	3	-	2	4
ME 1204	CR	Computer Science	2	1	2	3
ME 1203	CR	Chemistry	3	-	2	4
ME 1301	DR	Principles of Manufacturing Process	2	1	2	3
ME 1101	UR	English Language-I	2	-	-	2
ME 1102	UR	Human rights	1	-	-	1
Total Hours and Credit Hours			16	3	8	20
			27			

Semester II

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretic	Tutorial	Practical	
ME 1207	CR	Calculus-II	3	1	-	3
ME 1302	DR	Applied physics	2	1	2	3
ME 1205	CR	Engineering Mechanics)Static(I	3	1	-	3
ME 1208	CR	Engineering Drawing	2	2	2	3
ME 1206	CR	Fundamentals of Electrical Engineering	2	1	2	3
ME 1103	UR	Arabic Language	2	-	-	2
ME 1104	UR	Democracy	1	-	-	1
Total Hours and Credit Hours			15	6	6	81
			27			

Second Year (Sophomore)

Semester I

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 2201	CR	Calculus-III	3	1	-	3
ME 2301	DR	Fluid Mechanics-I	2	1	2	3
ME 2302	DR	Strength of Materials-I	2	1	2	3
ME 2303	DR	Thermodynamics-I	2	1	2	3
ME 2308	DR	Engineering Mechanics II (Dynamics)	2	1	-	2
ME 2311	DR	Electrical Machines	2	-	2	3
ME 2309	DR	Mechanical drawing	2	-	2	3
Total Hours and Credit Hours			15	5	10	20
			30			

Semester II

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 2202	CR	Calculus-IV	3	1	-	3
ME 2305	DR	Fluid Mechanics-II	2	1	2	3
ME 2306	DR	Strength of Materials-II	2	1	2	3
ME 2307	DR	Thermodynamics-II	2	1	2	3
ME 2304	DR	Engineering Metallurgy	2	1	2	3
ME 2310	DR	Computer Programming	2	-	2	3
ME 2101	UR	English Language-II	2	-	-	2
Total Hours and Credit Hours			15	5	10	20
			30			

Third Year (Junior)

Semester I

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 3301	DR	Engineering Analysis	2	2	-	2
ME 3302	DR	Heat Transfer-I	2	1	2	3
ME 3303	DR	Theory of Machines-I	2	1	2	3
ME 3304	DR	Internal Combustion Engines	2	2	-	2
ME 3309	DR	Gas Dynamics	2	2	-	2
ME 3201	CR	Engineering Statistics	3	-	-	3
ME 3101	UR	English Language-III	2	-	-	2
Total Hours and Credit Hours			15	8	4	17
			27			

Semester II

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 3202	CR	Engineering Numerical Methods	2	1	2	3
ME 3307	DR	Heat Transfer-II	2	1	2	3
ME 3308	DR	Theory of Machines-II	2	1	2	3
ME 3305	DR	Manufacturing Processes	2	1	-	2
ME 3102	UR	Ethics and Leadership Skills	2	0	-	2
ME 3310	DR	Industrial Engineering and Economic Analysis	2	1	-	2
ME 3306	DR	Research Methodology	1	-	-	1
Total Hours and Credit Hours			13	5	6	16
			24			

Fourth Year (Senior)

Semester I

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 4301	DR	Design of Machine Elements-I	3	1	-	3
ME 4302	DR	Air Conditioning	2	1	2	3
ME 4303	DR	Power Plants	2	1	-	2
ME 4304	DR	Mechanical Vibrations	2	1	2	3
ME 4308	DR	Engineering Materials	2	1	-	2
ME 43XX E	DR	Elective-I	2	-	-	2
ME 4305	DR	Final Year Project-I	2	1	2	3
Total Hours and Credit Hours			15	6	6	18
			27			

Semester II

Course Code	Category	Subject	Weekly Hours			Credit Hours
			Theoretical	Tutorial	Practical	
ME 4306	DR	Design of Machine Elements-II	3	1	-	3
ME 4307	DR	Refrigeration	2	1	2	3
ME 4309	DR	Control Systems	2	2	-	2
ME 4101	UR	English Language-IV	2	-	-	2
ME 43XX E	DR	Elective-II	2	-	-	2
ME 43XX E	DR	Elective-III	2	-	-	2
ME 4310	DR	Final Year Project-II	2	1	2	3
Total Hours and Credit Hours			15	5	4	17
			24			

10. Planning for personal development .
11. Admission standard (establishing regulations related to admission to the college or institute) • Approval of student admission conditions in accordance with the regulations of the Ministry of Higher Education and Scientific Research (central admission). • To pass the department's personal interview. • Must be fit for medical examination. • High school average. • The absorptive capacity of the college. •
12. The most important sources of information about the program • Market needs • Local trends of the governorate • Studies and questionnaires

A plan for Curriculum skills																			
Please situation Signal in Squares the interview for outputs Learning Individuality from the program Submissive For evaluation																			
				Learning Outputs required from the program															
the year / the level	Module name	Module Code	Basic or elective	Knowledge And understanding				Private Skills With the topic				Thinking skills				Skills the public and movable (or) skills the other Related Capable recruitment And evolution Personal			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
The first	Calculus-I	ME 1201	Basic	√	√			√				√							
	Physics-I	ME 1202	Basic	√	√			√				√							
	Computer Science	ME 1204	Basic	√	√			√				√							
	Chemistry	ME 1203	Basic	√	√			√				√							
	Fundamentals of Electrical Engineering	ME 1303	Basic	√	√			√	√			√	√						
	Calculus-II	ME 1205	Basic	√				√				√							

	Physics-II	**ME 1206**	**Basic**	√	√			√				√							
	Engineering Mechanics (Static)	**ME 1301**	**Basic**	√	√			√				√							
	Engineering Drawing	**ME 1207**	**Basic**	√				√											
	Principles of manufacturing process	**ME 1302**	**Basic**	√				√											
	English Language-II	**ME 1102**	**Elective**	√				√											
	Democracy	**ME 2308**	**Elective**	√	√			√	√			√							
	English Language-I	**ME 1101**	**Elective**	√				√											
	Humanrights	**ME 1103**	**Elective**	√				√											
the second				**a1**	**a2**	**a3**	**a4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**Dr 1**	**Dr 2**	**Dr 3**	**Dr4**
	Calculus-III	ME2201	**Basic**	√	√			√	√			√							
	Fluid Mechanics-I	ME2301	**Basic**	√				√	√			√	√						

	Strength of materials-I	ME2302	**Basic**	√				√				√	√						
	Thermodynamics-I	ME2303	**Basic**	√				√				√	√						
	Engineering Mechanics (Dynamics)	ME2308	**Basic**	√				√				√	√						
	Computer Programming	ME2310	**Basic**	√	√			√	√	√		√							
	Mechanical drawing	ME2309	**Basic**	√	√			√	√	√		√	√	√					
	Calculus-IV	ME2202	**Basic**	√	√			√	√			√	√						
	Fluid Mechanics-II	ME2305	**Basic**	√	√			√	√			√	√						
	Strength of materials-II	ME2306	**Basic**	√	√			√	√	√		√							
	Thermodynamics-II	ME2307	**Basic**	√	√			√	√	√		√	√	√					
	Engineering Metallurgy	ME2304	**Basic**	√	√			√	√			√	√						

	Mechanical Engineering	ME3310	**Basic**	√	√			√	√			√	√						
Third				**a1**	**a2**	**a3**	**a4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**Dr 1**	**Dr 2**	**Dr 3**	**Dr4**
	Engineering Analysis	ME 3301	**Basic**	√	√														
	Heat Transfer-I	ME 3302	**Basic**	√															
	Theory of Machines-I	ME 3303	**Basic**	√	√														
	Internal Combustion Engines	ME 3304	**Basic**	√	√														
	Engineering Statistics	ME 3201	**Basic**	√															
	Engineering Economy	ME 3203	**Basic**																
	Electrical Machines	ME 3310	**Basic**		√														
	Engineering Numerical Methods	ME 3202	**Basic**		√														

	Heat Transfer-II	ME 3307	**Basic**																
	Theory of Machines-II	ME 3308	**Basic**																
	Manufacturing Processes	ME 3305	**Basic**																
	Gas Dynamics	ME 3309	**Basic**																
	Research Methodology	**ME 3306**	**Basic**																
	Ethics & leadership skills	**ME 3101**	**Basic**																
	Engineering Analysis	ME 3301	**Basic**																
Fourth				**a1**	**a2**	**a3**	**a4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**Dr 1**	**Dr 2**	**Dr 3**	**Dr4**
	Design of Machine Elements-I	**ME 4301**	**Basic**																

	Air conditioning	**ME 4302**	**Basic**																
	Power plants	**ME 4303**	**Basic**																
	Mechanical Vibrations	**ME 4304**	**Basic**																
	Engineering Materials	**ME 4309**	**Basic**																
	CAD-CAM	**ME 4303E**	**Basic**																
	Final year project-I	**ME 4306**	**Basic**																
	Design of Machine Elements-II	**ME 4307**	**Basic**																
	Refrigeration	**ME 4308**	**Basic**																
	Control Engineering & Measurements	**ME 4310**	**Basic**																

	Industrial Engineering & Safety	ME 4305	**Basic**																
	Corrosion Engineering	**ME 4306E**	**Basic**																
	Operation research	**ME 4310E**	**Basic**																
	Final year project-II	ME 4311	**Basic**																
	Design of Machine Elements-I	**ME 4301**	**Basic**																
	Air conditioning	**ME 4302**	**Basic**																

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanical Engineering
3. name / Code The decision	English Language I /ME1101
4. Programs that Enters In which	Bachelor's
5. shapes the audience Available	Presence actual
6. the chapter / the year	the chapter Academic the first/2022-2023
7. number hours Scholarship (total)	30
8. date Preparation this the description	12/30/2022
9. Goals The decision : 1. Develop academic writing proficiency and critical thinking skills 2. Students are able to conduct effective searches of printed and electronic resources	

3. Students can use external sources to support ideas in an academic writing in mechanical engineering
4. Students can identify and explain the academic integrity (how to avoid plagiarism)
5. Students are familiar with the citation methods like the APA style
6. Students can participate in a classroom community that involves constructive exchange of ideas

10. Outputs Learning And methods education And learning And evaluation

In end of the Academic course will be able to:

1. Develop academic writing proficiency and critical thinking skills
2. Students are able to conduct effective searches of printed and electronic resources
3. Students can use external sources to support ideas in an academic writing in mechanical engineering
4. Students can identify and explain the academic integrity (how to avoid plagiarism)
5. Students are familiar with the citation methods like the APA style
6. Students can participate in a classroom community that involves constructive exchange of ideas

Methods education and learning

.
Lectures

Methods Evaluation

Exams The short one. Exams Monthly And finality. Duties Home.

C- Skills Thinking

1- Development capacity requester on performance Duties And delivered within an appointment specific.

2- Try application Concepts With a solution Species Different from matters.

3- Development requester in side Dialogue And discussion .

Methods education And learning

- Theoretical lectures
- Homework

Methods Evaluation

1- Short exams and monthly exams
2- Homework assignments
- Final exam

D- Skills the public And movable (Skills The other Related Capable recruitment And evolution Personal).

1- Development capacity requester on Dealing with English grammar
2- Ability to wright an English assay
3- Ability to make conversation

11. The module structure

week	hours	Learning Outputs required	Unit name / Course or the topic	Education method	Evaluation method
1	2	1-5	Am/ are/ is, my/ your, How are you?, What's this in English?, Plurals	Lectures	Questions General, discussion

3,2	4	1-5	Negatives and questions, The family	Lectures	Duties Home, exam,
4, 5	4	1-5	Sports/ food/ drinks Numbers and prices	Lectures	Duties Home, exam,
6,7	4	1-5	Question words Rooms and furniture Saying years	Lectures	Questions General, discussion
8, 9, 10, 11	8	1-5	Past simple- regular and irregular Can/ can't	Lectures	Duties Home, exam
12, 13, 14,15	8	1-5	I'd like- some/ any Signs all around	Lectures	Duties Home, exam,

12. Structure Infrastructure	
Readings required : ▪ books of The module ▪ Other	**Sources are placed** John & Liz Soars, "New Headway Plus- Beginner Student's Book", 10th ed 2014
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. admissions	
Requirements Previous	

less number from Students	20
Larger number from Students	25

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanical Engineering
3. name / Code The decision	English Language II /ME2101
4. Programs that Enters In which	Bachelor's
5. shapes the audience Available	Presence actual
6. the chapter / the year	the chapter Academic the second/2022-2023
7. number hours Scholarship (total)	30
8. date Preparation this the description	12/6/2022
9. Goals The decision : 1. Develop academic essay writing proficiency 2. Promote reading skills	

3. Expand academic vocabulary through reading
4. Promote speaking ability through group discussions and debates
5. Promote critical thinking skills

10. Outputs Learning And methods education And learning And evaluation

In end of the Academic course will be able to:

1. Develop academic essay writing proficiency
2. Promote reading skills
3. Expand academic vocabulary through reading
4. Promote speaking ability through group discussions and debates
5. Promote critical thinking skills

Methods education and learning

.
Lectures

Methods Evaluation

Exams The short one. Exams Monthly And finality. Duties Home.

C- Skills Thinking
1- Development capacity requester on performance Duties And delivered within an appointment specific.
2- Try application Concepts With a solution Species Different from matters.
3- Development requester in side Dialogue And discussion .

Methods education And learning

- Theoretical lectures
- Homework

Methods Evaluation
1- Short exams and monthly exams 2- Homework assignments - Final exam
D- Skills the public And movable (Skills The other Related Capable recruitment And evolution Personal). 1- Development capacity requester on Dealing with English grammar 2- Ability to wright an English assay 3- Ability to make conversation

11. The module structure

week	hours	Learning Outputs required	Unit name / Course or the topic	Education method	Evaluation method
1	2	1-5	Tenses - Vocabulary (Jobs) - Question forms - Writing (informal letter) Present sim-ple - Present continu-ous - Have/have to	Lectures	Questions General, discussion

			- Writing (Linking words +Describing a person)		
3,2	4	1-5	Past simple - Past continuous - Have + noun - Writing (a story 1) - Count and un-count nouns - Expression of quantity - Articles - Vocabulary (clothes	Lectures	Duties Home, exam, report
4, 5	6	1-5	What … like? Present perfect	Lectures,	Duties Home, exam,
6,7.8	6	1-5	have to & got to Present simple or will	Lectures	Questions General, discussion
9, 10, 11	6	1-5	Verb patterns The passive form	Lectures	Duties Home, exam
12, 13, 14,15	6	1-5	Second conditional Writing (a story 2)	Lectures	Duties Home, exam,

12. Structure Infrastructure	
Readings required : ▪ books of The module ▪ Other	**Sources are placed** John & Liz Soars, "New Headway Plus- Beginner Student's Book", 10th ed 2014
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. admissions	
Requirements Previous	ME 1101
less number from Students	20
Larger number from Students	25

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

Enterprise Educational .1	University of Anbar
Section University / Center .2	Mechanics
name / Code The decision .3	Engineering Statistics / ME3201
Programs that Enters In which .4	To divide Engineering Mechanical/Bachelor's degree
shapes the audience Available .5	My presence inside the hall
the chapter / the year .6	The chapter Academic the first
number hours Scholarship (total) .7	45
date Preparation this the description .8	30/ 10/ 2021
Goals The decision : .9	
1.Understand the differentiate between a random process and a deterministic process.	

2. Solve probability problems and its applications by to determine the sampled data; analyze it graphically.
3. Understand the relationship between both discrete and continuous random variables.
4. Understand the theoretical of the normal distribution with many populations in practice.

Outputs Learning And methods education And learning And evaluation .10
• use a number of methods and techniques for collecting and presentation the sets of data. • calculation and demonstration the center tendency and variation of data. • compute the probabilities in a simple cases and using the rules of probability • in computing; • .give an account of the concept random variable and be able to use some • common probability distributions; • .understand the meaning of the central limit theorem; • use point and interval estimates for some typical statistical problems; • .apply elementary regression for fitting measured data
Methods education And learning .11
Lectures the theory ✔ Exercises and activities in hall the lesson. ✔ Reports the operation. ✔ Guidance students to some sources that maybe benefit of which. ✔
Methods Evaluation .12
Quizzes ✔ Monthly and final exams ✔ Homework ✔ Laboratory reports ✔
skills Thinking .13
students should be able to determine when each of the various topics ✔ we have covered is appropriate to use, and to apply them to practical engineering ✔ situations or problems. This course will cover techniques on data ✔

collection and presentation, descriptive statistics, basic elements of probability theory, sampling techniques and theory, statistical estimation, hypothesis testing and regression analysis.	✔ ✔ ✔
Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal). .14	
Developing the student's ability to dialogue and discuss. Developing the student's ability to solve engineering problems by solving different types of engineering exercises. Developing the student's ability to deal with multiple media. Developing the student's ability to dialogue and discuss.	✔ ✔ ✔ ✔

The Module structure .15

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Fundamentals (Introduction to Statistics)	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	1. Introduction	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	2. Descriptive and Inferential Statistics	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	3. Variables and Types of Data	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	4. Data Collection and Sampling Techniques	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	5. Observational and Experimental Studies	(Lectures+ Tutorials)	Quizzes, Exams and HW

7	3	2	Presentation of a Statistical	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Data	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	4	probability	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	2	Hypothesis Testing	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	4	1. Preface	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	2. Steps in Hypothesis Testing—Traditional Method	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	4	2.1. The null hypothesis (H0)	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	4	2.2. The alternative hypothesis (H1)	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	4	2.3. The level of significance	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

Structure Infrastructure .16	
Readings required : ▪ books The module ▪ Other	Elementary Statistics A Step by Step Approach, -1 .Eighth Edition, By Allan G. Bluman Probability and Statistics For Engineers and .2 -2 Scientists, Fourth Edition, By Sheldon
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

admissions .17	
Requirements Previous	
less number from Students	70
Larger number from Students	90

Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation
International Accreditation Department

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1. Enterprise Educational	University of Anbar
2. Section University / Center	College of Engineering/Mechanics
3. name / Code The decision	Engineering Materials ME 4308
4. Programs that Enters In which	Mechanical Engineering Program
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	quarterly
7. number hours Scholarship (total)	45
8. date Preparation this the description	2021-2022
9. Goals The decision :	

1. Understand the practical concepts of engineering materials and their properties and applications.
2. Apply the knowledge of material properties and material selection foundations that are related to mechanical Engineering program.

10. Outputs Learning And methods education And learning And evaluation

1. Obtain important information of the mechanical properties of materials.
2. Classified the materials
3. Select the optimal material for each application
4. Analyze any type of failure and find the reasons of failure
5. know the developments of new materials.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to know the developments of new materials.
- ✓ The ability to Analyze any type of failure and find the reasons of failure
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

Developing the student's ability to deal with the Internet

- ✓ Developing the student's ability to deal with multiple media

15. The Module structure					
the week	**hours**	**Learning Outputs required**	**name Unit / Course or the topic**	**Education method**	**Evaluation method**
1	**3**	Knowledge And understanding	Material Properties	lecture	Exam daily
2	**3**	Knowledge	Mechanical Properties	lecture	Exam daily
3	**3**	Knowledge And understanding	Mechanical Properties	lecture	Exam daily
4	**3**	Knowledge	Temperature Effect	lecture	Exam daily
5	**3**	Knowledge And understanding	Physical Properties	lecture	Exam daily
6	**3**	Knowledge And understanding	Physical Properties	lecture	Exam daily
7	**3**	Knowledge And understanding	Engineering Materials (Ferrous Metal)	lecture	Exam daily

8	**3**	Knowledge And understanding	Engineering Materials (Ferrous Metal)	lecture	Exam daily
9	**3**	Knowledge And understanding	Engineering Materials (Nonferrous Metal)	lecture	Exam daily
10	**3**	Knowledge And understanding	Engineering Materials (Non-metallic)	lecture	Exam daily
11	**3**	Knowledge	Engineering Materials (Non-metallic)	lecture	Exam daily
12	**3**	Knowledge And understanding	Designation of the Engineering Materials	lecture	Exam daily
13	**3**	Knowledge And understanding	Selection of Materials	lecture	Exam daily

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1. J T. Black, R. A. Kohser and E. P. Degarmo, " Materials and processes in manufacturing ", 10th Edition, 2008. ME HANDBOOK | 132 MECHANICAL ENGINEERING DEPARTMENT HANDBOOK 2022-2023 2. Materials Science and Engineering an Introduction William D. Callister, Jr. 3. Foundations of Materials Science and Engineering, by William F. smith & Javad Hashemi 4. Ceramic Science for Materials Technologist by T.J Mc-Calm 5. Engineering with polymers by P.C. Powel
requirements especially	Materials Science and Engineering an Introduction William D. Callister, Jr.
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Example Lectures Guests

17. admissions	
Requirements Previous	
less number from Students	20
Larger number from Students	30

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Computer Programming ME 2310
4. Programs that Enters In which	Mechanical Engineering Program
5. shapes the audience Available	My presence inside the hall + online presence
6. the chapter / the year	The chapter Academic the second
7. number hours Scholarship (total)	45
8. date Preparation this the description	21/2/2022
9. Goals The decision :	
1. To solve problems through writing FORTRAN programs.	

2. To be able to develop FORTRAN programs from specifications and document those program.
3. To understand the useful of control structures, data types, input and output process.
4. To know how to verify that the programs are running correctly.
5. To write FORTRAN programs for engineering applications.

10. Outputs Learning And methods education And learning And evaluation

1. Write simple program modules to implement single numerical methods and
2. algorithms.
3. Calculate solutions to mechanical engineering problems using standard numerical
4. methods.
5. Test program output for accuracy using hand calculations and debugging techniques.
6. Analyze the applicability and accuracy of numerical solutions to diverse mechanical
7. engineering problems.
8. Synthesize multiple program modules into larger program packages.
9. Detail numerical results into a readable format that answers specific mechanical engineering analysis and design question
10.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.
- ✓ The ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.
- ✓ Analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems.
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to Write Programming structures, variables/data types, read /write/print statements,
- ✓ Developing the student's ability to Programs for Engineering Applications
- ✓ Developing the student's ability to IF Statements
- ✓ Developing the student's ability to work Matrices Program

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1,2	6	1- Ability to write simple program modules to implement single numerical methods and algorithms.	Programming structures, variables/data types, read /write/print statements,	Lectures and tutorials	Quiz Exam HW
3,4,5	9	2- Ability to calculate solutions to mechanical engineering problems using standard numerical methods	IF Statements. & Do Loops.	Lectures and tutorials	Quiz Exam HW
6	3	3- Test program output for accuracy using hand calculations and debugging techniques applications.	File Input and output and formatting	Lectures and tutorials	Quiz Exam HW
7	3	CLO 1&CLO2& CLO3	EXAM1		
8 , 9	6	4- The ability to analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems	Arrays and Matrices	Lectures and tutorials	Quiz Exam HW
10	3	5- Synthesize multiple program modules into larger program packages	Subroutines and Functions	Lectures and tutorials	Quiz Exam HW
11,12, 13,14	12	6- Detail numerical results into a readable format that answers specific mechanical engineering analysis and design questions	Programs for Engineering Applications	Lectures and tutorials	Quiz Exam HW
15	3	CLO 4&CLO5& CLO6	EXAM2		

1,2	6	1- Ability to write simple program modules to implement single numerical methods and algorithms.	Programming structures, variables/data types, read /write/print statements,	Lectures and tutorials	Quiz Exam HW
3,4,5	9	2- Ability to calculate solutions to mechanical engineering problems using standard numerical methods	IF Statements. & Do Loops.	Lectures and tutorials	Quiz Exam HW
6	3	3- Test program output for accuracy using hand calculations and debugging techniques applications.	File Input and output and formatting	Lectures and tutorials	Quiz Exam HW
7	3	CLO 1&CLO2& CLO3	EXAM1		
8 , 9	6	4- The ability to analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems	Arrays and Matrices	Lectures and tutorials	Quiz Exam HW
10	3	5- Synthesize multiple program modules into larger program packages	Subroutines and Functions	Lectures and tutorials	Quiz Exam HW

11,12, 13,14	12	6- Detail numerical results into a readable format that answers specific mechanical engineering analysis and design questions	Programs for Engineering Applications	Lectures and tutorials	Quiz Exam HW
15	3	CLO 4&CLO5& CLO6	EXAM2		

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1. . University of DuhramITS,"An Introduction to Programming in FORTRAN90",2007 1. J.Adams,"Fortran 90 Handbook",Mc-Graw Hill Book Company 1992. 2. Ian D.Chivers," Introduction to Programming with Fortran",Springer ,2006.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	ME 1209 Computer Science
less number from Students	20
Larger number from Students	30

Course Description Form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanical Engineering Department
3. Name / Code The decision	MEC 403/ Mechanical Vibrations
4. Programs that Enter In which	Mechanical Engineering Program
5. shapes the audience Available	Presence (practical)+ Electronic (theoretical)
6. The Course / the year	The second Academic Course
7. number hours Scholarship (total)	45 theoretical +15 solutions Issues +15 practical
8. date Preparation this description	10/3/2022

9. Goals of the decision:

The course describes the fundamental laws (e.g., Newton's laws of motion, energy method, Lagrange's method) can be applied to derive, compute and analyse the mechanical vibrations systems. These include natural frequencies, modes of vibrations, resonance phenomenon, effect of damping factor for single and multi-degree of freedom systems. The calculation of these values provides practical

solutions to avoid excessive vibrations to mechanical systems. Thus, students will be able to model mathematical relations, derivation/solution of equations of motion. The course also will reinforce the skills students relating to how to utilize experimental techniques of vibration measurement.

10. Outputs Learning and methods of Education

1. Derive the equations of motion for single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).
2. Understand the goal of damping systems in mechanical vibrating systems.
3. Model, calculate and interpret the response of vibrating of single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).
4. Analyse the vibratory behaviour of different mechanical vibration systems subjected to harmonic force or impulsive force.
5. Design model systems that minimize the transmission of vibration to mechanical or structural systems.

A. **Methods education and learning**

1. Lectures for the theory
2. Using engineering software
3. Experiences Laboratory immanence

B. Methods Evaluation

1. Exams Short
2. Exams Monthly
3. Reports Laboratory

C- Thinking Skills

1. Accreditation on Curriculum of the decision with sources and other Like books and Internet.
2. Solution Issues and duties at home includes ideas and applications.
4. Applied fundamentals of Engineering theory on Experiments Laboratory.
5. Ability on finding new methods and designs during expansion domain and think.

D- Skills the public and movable (Skills The other Related Capable recruitment and evolution Personal).

1. Ability on to set the problem and solve it.
2. Ability on using engineering software to solve mathematical equations and interpret the results in modeling systems.
3. Ability on finding better designs.
4. Ability on evaluation all designs and compare them with jealousy.

11. Module structure

week	hours	Outputs Learning required	Unit name / Course or the topic	Education method	Evolution method
1	**4**	Derive the equations of motion for single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Fundamentals of Vibration	(Lectures + tutorials + Lab)	Quiz Exam Report
2	**4**	Derive the equations of motion for single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Modeling Vibration / Harmonic motion	(Lectures + tutorials + Lab)	Quiz Exam Report
3	**4**	Derive the equations of motion for single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Free vibration of undamped SDOF systems (Newton's laws, Energy Method)	(Lectures + tutorials + Lab)	Quiz Exam Report
4	**4**	Derive the equations of motion for single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Longitudinal and torsional vibrations of bars or Shafts	(Lectures + tutorials + Lab)	Quiz Exam Report

5	**4**	Understand the goal of damping systems in mechanical vibrating systems.	Free vibration of viscously damped SDOF systems	(Lectures + tutorials + Lab)	Quiz Exam Report
6	**4**	Understand the goal of damping systems in mechanical vibrating systems.	Free vibration of damped SDOF systems with Coulomb and hysteretic damping	(Lectures + tutorials + Lab)	Quiz Exam Report
7	**4**	Model, calculate and interpret the response of vibrating of single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Harmonically forced SDOF systems (rotating imbalance, vibration isolation)	(Lectures + tutorials + Lab)	Quiz Exam Report
8	**4**	Model, calculate and interpret the response of vibrating of single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Harmonically forced SDOF systems (support motion,whirling of shafts)	(Lectures + tutorials + Lab)	Quiz Exam Report
9	**4**	Model, calculate and interpret the response of vibrating of single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Free vibration of 2 DOF systems	(Lectures + tutorials + Lab)	Quiz Exam Report
10	**4**	Model, calculate and interpret the response of vibrating of single degree of freedom (SDOF) and multi-degree of freedom systems (MDOF).	Free vibration of 2 DOF systems	(Lectures + tutorials + Lab)	Quiz Exam Report
11	**4**	Analyse the vibratory behaviour of different mechanical vibration systems subjected to harmonic force or impulsive force.	Eigenvalue problem for free vibration of 2 DOF	(Lectures + tutorials + Lab)	Quiz Exam Report
12	**4**	Analyse the vibratory behaviour of different mechanical vibration systems subjected to harmonic force or impulsive force.	Forced vibration of 2 DOF systems	(Lectures + tutorials + Lab)	Quiz Exam Report

13	**4**	Design model systems that minimize the transmission of vibration to mechanical or structural systems.	Equations of motion for MDOF systems	(Lectures + tutorials + Lab)	Quiz Exam Report
14	**4**	Design model systems that minimize the transmission of vibration to mechanical or structural systems.	Forced vibrations of MDOF systems using modal analysis	(Lectures + tutorials + Lab)	Quiz Exam Report
15	**4**		Progress Exam	(Lectures + tutorials + Lab)	Quiz Exam Report

12. Infrastructure Structure	
Readings required : ▪ The module. ▪ books ▪ Other	▪ Rao, S. S., & Yap, F. F. (1995). Mechanical vibrations (Vol. 4, pp. 75-848). New York: Addison-wesley ▪ Thomson, W. T. (2018). Theory of vibration with applications. CrC Press.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. Admissions	
Requirements Previous	MEC 308 - Theory of Machines-II MEC 102 - Engineering Mechanics II (Dynamics)
less number from Students	12
Larger number from Students	55

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar – College of Engineering
2. University Department / Center	Mechanics
3. Course Name/Code	Calculus III / ME 2201
4. Programs in which he enters	To divide Engineering Mechanical/Bachelor's degree
5. Available Attendance Forms	My presence inside the hall
6. Semester / Year	First Semester - Second Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	23/6/2021
9. Course Objectives:	
• Expand the student's potential in mathematics to help him solve • engineering problems facing him in his field of specialization	

10. Learning outcomes and teaching, learning and assessment methods

- Recognize the basic concepts of vectors and expand them
- Functions with two or more variables and their applications
- Bilateral and tripartite integrations and multiple applications

Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

- Participation during the lecture.
- Submission of activities
- Quarterly tests, activities and activities.

C- Thinking skills

- Develop the student's ability to work on performing duties and deliver them on time.
- Try to apply concepts by solving different types of exercises.

Teaching and learning methods

- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

- Active participation in the classroom is a guide to student commitment and responsibility.
- Commitment to the deadline in submitting assignments and research.
- Quarterly and final exams express commitment and achievement of knowledge and skills.
  Apps, exercises and daily assignments

- General and transferable skills (other skills related to employability and personal development).
- Develop the student's ability to dialogue, discuss, solve various problems and deal with them

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First	4	Brief Review	Brief Review	Theoretical + Discussion	General questions and discussion
Second	4	Vectors	Vectors: Dot and Cross Product, Equations of Lines and Planes	Theoretical + Discussion	General questions and discussion or exam
Third	4	Vectors	Vector Function, Velocity and Acceleration	Theoretical + Discussion	General questions and discussion
Fourth	4	Vectors	Curvature and the Unit Normal Vectors	Theoretical + Discussion	examination
Fifth	4	Vectors	Functions of several variables	Theoretical + Discussion	General questions and discussion or exam I
Sixth	4	Vectors	Determinants	Theoretical + Discussion	General questions and discussion
Seventh	4	Vectors	Differentiation	Theoretical + Discussion	General Questions
Eighth	4	Functions of two or more variables	Partial Differentiation	Theoretical + Discussion	Duties
Ninth	4	Functions of two or more variables	Partial Differentiation: Function of Two or More Variables and the Chain Rule,	Theoretical + Discussion	General Questions
Tenth	4	Functions of two or more variables	Partial Differentiation Applications	Theoretical + Discussion	Monthly exam
Eleventh	4	Functions of two or more variables	Maximum, Minimum and Saddle Points	Theoretical + Discussion	General Questions
Twelfth	4	Multiple Integral	Multiple Integral: Double and Triple Integral, Area and Volume	Theoretical + Discussion	Discussion and exam

Thirteenth	4	Multiple Integral	Double Integral in Polar Form	Theoretical + Discussion	General Questions
Fourteenth	4	Multiple Integral	Triple Integrals in Rectangular Coordinates	Theoretical + Discussion	Duties + discussion
Fifteenth	4	Multiple Integral	Surface Integrals	Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	CALCULUS Advanced Engineering Mathematics
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	***EE1202***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he made the most of the available learning opportunities. It must be linked to the description of Program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Mechanics
3. Course Name/Code	English II / ME 2102
4. Programs in which he enters	To divide Engineering Mechanical/ Bachelor's degree
5. Available Attendance Forms	My presence inside the hall
6. Semester / Year	Second Semester / First Academic Year
7. Number of Credit Hours (Total)	30
8. The preparation date of this description	23/6/2021
9- Course Objectives:	

10. Learning outcomes and teaching, learning and assessment methods

A. Raising the level of student proficiency in the English language.
B. Developing the student's ability to read and write in English.
c. The student should be able to acquire new vocabulary.
d. The student should know the extent to which he can speak English fluently.

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation during the lecture.
Submission of activities
Quarterly and final exams and activities.

C- Thinking skills
C1- Developing the student's ability to work on performing duties and delivering them on time .
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods

- Exercises and practical problems
- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

● Active participation in the classroom is a guide to student commitment and responsibility. ● Commitment to the deadline in submitting assignments and research. ● Quarterly and final exams express commitment and achievement of knowledge and skills. ● Apps, exercises and daily assignments
d. General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First	4	**What is engineering The story of engineering**	English 2	Theoretical + Discussion	General questions and discussion
Second	4	**Fields of engineering**	=	Theoretical + Discussion	General questions and discussion or exam I
Third	4	**Vocabulary practice**	=	Theoretical + Discussion	General questions and discussion
Fourth	4	**What is electricity**	=	Theoretical + Discussion	I'm examined.
Fifth	4	**Grammar review**	=	Theoretical + Discussion	General questions and discussion or exam I
Sixth	4	**Verb Tenses**	=	Theoretical + Discussion	General questions and discussion
Seventh	4	**Exercises**	=	Theoretical + Discussion	General Questions

Eighth	4	**Electrical conductors/passages**	=	Theoretical + Discussion	Group duties
Ninth	4	**Inventions**	=	Theoretical + Discussion	General Questions
Tenth	4	**Exercises/ passages**	=	Theoretical + Discussion	Monthly exam
Eleventh	4	**Relative clauses**	=	Theoretical + Discussion	General Questions
Twelfth	4	**Prepositions**	=	Theoretical + Discussion	Discussion and exam I
Thirteenth	4	**Language skills**	=	Theoretical + Discussion	General Questions
Fourteenth	4	**presentations**	=	Theoretical + Discussion	Group Duties+ discussion
Fifteenth	4	**Computers**	=	Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	▪ **Soars, J. and Soars, L., 2003. New Headway-Pre-Intermediate. Oxford University.** ▪ **Understanding and Using English Grammar- 4th Edition by Betty S. Azar, Rachel S. Koch, and Stacy A. Hagen**
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	EE1104
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

Course Description

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Mechanics
3. Course Name/Code	Computer Programming / ME2310
4. Programs in which he enters	To divide Engineering Mechanical/Bachelor's degree
5. Available Attendance Forms	My presence inside the hall
6. Semester / Year	Second Semester / Second Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	23/6/2021
9- Course Objectives :	
A. The student must be familiar with the use of programming in MATLAB. B. The student must be familiar with the design using the Matlab. C. The student learns to design digital and electronic circuits using EWB D. Design some systems and know their response	

10. Learning outcomes and teaching, learning and assessment methods

a. Ability to handle generators, motors and transformers
b. Ability to analyze and study DC machines
c. Ability to infer and solve problems related to machines
d. Know the types of converters and methods of conversion from one type to another
e. Conducting applications in the laboratory

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities during the lecture .
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation during the lecture.
Submission of activities
Quarterly tests, activities and activities.

C- Thinking skills
C1 - Developing the student's ability to work on performing duties and delivering them on time.
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods

- Exercises and sports problems
- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

- Active participation during the lecture is a guide to the student's commitment and responsibility.

- Commitment to the deadline in submitting assignments and research.
- Quarterly and final exams express commitment and achievement of knowledge and skills.
- Apps, exercises and daily assignments

D - General and transferred skills (other skills related to employability and personal development).

D1- Developing the student's ability to deal with the means of technology.

D2- Developing the student's ability to deal with the Internet.

D3- Developing the student's ability to deal with multiple means.

D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
The week	**Hours**	**Required Learning Outcomes**	**Name of the unit/course or topic**	**Method of education**	**Evaluation method**
First	3	Introduction to computer system	Matlab	Theoretical + Discussion	General questions and discussion
Second	3	Introduction to computer system		Theoretical + Discussion	General questions and discussion or exam I
Third	3	Algorithms and flowcharts		Theoretical + Discussion	General questions and discussion
Fourth	3	Introduction to visual baisic-programming language		Theoretical + Discussion	I'm examined.
Fifth	3	Introduction VB language		Theoretical + Discussion	General questions and discussion or exam I
Sixth	3	Input & output statement		Theoretical + Discussion	General questions and discussion
Seventh	3	Control statements. (F, switch)		Theoretical + Discussion	General Questions
Eighth	3	Control statements. (F, switch)		Theoretical + Discussion	Group duties
Ninth	3	Loops. (for ,while, do....while)		Theoretical + Discussion	General Questions
Tenth	3	string processing		Theoretical + Discussion	Monthly exam
Eleventh	3	string processing		Theoretical + Discussion	General Questions

Twelfth	3	Subscripted variables (one and two dimension array)		Theoretical + Discussion	Discussion and exam I
Thirteenth	3	Subscripted variables (one and two dimension array)		Theoretical + Discussion	General Questions
Fourteenth	3	Subscripted variables (one and two dimension array)		Theoretical + Discussion	Group Duties+ discussion
Fifteenth	3	Loops. (for ,while, do....while)		Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	Essential Matlab for scientists and Engineers".
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	There isn't any
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar – College of Engineering
2. University Department / Center	Mechanics
3. Course Name/Code	Calculus IV/ME 2202
4. Programs in which he enters	To divide Engineering Mechanical/Bachelor's degree
5. Available Attendance Forms	My presence inside the hall
6. Semester / Year	Second Semester - Second Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	23/6/2021
9. Course Objectives :	
• Expand the student's potential in mathematics to help him solve engineering problems facing him in his field of specialization	

10. Learning outcomes and teaching, learning and assessment methods

• Learn about the basic concepts of differential equations and ways to solve and expand them • Fourier Series Applications • Laplace Applications
Teaching and learning methods
• Sudden daily and weekly continuous tests. • Trainings and activities. • Guiding students to some sources that contain examples and exercises to benefit from them.
Evaluation methods
• Participation during the lecture. • Submission of activities • Quarterly tests, activities and activities.
C- Thinking skills
• Develop the student's ability to work on performing duties and deliver them on time. • Try to apply concepts by solving different types of exercises.
Teaching and learning methods
• Assigning the student some group activities and duties. • Allocate a percentage of the grade for daily assignments and tests.
Evaluation methods
• Active participation during the lecture is a guide to the student's commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. Apps, exercises and daily assignments

D - General and transferred skills (other skills related to employability and personal development).

- Develop the student's ability to dialogue, discuss, solve various problems and deal with them

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First	4	First Order Differential equations	First Order: Variable Separable and Homogenous Differential equations	Theoretical + Discussion	General questions and discussion
Second	4	First Order Differential equations	Linear, Bernoulli and Exact Differential Equations	Theoretical + Discussion	General questions and discussion or exam
Third	4	First Order Differential equations	Second Order: Homogeneous Differential equations	Theoretical + Discussion	General questions and discussion
Fourth	4	Second Order Differential equations	Second Order: Non Homogeneous Differential equations	Theoretical + Discussion	examination
Fifth	4	Higher Order Differential equations	Higher Order Differential equations	Theoretical + Discussion	General questions and discussion or exam I
Sixth	4	Laplace Transform	Laplace Transform: Definition, Properties	Theoretical + Discussion	General questions and discussion
Seventh	4	Laplace Transform	Inverse Laplace Transform: Properties and Partial Fractions	Theoretical + Discussion	General Questions
Eighth	4	Laplace Transform	Solution of Differential Equations Using Laplace Transform	Theoretical + Discussion	Duties
Ninth	4	Laplace Transform	Applications: Solution of Electric Circuits Using Laplace Transform	Theoretical + Discussion	General Questions
Tenth	4	Laplace Transform	Applications: Solution of Electric Circuits Using Laplace Transform	Theoretical + Discussion	Monthly exam
Eleventh	4	Fourier Series	Fourier Series: Periodic and non Periodic Functions, Euler Formulas	Theoretical + Discussion	General Questions
Twelfth	4	Fourier Series	Even and Odd functions, Half Range , Expansion(Fourier Sine and Fourier Cosine)	Theoretical + Discussion	Discussion and exam

Thirteenth	4	Fourier Series	Complex Fourier Series (Exponential)	Theoretical + Discussion	General Questions
Fourteenth	4	Fourier Series	Applications of Fourier Series in Electric Circuits	Theoretical + Discussion	Duties + discussion
Fifteenth	4	Fourier Series	Partial Differentiation: Function of Two or More Variables	Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	CALCULUS Advanced Engineering Mathematics
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	***EE2208***
Minimum number of students	20
The largest number of students	100

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

Enterprise Educational .1	University of Anbar
Section University / Center .2	Mechanics
name / Code The decision .3	Engineering Statistics / ME3201
Programs that Enters In which .4	To divide Engineering Mechanical/Bachelor's degree
shapes the audience Available .5	My presence inside the hall
the chapter / the year .6	The chapter Academic the first
number hours Scholarship (total) .7	45
date Preparation this the description .8	30/ 10/ 2021
Goals The decision : .9	
1.Understand the differentiate between a random process and a deterministic process.	

2. Solve probability problems and its applications by to determine the sampled data; analyze it graphically.
3. Understand the relationship between both discrete and continuous random variables.
4. Understand the theoretical of the normal distribution with many populations in practice.

Outputs Learning And methods education And learning And evaluation .10
• use a number of methods and techniques for collecting and presentation the sets of data. • calculation and demonstration the center tendency and variation of data. • compute the probabilities in a simple cases and using the rules of probability • in computing; • .give an account of the concept random variable and be able to use some • common probability distributions; • .understand the meaning of the central limit theorem; • use point and interval estimates for some typical statistical problems; • .apply elementary regression for fitting measured data
Methods education And learning .11
Lectures the theory ✔ Exercises and activities in hall the lesson. ✔ Reports the operation. ✔ Guidance students to some sources that maybe benefit of which. ✔
Methods Evaluation .12
Quizzes ✔ Monthly and final exams ✔ Homework ✔ Laboratory reports ✔
skills Thinking .13
students should be able to determine when each of the various topics ✔ we have covered is appropriate to use, and to apply them to practical engineering ✔ situations or problems. This course will cover techniques on data ✔

collection and presentation, descriptive statistics, basic elements of probability theory, sampling techniques and theory, statistical estimation, hypothesis testing and regression analysis.	✔ ✔ ✔
Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal). .14	
Developing the student's ability to dialogue and discuss. Developing the student's ability to solve engineering problems by solving different types of engineering exercises. Developing the student's ability to deal with multiple media. Developing the student's ability to dialogue and discuss.	✔ ✔ ✔ ✔

The Module structure .15

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Fundamentals (Introduction to Statistics)	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	1. Introduction	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	2. Descriptive and Inferential Statistics	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	3. Variables and Types of Data	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	4. Data Collection and Sampling Techniques	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	5. Observational and Experimental Studies	(Lectures+ Tutorials)	Quizzes, Exams and HW

7	3	2	Presentation of a Statistical	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Data	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	4	probability	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	2	Hypothesis Testing	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	4	1. Preface	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	2. Steps in Hypothesis Testing—Traditional Method	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	4	2.1. The null hypothesis (H0)	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	4	2.2. The alternative hypothesis (H1)	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	4	2.3. The level of significance	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

Structure Infrastructure .16	
Readings required : ▪ books The module ▪ Other	Elementary Statistics A Step by Step Approach, -1 .Eighth Edition, By Allan G. Bluman Probability and Statistics For Engineers and .2 -2 Scientists, Fourth Edition, By Sheldon
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

admissions .17	
Requirements Previous	
less number from Students	70
Larger number from Students	90

Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation
International Accreditation Department

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	College of Engineering/Mechanics
3. name / Code The decision	Engineering Materials ME 4308
4. Programs that Enters In which	Mechanical Engineering Program
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	quarterly
7. number hours Scholarship (total)	45
8. date Preparation this the description	2021-2022
9. Goals The decision :	

1. Understand the practical concepts of engineering materials and their properties and applications.
2. Apply the knowledge of material properties and material selection foundations that are related to mechanical Engineering program.

10. Outputs Learning And methods education And learning And evaluation

1. Obtain important information of the mechanical properties of materials.
2. Classified the materials
3. Select the optimal material for each application
4. Analyze any type of failure and find the reasons of failure
5. know the developments of new materials.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to know the developments of new materials.
- ✓ The ability to Analyze any type of failure and find the reasons of failure
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

Developing the student's ability to deal with the Internet

- ✓ Developing the student's ability to deal with multiple media

15. The Module structure					
the week	**hours**	**Learning Outputs required**	**name Unit / Course or the topic**	**Education method**	**Evaluation method**
1	**3**	Knowledge And understanding	Material Properties	lecture	Exam daily
2	**3**	Knowledge	Mechanical Properties	lecture	Exam daily
3	**3**	Knowledge And understanding	Mechanical Properties	lecture	Exam daily
4	**3**	Knowledge	Temperature Effect	lecture	Exam daily
5	**3**	Knowledge And understanding	Physical Properties	lecture	Exam daily
6	**3**	Knowledge And understanding	Physical Properties	lecture	Exam daily
7	**3**	Knowledge And understanding	Engineering Materials (Ferrous Metal)	lecture	Exam daily

8	**3**	Knowledge And understanding	Engineering Materials (Ferrous Metal)	lecture	Exam daily
9	**3**	Knowledge And understanding	Engineering Materials (Nonferrous Metal)	lecture	Exam daily
10	**3**	Knowledge And understanding	Engineering Materials (Non-metallic)	lecture	Exam daily
11	**3**	Knowledge	Engineering Materials (Non-metallic)	lecture	Exam daily
12	**3**	Knowledge And understanding	Designation of the Engineering Materials	lecture	Exam daily
13	**3**	Knowledge And understanding	Selection of Materials	lecture	Exam daily

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1. J T. Black, R. A. Kohser and E. P. Degarmo, " Materials and processes in manufacturing ", 10th Edition, 2008. ME HANDBOOK | 132 MECHANICAL ENGINEERING DEPARTMENT HANDBOOK 2022-2023 2. Materials Science and Engineering an Introduction William D. Callister, Jr. 3. Foundations of Materials Science and Engineering, by William F. smith & Javad Hashemi 4. Ceramic Science for Materials Technologist by T.J Mc-Calm 5. Engineering with polymers by P.C. Powel
requirements especially	Materials Science and Engineering an Introduction William D. Callister, Jr.
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Example Lectures Guests

17. admissions	
Requirements Previous	
less number from Students	20
Larger number from Students	30

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Strength of materials I - **ME 2302**
4. Programs that Enter In which	program of Mechanical Engineering
5. shapes the audience Available	Class attendance
6. the chapter / the year	First semester
7. number hours Scholarship (total)	45
8. date Preparation this the description	3/21/2022

9. The decision Goals:

1. Calculate stresses on a member subjected to axial loads

2. Calculate stresses of a member subjected to shear force

3. Explain and compute the mechanical properties of materials.

4. Calculate angular rotation of a shaft subjected to torsional moment.

5. Compute forces, stresses, and bending moments in loaded beams.

10. Outputs Learning And methods Education And learning And evaluation

. Understand the effect of direct and shear force on mechanical parts and the difference between these forces.

2. Drawing the shear force and bending moment diagram and solve the problems that contain bending stress and shear stress.

3. Recognize the difference between direct shear and torsion. Also solving torsion problems in different mechanical parts.

A. Methods education And learning Electronic lectures:

1.The theory Lectures

2. Lab

B. Methods Evaluation

Quiz, Monthly Exam, Homework, Labs reports, Attendance, final exam.

C- Thinking Skills

1- Development capacity requested on performance Duties And delivered in the time Specified.

2-Try application Concepts from during Solution Species Different from Exercises.

3- Development requester on Possibility Discussion.

Methods education And learning

11. The module structure

week	hours	Learning Outputs required	Unit name / Course or the topic	Education method	Evaluation method
1	4	1	Introduction to Strengths of Materials/Statics Review	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
2	4	1	Introduction to Strengths of Materials/Statics Review	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
3	4	1	Simple stresses and strains	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
4	4	1	Simple stresses and strains	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
5	4	1.3	Bending moments and shearing forces	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
6	4	1.3	Bending moments and shearing forces	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
7	4	1.3	Bending moments and shearing forces	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
8	4	1.3	Bending stresses in beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports

9	4	1.3	Bending stresses in beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
10	4	1,3	Shear stress in beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
11	4	1.3	Shear stress in beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
12	4	1,3	Torsion	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
13	4	1.3	Torsion	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
14	4	1.3	Principal stresses and strains	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
15	4	1.3	Principal stresses and strains	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
16		1.3	Final Exam	Multiple questions	Exam

12. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	**Sources are placed** 1. Mechanics of Materials I,II by E. J. Hearn **2.** Strength of materials by Beer
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. admissions	
Requirements Previous	ME 1301 Static
less number from Students	25
Larger number from Students	50

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Fluid Mechanics-I/ ME2301
4. Programs that Enters In which	To divide Engineering Mechanical/Bachelor's degree
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	The chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	30/ 10/ 2021
9. Goals The decision :	
1. To understand the properties of the fluid.	

2. To understand hydrostatic forces on submerged plane surfaces.
3. To understand mass, Bernoulli, momentum analysis of flow systems and energy equations.
4. To understand the principle of dimensional homogeneity and dimensional analysis and modeling.
5. To understand the laminar flow regime in circular and non-circular pipes.

10. Outputs Learning And methods education And learning And evaluation

1. Characterize, define and explain fundamental concepts of fluid mechanics including: continuum, density, specific weight, viscosity, surface tension and capillary effect.
2. Derive, analyze and discuss the basic equation of static fluid to determine hydrostatic forces on submerged planar and curved surfaces, manometers and fluids in rigid-body motion.
3. Analyze and comprehend the mass, Bernoulli, momentum analysis of flow systems and energy equations.
4. Review the concepts of dimensions and units, analyze and discuss the dimensional analysis and modeling.
5. Perform and understand the viscous laminar flow regime through circular and non-circular pipes.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to comprehend the approved material, which includes several different topics, such as identifying the types of flow and the dimensional numbers associated with each type, as well as the coefficient of friction.
- ✓ The ability to understand and understand flow applications in

pipeline networks and connection methods.

- ✓ Understand how to calculate flow rate through the use of flow velocity meters.
- ✓ Understand how to choose the pump type to suit the type of application.
- ✓ Logical analysis to find solutions to engineering problems in a broader and broader way than being limited to a specific field of study or work.
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to dialogue and discuss.
- ✓ Developing the student's ability to solve engineering problems by solving different types of engineering exercises.
- ✓ Developing the student's ability to deal with multiple media.
- ✓ Developing the student's ability to dialogue and discuss.

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Introductory Concepts of Fluid Mechanics	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	Thermodynamic Properties of Fluid	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	Surface Tension and Capillary Effect	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	Pressure Distribution in a Fluid	(Lectures+ Tutorials)	Quizzes, Exams and HW

5	3	2	Pressure Measurements	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	Hydrostatic Forces on Submerged Plane Surfaces	(Lectures+ Tutorials)	Quizzes, Exams and HW
7	3	2	Hydrostatic forces on submerged curved surfaces	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Fluids in rigid-body motion and Rotation in a Cylindrical Container	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	3	Fluid Flow Concepts (Definitions and Concepts)	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	3	System and control volume of Fluid Flow	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	3	The Bernoulli equation and Mechanical energy and efficiency	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	Dimensional analysis and similarity	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	4	Physical Modeling (Geometric, Kinematic and Dynamic Similarities)	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	5	Laminar Flow in pipes (Definitions and Concepts)	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	5	Laminar Flow in pipes (friction factor coefficient)	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1- Frank M. White, "Fluid Mechanics", WCB McGraw-Hill series in mechanical engineering, Fourth Edition, 2012. 2- Yunus A. Çengel and John M. Cimbala, "Fluid Mechanics: Fundamentals and Applications", McGraw-Hill series in mechanical engineering, 1st Edition, 2006. 3- Bruce R. Munson, Donald F. Young, Theodore H. Okiishi, and Wade W.Huebsch, "Fundamentals of Fluid Mechanics", John Wiley & Sons, 6th Edition, 2009. 4- Victor L. Streeter,E. Benjamin Wylie, Keith W. Bedford, "Fluid Mechanics", McGraw-Hill, 9th Edition, 2002.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	
less number from Students	70
Larger number from Students	90

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Strength of materials 2 - **ME 2306**
4. Programs that Enter In which	program of Mechanical Engineering
5. shapes the audience Available	Class attendance
6. the chapter / the year	Second semester
7. number hours Scholarship (total)	45
8. date Preparation this the description	3/21/2022

9. The decision Goals:

1. Calculate stresses in thin and thick cylinders.

2. Calculate the deflection of determinate and indeterminate beams.

3. Explain and compute the combined stresses in different loading types.

4. Explain the difference between brittle and ductile material in term of failure mode.

5. Compute the factor of safety of different loading types

10. Outputs Learning And methods Education And learning And evaluation

. Understand the difference of stresses in thin and thick cylinders.

2. Recognize the difference between deflection of determinate and indeterminate beams..

3. Recognize the difference between the brittle and ductile material in term of failure mode.

4. Draw Mohr's stress circle and computing combine stress in different type of loading.

A. Methods education And learning Electronic lectures:

1.The theory Lectures

2. Lab

B. Methods Evaluation

Quiz, Monthly Exam, Homework, Labs reports, Attendance, final exam.

C- Thinking Skills

1- Development capacity requested on performance Duties And delivered in the time Specified.

2-Try application Concepts from during Solution Species Different from Exercises.

3- Development requester on Possibility Discussion.

Methods education And learning

11. The module structure

week	hours	Learning Outputs required	Unit name / Course or the topic	Education method	Evaluation method
1	4	1	Deflection of determinate beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
2	4	1	Deflection of determinate beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
3	4	1	Deflection of indeterminate beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
4	4	1	Deflection of indeterminate beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
5	4	1.3	Deflection of indeterminate beams	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
6	4	1.3	Thin cylinders	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
7	4	1.3	Thin cylinders	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
8	4	1.3	Thick cylinders	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports

9	4	1.3	Thick cylinders	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
10	4	1,3	Thick cylinders	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
11	4	1.3	combined stress	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
12	4	1,3	combined stress	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
13	4	1.3	combined stress	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
14	4	1.3	Theories of failure	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
15	4	1.3	Theories of failure	(Lectures + tutorials + Lab)	Quizzes Exams H.W. Reports
16		1.3	Final Exam	Multiple questions	Exam

12. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	**Sources are placed** 1. Mechanics of Materials I,II by E. J. Hearn **2.** Strength of materials by Beer
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. admissions	
Requirements Previous	ME 2302 Strength of materials I
less number from Students	25
Larger number from Students	50

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Manufacturing Processes/ ME3305
4. Programs that Enters In which	To divide Engineering Mechanical/Bachelor's degree
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	The chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	30/ 10/ 2023
9. Goals The decision :	
1. Students should understand of the principles of the major	

manufacturing processes.

2. Students should be able to recognize the standard processes used to produce products
3. Students should be able to select the optimal process to produce a product.

10. Outputs Learning And methods education And learning And evaluation

1. To gain information about different bulk deformation processes (forging, rolling, extrusion, drawing)
2. To gain knowledge about the nonconventional machining processes.
3. An ability to understand the theory of metal machining.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework

13. skills Thinking

- ✓ The ability to comprehend the approved material, which includes several different topics such as identifying deformities Processes (rolling, forging, extrusion, wire and rod drawing, sheet metal deformation).
- ✓ The ability to understand the basics, units of operations and influential forces.
- ✓ Understand what happens in the raw material and the stresses involved.
- ✓ Understand the workforce and external activities.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to dialogue and discuss.
- ✓ Developing the student's ability to solve engineering problems by solving different types of engineering exercises.

- ✓ Developing the student's ability to deal with multiple media.
- ✓ Developing the student's ability to dialogue and discuss.

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1, 3	Tensile properties	(Lectures)	Quizzes, Exams and HW
2	3	1, 3	Compression properties	(Lectures)	Quizzes, Exams and HW
3	3	1, 3	Shear properties	(Lectures)	Quizzes, Exams and HW
4	3	3	Hardness	(Lectures)	Quizzes, Exams and HW
5	3	2,3	Effect of Temperature on Properties	(Lectures)	Quizzes, Exams and HW
6	3	2	Fluid Properties	(Lectures)	Quizzes, Exams and HW
7	3	1	Bulk deformation	(Lectures)	Quizzes, Exams and HW
8	3	1	Rolling	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	1, 3	Rolling	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	1	Forging	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	1, 3	Forging	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	1	Extrusion	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	1, 3	Extrusion	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	1	WIRE AND BAR DRAWING	(Lectures+ Tutorials)	Quizzes, Exams and HW

15	3	1	WIRE AND BAR DRAWING	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1- Fundamentals of Modern Manufacturing" Fourth Edition by Mikell P. Groover 2- Manufacturing Engineering and Technology by Kalpakjian 3- Materials and Processes in Manufacturing by E.P Degarmo
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	
less number from Students	55
Larger number from Students	70

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to adescriptionthe program.

1. Enterprise Educational	University of Anbar
2. Section University/ Center	Mechanics
3. name/ Code The decision	Gas dynamics /ME 3309
4. ProgramsthatEnterIn which	Program Engineering Mechanical
5. Shapes the audience Available	Class
6. the chapter/ the year	the chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	3/21/2022
9. The Course Objectives:	
1. Understand the compressible flow fundamentals.	

2. Solve isentropic flow in variable area ducts.
3. Understand various shock wave situations and the use of gas tables.
4. Study the compressible flow with friction.
5. Study the compressible flow with heat transfer.

10. Learning outcomes and methods of Education and learning and evaluation

NGO1, NGO2

Methods education and learning electronic lectures

.
The theoryLectures

MethodsEvaluation
Quiz, Exam, Homework

Exams the short one. Monthly exams and finality. Home works

C- Thinking Skills
1- Develop the student's ability to perform assignments and deliver them on time
2-Attempt to apply concepts by solving different types of exercises
3-Developing the student on discussion and possibility.

Methods education and learning

MethodsEvaluation

Quiz, Exam, Homework

D-Skillsthe publicAnd movable(SkillsThe otherRelatedCapablerecruitmentAnd evolutionPersonal).

11. The module structure

week	hours	Required Learning Outcomes	Unit name/ Course or the topic	Education method	Evaluation method
1	3	Ability to solve the properties of compressible fluid flow, one Dimensional isentropic flow.	**Compressible fluid flow**	Lectures and tutorials	Quiz Exam HW
2,3,4	9	Ability to solve the properties of compressible fluid flow, one Dimensional isentropic flow.	**One Dimensional Isentropic flow**	Lectures and tutorials	Quiz Exam HW
5,6	6	Ability to solve and analysis of Normal and Oblique shock waves.	**Normal shock Waves**	Lectures and tutorials	Quiz Exam HW
7	3	CLO 1&CLO2	**EXAM**		

8,9	6	Ability to solve and analysis of Normal and Oblique shock waves.	**Oblique shock Waves**	Lectures and tutorials	Quiz Exam HW
10,11,12	9	The ability to determine the properties of the flow in constant area duct with friction (Fanno flow) and its applications.	**Flow in constant area duct with friction (Fanno flow)**	Lectures and tutorials	Quiz Exam HW
13,14,15	9	The ability to determine the properties of the flow in constant area duct with heat transfer (Rayleigh flow) and its applications	**Flow in constant area duct with heat transfer (Rayleigh flow)**	Lectures and tutorials	Quiz Exam HW

12. Structure Infrastructure	
Readingsrequired: ▪ booksThe module ▪ Other	**Sources are placed** 1. James E.A. John , Theo G. Keith ," Gas Dynamics, 3rd Edition,John-Wiely,2006 2. The Dynamics and Thermodynamics of Compressible Fluid Flow (Vol.1), by A.H. Shapiro, Ronald, 1953. 3. Power Plant Technology, by M.M. El-Wakil. 4. Steam Turbines Theory and Practice, by W.J. Keartin.
requirementsespecially	Nothing
ServicesSocial(IncludeonwayExample LecturesGuestsAnd trainingProfessionalAnd studiesField)	Nothing

13. admissions	
RequirementsPrevious	ME 2301Fluid Mechanics I ME 2303Thermodynamics I
Less number for Students	10
Large number for Students	60

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Engineering Numerical Methods/ ME 3202
4. Programs that Enters In which	To divide Engineering Mechanical/Bachelor's degree
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	The chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	30/ 10/ 2021
9. Goals The decision :	
By the end of successful completion of this course, the student will be able to:	

1. To gain experience in error analysis.
2. Understanding the different numerical methods to solve systems of linear and nonlinear equations.
3. Understanding the different numerical methods for differentiation, integration, and solving a set of ordinary differential equations.
4. Understanding how numerical methods can be implemented in MATLAB software.

10. Outputs Learning And methods education And learning And evaluation

To gain experience in error analysis.
.2 Understanding the different numerical methods to solve systems of linear and nonlinear equations.
.3 Understanding the different numerical methods for differentiation, integration, and solving a set of ordinary differential equations.
4. Understanding how numerical methods can be implemented in MATLAB software

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ Controlling the approved curriculum first and then dealing with other sources.
- ✓ The ability to comprehend the approved material that includes several different topics
- ✓ The ability to solve differential equations using numerical methods
- ✓ Understand how to create MATLAB Code to program numerical methods and solve them using a computer

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ 1- Developing the student's ability to dialogue and discuss
- ✓ 2- Developing the student's ability to solve engineering problems by solving different types of engineering exercises
- ✓ 3- The ability to distinguish between the different energies

generated in various practical applications, while analyzing and deducing the most efficient methods of production.

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Error Analysis	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	Error Analysis	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	Roots of equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	Roots of equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	Roots of equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	Solving system of linear equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
7	3	2	Solving system of linear equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Integration and differentiation	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	3	Integration and differentiation	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	3	Integration and differentiation	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	3	Integration and differentiation	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	Ordinary differential equations	(Lectures+ Tutorials)	Quizzes, Exams and HW

13	3	4	Ordinary differential equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	5	Ordinary differential equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	5	Ordinary differential equations	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	▪ Numerical Methods for Engineers, S. C. Chapra and R. P Canale, McGraw-Hill, 6th edition 2010. ▪ Hoffman, J. D., & Frankel, S. (2018). Numerical methods for engineers and scientists. CRC press.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	ME2202 Calculus IV
less number from Students	25
Larger number from Students	45

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	ME2305/ Fluid Mechanics-II
4. Programs that Enters In which	to divide Engineering Mechanical/Bachelor's degree
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	The chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	2/30/2022
9. Goals The decision :	
1. Perform and understand the viscous laminar and turbulent flow	

through pipes and ducts.

2. To understand major (friction) and minor losses of flow in piping system.
3. Match pump and turbine characteristics and system characteristics to determine the duty point.
4. To understand flow rate and velocity measurements.
5. Select the type of pump or turbine on the basis of specific speed.

10. Outputs Learning And methods education And learning And evaluation

1. Perform and understand the viscous turbulent flow through pipes and ducts.
2. Employ Bernoulli's equation for real flow and deduce expressions for orifice meter and Venturi meter, and Pitot tube (flow rate and velocity measurements).
3. Characterize and analyze the pipe losses due to friction and minor losses in pipe systems as well as multiple-pipe systems.
4. Evaluate drag and lift force for a given set of dimension and variables.
5. Introduce and classify the centrifugal pump and pump performance curve.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to comprehend the approved material, which includes several different topics, such as identifying the types of flow and the dimensional numbers associated with each type, as well as the coefficient of friction.
- ✓ The ability to understand and understand flow applications in pipeline networks and connection methods.
- ✓ Understand how to calculate flow rate through the use of flow

velocity meters.
- ✓ Understand how to choose the pump type to suit the type of application.
- ✓ Logical analysis to find solutions to engineering problems in a broader and broader way than being limited to a specific field of study or work.
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to dialogue and discuss.
- ✓ Developing the student's ability to solve engineering problems by solving different types of engineering exercises.
- ✓ Developing the student's ability to deal with multiple media.
- ✓ Developing the student's ability to dialogue and discuss.

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	The concepts of dimensional analysis and similarity	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	Theorems of dimensional analysis and similarity	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	Physical Modeling (Geometric, Kinematic and Dynamic Similarities)	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	Laminar flow in pipes	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	Turbulent flow in pipes	(Lectures+ Tutorials)	Quizzes, Exams and HW

6	3	2	The Moody chart	(Lectures+ Tutorials)	Quizzes, Exams and HW
7	3	2	Types of fluid flow problems	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	3	Piping Networks with Pumps and Turbines	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	3	The efficiency of the pump–motor combination	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	3	Flow rate and velocity measurements	(Lectures+ Tutorials)	Quizzes, Exams and HW
11	3	3	Obstruction flow meters: Orifice, Venturi, and Nozzle meters	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	Flow over bodies: drag and lift	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	4	Drag and lift coefficients of common geometries	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	5	Turbomachinery-Pumps	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	5	Pump Performance Curves and Matching a Pump to a Piping System	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final exam		Exam

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1- Frank M. White, "Fluid Mechanics", WCB McGraw-Hill series in mechanical engineering, Fourth Edition, 2012. 2- Yunus A. Çengel and John M. Cimbala, "Fluid Mechanics: Fundamentals and Applications", McGraw-Hill series in mechanical engineering, 1st Edition, 2006. 3- Bruce R. Munson, Donald F. Young, Theodore H. Okiishi, and Wade W.Huebsch, "Fundamentals of Fluid Mechanics", John Wiley & Sons, 6th Edition, 2009. 4- Victor L. Streeter,E. Benjamin Wylie, Keith W. Bedford, "Fluid Mechanics", McGraw-Hill, 9th Edition, 2002.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	
less number from Students	70
Larger number from Students	90

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

Enterprise Educational .1	University of Anbar
Section University / .2 Center	Mechanics
name / Code The decision .3	Principles of Manufacturing Process/ ME1301
Programs that Enters In .4 which	To divide Engineering Mechanical/Bachelor's degree
shapes the audience .5 Available	My presence inside the hall
the chapter / the year .6	The chapter Academic the first
number hours .7 Scholarship (total)	45
date Preparation this the .8 description	30/ 10/ 2021
Goals The decision : .9	
The goals of this course are to enable students to:	

1. Students should understand of the principles of the major manufacturing processes.
2. Students should be able to recognize the standard processes used to produce products
3. Students should be able to select the optimal process to produce a product.

Outputs Learning And methods education And learning .10
• 1. To understand the principle of manufacturing engineering. • 2. To obtain important information about the iron ores and how can obtain the different types of iron and steel. • 3. To classify materials and their improvement properties. • 4. To know the different types of machining processes
Methods education And learning .11
Lectures the theory ✔ Exercises and activities in hall the lesson. ✔ Reports the operation. ✔ Guidance students to some sources that maybe benefit of which. ✔
Methods Evaluation .12
Quizzes ✔ Monthly and final exams ✔ Homework ✔ Laboratory reports ✔
skills Thinking .13
students should be able to determine when each of the various topics ✔ we have covered is appropriate to use, and to apply them to practical engineering situations or problems. This course will cover techniques ✔ manufacturing and the production of metallic materials ferrous and nonferrous), manufacturing operations, basic -) ✔ plumbing, composition, hot, cold forming, manufacturing processes Secondary - welding, arrived ✔ ,metals , powder technology operating Absolutely. ✔ ✔

Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal). .14	
Developing the student's ability to dialogue and discuss.	✔
Developing the student's ability to solve engineering problems by solving different types of engineering exercises.	✔
Developing the student's ability to deal with multiple media.	✔
Developing the student's ability to dialogue and discuss.	✔

The Module structure .15

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Engineering materials	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	introduction to entrepreneurship,	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	Manufacturing processes: casting, welding, forming, working ,joining processes.	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	Hand work and hand tools,	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	Concept of machining processes, turning, drilling milling, and grinding.	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	Metrological concepts.	(Lectures+ Tutorials)	Quizzes, Exams and HW
7	3	2	Industrial safety.	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Engineering materials	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	5	introduction to entrepreneurship,	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	2	Manufacturing processes: casting, welding, forming, working ,joining	(Lectures+ Tutorials)	Quizzes, Exams and HW

			processes.		
11	3	5	Hand work and hand tools,	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	6	Concept of machining processes, turning, drilling milling, and grinding.	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	6	Turning process	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	6	Milling process	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	5	Engineering materials	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

Structure Infrastructure .16	
Readings required : books The module ▪ Other ▪	1- Rajender Singh third Edition 2006 Introduction to manufacturing process and 2- Workshop Technology 3- .2Fundamentals of Modern Manufacturing by Groover 4- .3Manufacturing Engineering and Technology by Kalpakjian 5- .4Materials and Processes in Manufacturing by E.P Degarmo 6- .5Process and Materials of manufacture by F.A Lindberg.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

admissions .17	
Requirements Previous	
less number from Students	70
Larger number from Students	90

Course Description Form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanical Engineering Department
3. Name / Code The decision	MEC 408/ Control Systems
4. Programs that Enter In which	Mechanical Engineering Program
5. shapes the audience Available	Presence (practical)+ Electronic (theoretical)
6. The Course / the year	The second Academic Course
7. number hours Scholarship (total)	45 theoretical +15 solutions Issues +15 practical
8. date Preparation this description	10/3/2022

9. Goals of the decision:

Engineering control is the study of the analysis and regulation of the output behaviors of dynamical systems subject to input signals. It involves the design of engineering products or systems where a requirement is to accurately control some quantity. It is essential for students pursuing degrees in electrical, mechanical, aerospace, biomedical, or chemical engineering. Control systems are found in a broad range of applications within these disciplines, from aircraft and spacecraft to robots and process control systems.

10. Outputs Learning and methods of Education

1. Identify open and closed loop control system and formulate mathematical model of physical systems.
2. Compute the characteristics of trainset responses and stability of various control systems and use these states to design a desired control system
3. Use Evans root locus and Frequency response methods in control design for real world systems
4. Learn the measurement systems, errors of measurement, as well as explain working principles of sensors and transducers.

A. **Methods education and learning**

1. Lectures for the theory
2. Using engineering software
3. Experiences Laboratory immanence

B. Methods Evaluation

1. Exams Short
2. Exams Monthly
3. Reports Laboratory

C- Thinking Skills

1. Accreditation on Curriculum of the decision with sources and other Like books and Internet.
2. Solution Issues and duties at home includes ideas and applications.
4. Applied fundamentals of Engineering theory on Experiments Laboratory.
5. Ability on finding new methods and designs during expansion domain and think.

D- Skills the public and movable (Skills The other Related Capable recruitment and evolution Personal).

1. Ability on to set the problem and solve it.
2. Ability on using engineering software to solve mathematical equations and interpret the results in modeling systems.
3. Ability on finding better designs.
4. Ability on evaluation all designs and compare them with jealousy.

11. Module structure

week	hours	Outputs Learning required	Unit name / Course or the topic	Education method	Evolution method
1	**4**	Identify open and closed loop control system and formulate mathematical model of physical systems.	Introduction to automatic control	(Lectures + tutorials + Lab)	Quiz Exam Report
2	**4**	Identify open and closed loop control system and formulate mathematical model of physical systems.	Representation of control components	(Lectures + tutorials + Lab)	Quiz Exam Report
3	**4**	Compute the characteristics of trainset responses and stability of various control systems and use these states to design a desired control system	Representation of control systems	(Lectures + tutorials + Lab)	Quiz Exam Report
4	**4**	Compute the characteristics of trainset responses and stability of various control systems and use these states to design a desired control system	Mass, spring damper system	(Lectures + tutorials + Lab)	Quiz Exam Report
5	**4**	Compute the characteristics of trainset responses and stability of various control systems and use these states to design a desired control system	Hydraulic system	(Lectures + tutorials + Lab)	Quiz Exam Report
6	**4**	Compute the characteristics of trainset responses and stability of various control systems and use these states to design a desired control	Pneumatic system	(Lectures + tutorials + Lab)	Quiz Exam Report

		system			
7	**4**	Use Evans root locus and Frequency response methods in control design for real world systems	Steady-state operation	(Lectures + tutorials + Lab)	Quiz Exam Report
8	**4**	Use Evans root locus and Frequency response methods in control design for real world systems	Laplace transformer	(Lectures + tutorials + Lab)	Quiz Exam Report
9	**4**	Use Evans root locus and Frequency response methods in control design for real world systems	The characteristic function	(Lectures + tutorials + Lab)	Quiz Exam Report
10	**4**	Learn the measurement systems, errors of measurement, as well as explain working principles of sensors and transducers.	Transient and steady-state responses	(Lectures + tutorials + Lab)	Quiz Exam Report
11	**4**	Learn the measurement systems, errors of measurement, as well as explain working principles of sensors and transducers.	Steady-state operation	(Lectures + tutorials + Lab)	Quiz Exam Report
12	**4**	Learn the measurement systems, errors of measurement, as well as explain working principles of sensors and transducers.	Laplace transformer	(Lectures + tutorials + Lab)	Quiz Exam Report
13	**4**	To solve various practical applications	Transient and steady-state responses	(Lectures + tutorials + Lab)	Quiz Exam Report
14	**4**	To solve various practical applications	Steady-state errors in control systems	(Lectures + tutorials + Lab)	Quiz Exam Report
15	**4**		Stability of control systems	(Lectures + tutorials + Lab)	Quiz Exam Report

12. Infrastructure Structure

Readings required : ▪ The module. ▪ books ▪ Other	▪ Automatic Control Engineering, First Edition 1961, by Francis H. Raven, McGraw Hill . ▪ Modern Control Systems, Twelfth Edition 2011, by Richard C. Dorf and Robert H. Bishop, Prentice Hall.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. Admissions	
Requirements Previous	MEC 308 - Theory of Machines-II MEC 403 - Mechanical Vibrations
less number from Students	12
Larger number from Students	55

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Computer Programming ME 2310
4. Programs that Enters In which	Mechanical Engineering Program
5. shapes the audience Available	My presence inside the hall + online presence
6. the chapter / the year	The chapter Academic the second
7. number hours Scholarship (total)	45
8. date Preparation this the description	21/2/2022
9. Goals The decision :	
1. To solve problems through writing FORTRAN programs.	

2. To be able to develop FORTRAN programs from specifications and document those program.
3. To understand the useful of control structures, data types, input and output process.
4. To know how to verify that the programs are running correctly.
5. To write FORTRAN programs for engineering applications.

10. Outputs Learning And methods education And learning And evaluation

1. Write simple program modules to implement single numerical methods and
2. algorithms.
3. Calculate solutions to mechanical engineering problems using standard numerical
4. methods.
5. Test program output for accuracy using hand calculations and debugging techniques.
6. Analyze the applicability and accuracy of numerical solutions to diverse mechanical
7. engineering problems.
8. Synthesize multiple program modules into larger program packages.
9. Detail numerical results into a readable format that answers specific mechanical engineering analysis and design question
10.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ The ability to distinguish, identify, define, formulate, and solve engineering problems by applying principles of engineering, science and mathematics.
- ✓ The ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble and apply it properly.
- ✓ Analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems.
- ✓ Controlling the approved curriculum first and then dealing with other sources.

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to Write Programming structures, variables/data types, read /write/print statements,
- ✓ Developing the student's ability to Programs for Engineering Applications
- ✓ Developing the student's ability to IF Statements
- ✓ Developing the student's ability to work Matrices Program

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1,2	6	1- Ability to write simple program modules to implement single numerical methods and algorithms.	Programming structures, variables/data types, read /write/print statements,	Lectures and tutorials	Quiz Exam HW
3,4,5	9	2- Ability to calculate solutions to mechanical engineering problems using standard numerical methods	IF Statements. & Do Loops.	Lectures and tutorials	Quiz Exam HW
6	3	3- Test program output for accuracy using hand calculations and debugging techniques applications.	File Input and output and formatting	Lectures and tutorials	Quiz Exam HW
7	3	CLO 1&CLO2& CLO3	EXAM1		
8 , 9	6	4- The ability to analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems	Arrays and Matrices	Lectures and tutorials	Quiz Exam HW
10	3	5- Synthesize multiple program modules into larger program packages	Subroutines and Functions	Lectures and tutorials	Quiz Exam HW
11,12, 13,14	12	6- Detail numerical results into a readable format that answers specific mechanical engineering analysis and design questions	Programs for Engineering Applications	Lectures and tutorials	Quiz Exam HW
15	3	CLO 4&CLO5& CLO6	EXAM2		

1,2	6	1- Ability to write simple program modules to implement single numerical methods and algorithms.	Programming structures, variables/data types, read /write/print statements,	Lectures and tutorials	Quiz Exam HW
3,4,5	9	2- Ability to calculate solutions to mechanical engineering problems using standard numerical methods	IF Statements. & Do Loops.	Lectures and tutorials	Quiz Exam HW
6	3	3- Test program output for accuracy using hand calculations and debugging techniques applications.	File Input and output and formatting	Lectures and tutorials	Quiz Exam HW
7	3	CLO 1&CLO2& CLO3	EXAM1		
8 , 9	6	4- The ability to analyze the applicability and accuracy of numerical solutions to diverse mechanical engineering problems	Arrays and Matrices	Lectures and tutorials	Quiz Exam HW
10	3	5- Synthesize multiple program modules into larger program packages	Subroutines and Functions	Lectures and tutorials	Quiz Exam HW

11,12, 13,14	12	6- Detail numerical results into a readable format that answers specific mechanical engineering analysis and design questions	Programs for Engineering Applications	Lectures and tutorials	Quiz Exam HW
15	3	CLO 4&CLO5& CLO6	EXAM2		

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	1. . University of DuhramITS,"An Introduction to Programming in FORTRAN90",2007 1. J.Adams,"Fortran 90 Handbook",Mc-Graw Hill Book Company 1992. 2. Ian D.Chivers," Introduction to Programming with Fortran",Springer ,2006.
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	ME 1209 Computer Science
less number from Students	20
Larger number from Students	30

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Engineering Mechanical
3. name / Code The decision	Air conditioning /ME4302
4. Programs that Enters In which	Bachelor's
5. shapes the audience Available	Presence actual
6. the chapter / the year	the chapter Academic the first/2022-2023
7. number hours Scholarship (total)	60
8. date Preparation this the description	12/30/2022
9. Goals The decision :	

1- Knowing the properties of moist air and how to find each property
2- Gaining the ability to use the psychometric chart to find the properties of air and draw air conditioning operations.

3- Learn how to calculate heating and cooling loads.

4- Identify the types of air conditioning systems.

5- Teaching students how to calculate the sizes of air ducts, as well as calculate the pressure loss in the air distribution system.

10. Outputs Learning And methods education And learning And evaluation

In end of the Academic course will be able to:
1. Application Concepts the basic For dynamics Thermal And Use Scheme to calculate Properties Air Wet And also acting Operations conditioning Air on it.
2- Account Loads The heating And cooling And also to set conditions the design Interior And external.
3. Comparison between Systems conditioning Air different.
4. Design sewers Air For systems Air conditioning And determine drop the pressure Total For a system sewers Air.

Methods education and learning

.
Lectures the theory + Experiments Laboratory

Methods Evaluation

Exams The short one. Exams Monthly And finality. Duties Home. Reports Laboratory.

C- Skills Thinking 1- Development capacity requester on performance Duties And delivered within an appointment specific. 2- Try application Concepts With a solution Species Different from matters. 3- Development requester in side Dialogue And discussion .
Methods education And learning
• Theoretical lectures • Homework • Laboratory experiments
Methods Evaluation
1- Short exams and monthly exams 2- Homework assignments 3- Laboratory reports 4- Final exam
D- Skills the public And movable (Skills The other Related Capable recruitment And evolution Personal). 1- Development capacity requester on Dealing with Problems Engineering. 2- Ability requester on completion the accounts Design Private With systems conditioning Air.

3- Development capacity requester on Dialogue And discussion.

11. The module structure

week	hours	Learning Outputs required	Unit name / Course or the topic	Education method	Evaluation method
1	3	knowledge date development science conditioning Air	Introduction to air conditioning	Lectures theory	Questions General, discussion
3,2	6+3	to learn How account Properties Air Wet using Laws.	Calculating the properties of moist air.	Lectures Theory, experiment practical	Duties Home, exam, report
4, 5	6+3	to learn Use Scheme And draw Operations conditioning Air on him	Resource planning and resource operations.	Lectures Theory, experiment practical	Duties Home, exam, report
6,7	6+3	to learn meaning Comforts Thermal And Schemes Comforts And how to choose Circumstances Design.	Thermal comfort and interior and exterior design conditions	Lectures theory	Questions General, discussion
8, 9, 10, 11	12+3	to learn style account Loads The heating And cooling.	Heating load and cooling load calculations	Lectures theory	Duties Home, exam
12, 13, 14,15	12+3	to learn design Systems distribution Air And knowledge	Air conditioning systems and air distribution systems	Lectures Theory, experiment practical	Duties Home, exam, report

		Types different For systems conditioning Air			

12. Structure Infrastructure	
Readings required : ▪ books of The module ▪ Other	**Sources are placed** *Refrigeration and air conditioning*by Ahmedul Ameen, Prentice-Hall of India, New Delhi, 2007 *Refrigeration and air conditioning*by*SNSapali.*
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

13. admissions	
Requirements Previous	ME 2303, ME 2307, ME 2301, ME 2305, ME 3302, ME 3307
less number from Students	30
Larger number from Students	50

Course description form

Reviewing the performance of higher education institutions ((academic program review))

This course description provides a succinct summary of the most important course characteristics and the learning outcomes the student is expected to achieve Demonstrating whether they have made the most of the learning opportunities available. It must be linked to a description the program.

1. Enterprise Educational	University of Anbar
2. Section University / Center	Mechanics
3. name / Code The decision	Engineering Analysis/ ME3301
4. Programs that Enters In which	To divide Engineering Mechanical/Bachelor's degree
5. shapes the audience Available	My presence inside the hall
6. the chapter / the year	The chapter Academic the first
7. number hours Scholarship (total)	45
8. date Preparation this the description	30/ 10/ 2021
9. Goals The decision :	
1. To enhance the student's ability to think logically and mathematically in modeling sys-	

tems.

2. To use ordinary differential equation for solving practical problems.
3. To knowledge the partial differential equations (PDEs) and how they can serve as models for physical processes such as mechanical vibrations, transport phenomena including diffusion, heat transfer, and advection, and electrostatics.
4. To use Fourier transforms and the convolution theorem to analyze and solve the heat equation.
5. Select and execute appropriate methods to achieve objectives.
6. Interpret and communicate the results.

10. Outputs Learning And methods education And learning And evaluation

1. Think logically and mathematically for solving practical problems such as mechanical vibrations, fluid flow problems, heat transfer problems.
2. Practice modelling and be able to translate engineering and physical situations into a mathematical model
3. To gain experience and further mastery of complete problem, solving fluency based on Fourier Series and Partial Differential Equations.
4. Use proper assumptions to describe the complex behaviour of practical problems and able to read and interpret problem objectives.

11. Methods education And learning

- ✓ Lectures the theory
- ✓ Exercises and activities in hall the lesson.
- ✓ Reports the operation.
- ✓ Guidance students to some sources that maybe benefit of which.

12. Methods Evaluation

- ✓ Quizzes
- ✓ Monthly and final exams
- ✓ Homework
- ✓ Laboratory reports

13. skills Thinking

- ✓ Monitoring effective implementation first and then controlling other sources.
- ✓ The ability to comprehend the approved material that includes several different topics
- ✓ The ability to solve differential equations

14. Skills the public and movable (Skills the other Related Capable recruitment and evolution Personal).

- ✓ Developing the student's ability to dialogue and discuss.
- ✓ Developing the student's ability to solve engineering problems by solving different types of engineering exercises.
- ✓ Developing the student's ability to deal with multiple media.
- ✓ Developing the student's ability to dialogue and discuss.

15. The Module structure

the week	hours	Learning Outputs required	name Unit / Course or the topic	Education method	Evaluation method
1	3	1	Modeling with Higher Order Linear Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
2	3	1	Modeling with Higher Order Linear Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
3	3	1	Modeling with Higher Order Linear Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
4	3	2	Systems of Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
5	3	2	Systems of Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
6	3	2	Applications of Ordinary Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
7	3	2	Applications of Ordinary Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
8	3	2	Fourier series	(Lectures+ Tutorials)	Quizzes, Exams and HW
9	3	3	Fourier series	(Lectures+ Tutorials)	Quizzes, Exams and HW
10	3	3	Partial Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW

11	3	3	Partial Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
12	3	4	Partial Differential Equations.	(Lectures+ Tutorials)	Quizzes, Exams and HW
13	3	4	Functions of complex variables	(Lectures+ Tutorials)	Quizzes, Exams and HW
14	3	5	Functions of complex variables	(Lectures+ Tutorials)	Quizzes, Exams and HW
15	3	5	Functions of complex variables	(Lectures+ Tutorials)	Quizzes, Exams and HW
16			Final Exam		Exam

16. Structure Infrastructure	
Readings required : ▪ books The module ▪ Other	**Text Book(s):** 1- Erwin Kreyszig, Advanced Engineering Mathematics, 10th edition, 2011, John Wiley. 2- Mathematical Methods, by S. M. Yousuf **Recommended Readings:** 3- Zill, D., Wright, W. S., & Cullen, M. R. (2011). Advanced engineering mathematics. Jones & Bartlett Learning. 4-
requirements especially	Nothing
Services Social (Include on way Example Lectures Guests And training Professional And studies Field)	Nothing

17. admissions	
Requirements Previous	ME2202 Calculus IV
less number from Students	25
Larger number from Students	50