Unit Description Form

Course Description Form

Faculty of Engineering / Department of

Unit Information

Course Information

Unit Title	**Engineering Analytics**		**Unit delivery**
Unit Type	**fundamental**		**نظريه** ☒ **حاضر** ☒ **المختبر** ☐ **تعليمي** ☐ **عملي** ☐ **Seminar** ☐
Unit Code	WBM-31-09		
ECTS Credits	**8**		
SWL (ساعة / SEM)	**45 hours**		
Unit level	1	**Delivery Semester**	1
Department of Administration	Biomedical	**College**	Engineering
Unit Commander	M.M. Ahmed Muhammad Mirza	**E-mail Address**	ahmead.muhmed@uowa.edu.iq
Title of Unit Commander	Assistant bell	**Unit Commander Qualifications**	Master
Unit Teacher		**E-mail Address**	
Peer Reviewer Name	name	**E-mail Address**	E-mail Address
Date of accreditation of the Scientific Committee	26/9/2024	**Version number**	1.0

Relationship with other units

Relationship with other subjects

Prerequisites Unit	No	**Semester**	
Common Requirements Unit	No	**Semester**	

Unit objectives, learning outcomes and how-to contents Course objectives, learning outcomes and instructional contents	
Objectives of the Unit Course Objectives	• **Understand the mathematical foundations of geometric analysis**: Learn mathematical methods such as differential equations, linear algebra, and numerical analysis used in structural analysis. • **Structural Analysis**: The study of how engineering structures such as bridges, buildings, or machines are analyzed under the influence of various loads. • **Stress and Deformation Analysis**: Learn how to calculate stresses and deformations caused by forces acting on structures. • **Dynamic Analysis**: The study of how to analyze the dynamic response of structures under the influence of time-changing forces such as earthquakes or wind. • **Use engineering software**: Learn how to use engineering software (such as ANSYS or MATLAB) to perform complex engineering analyses.
Unit Learning Outcomes Learning outcomes of the course	• **Analysis of structures under** loads: Ability to perform mathematical and technical analyzes to understand how structures respond to loads. • **Calculation of stresses and deformations**: Know how to calculate stresses and deformations that occur in materials and structures under the influence of forces. • **Use of mathematical tools**: Ability to apply advanced mathematical tools such as differential equations and numerical methods for the analysis of engineering systems. • **Dynamic analysis of structures**: the ability to analyze the response of structures under the influence of changing forces. • **Use of engineering software**: The use of engineering software to apply engineering analysis concepts to complex designs.
Indicative Contents Indicative Contents	• **Introduction to Engineering Analysis**: Definition of engineering analysis and its importance in the design of engineering structures. • **Fundamentals of Structural Analysis**: Learn how to identify forces and stresses in structures. • **Types of loads affecting structures**: the study of loads such as tensile, compression, bending, and shear. • **Stress and Deformation Analysis**: Study of methods for calculating stresses and distortions using mathematical equations.

Learning and Teaching Strategies Learning and Teaching Strategies	
Strategies	• **Hands-on learning**: The use of real models or simulations to analyze structures in a laboratory environment. • **Real-world applications**: Real engineering case studies to analyze how engineering challenges are addressed in designs. • **Project-based learning**: Assign students to projects that involve analyzing complex engineering structures or systems. • **Engineering Software**: Train students to use engineering simulation software to analyze structures and materials. • **Interactive** discussions: Discuss different methods of analysis and how to determine the most appropriate methods for specific applications.

Student Workload (SWL) The student's academic load is calculated for 15 weeks			
SWL منظم (h / sem) Regular academic load of the student during the semester	30	**SWL regulator(h/s)** Regular student load per week	5
SWL غير منظم (h / sem) Irregular academic load of the student during the semester	15	**Unregulated SWL (h/s)** Irregular student academic load per week	5
SWL إجمالى (h / sem) The student's total academic load during the semester	45		

Unit Evaluation Course Evaluation					
	As	**Time/Number**	**Weight (tags)**	**Week due**	**Related learning outcomes**
Formative Assessment	**Contests**	2	10% (10)	5, 10	LO #1 , 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO #3 , 4, 6 and 7
	Projects /Laboratory.	1	10% (10)	continuous	every
	report	1	10% (10)	13	LO #5 , 8 and 10
Final Assessment	**Midterm Exam**	2 hr	10% (10)	7	LO #1-7
	Final Exam	2 hours	50% (50)	16	every
	Overall Rating		100% (100 degree)		

Delivery Plan (Weekly Curriculum) Theoretical Weekly Curriculum	
week	**Covered Material**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	

Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	

Learning and Teaching Resources Learning and Teaching Resources		
	text	**Available in the library?**
Required texts	Clinical Biochemistry, (8 editions), by Leipencotts	Yes
Recommended texts		Yes
Websites		

Grading chart Grading chart				
group	**degree**	Appreciation	**Tags (%)**	**definition**
An-Najah Group (50 - 100)	**A -** Excellent	privilege	90 - 100	Outstanding Performance
	B - Very Good	Very good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Proper work with noticeable errors
	D - Satisfactory	medium	60 - 69	Fair but with significant shortcomings
	E - sufficient	Acceptable	50 - 59	The work meets the minimum standards
Group failure (0 – 49)	**FX -** Failed	Deposit (in (processing	(45-49)	More work required but credit granted
	F - Failed	Failure	(0-44)	Large amount of work required

Note: Signs that are more than 0.5 decimal places greater than or below the full mark will be rounded higher or lower (for example, a score of 54.5 will be rounded to 55, while a mark of 54.4 will be rounded to 54. The university has a policy of not tolerating "imminent traffic failure", so the only modification to the marks granted by the original mark(s) will be the automatic rounding described above.