Unit Description Form

Course Description Form

/ Faculty of Engineering
Department of Biomedicine

Unit Information Course Information			
Unit Title	**Mathematics||**	**Unit delivery**	
Unit Type	**fundamental**		نظريه ☒ حاضر ☒ المختبر ☒ تعليمي ☐ عملي ☐ ☐ Seminar
Unit Code	BME-111		
ECTS Credits	8		
SWL (ساعة / SEM)	125		
Unit level	3	**Delivery Semester**	1
Administrative Management	**Biomedical Engineering**	**College**	**Faculty of Engineering**
Unit Commander	**Saad Mahmoud Farhan**	**E-mail Address**	saad.mah@uowa.edu.iq
Title of Unit Commander	teacher	**Unit Commander Qualifications**	Doctor
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	The objectives of the Mathematics Unit aim to develop a deep understanding of basic mathematical concepts and their practical applications. Emphasis is placed on enhancing students' analytical and logical thinking skills through problem solving and the use of appropriate mathematical methods. The module also aims to teach students how to represent and analyze data using mathematical tools such as graphs and equations. The unit also seeks to develop the ability to apply mathematical concepts in multiple fields such as engineering, physics, and economics, helping to connect mathematics to everyday life and other sciences. In addition, students are encouraged to use modern technologies such as mathematical software to facilitate mathematical calculations and modeling, enhancing their academic and professional competence.

Unit Learning Outcomes Learning outcomes of the course	The learning outcomes of the Mathematics module include enabling students to understand and apply basic mathematical concepts such as algebra, geometry, and calculus. Students are able to solve mathematical problems accurately and efficiently using various strategies and analyze results in a logical way. Students learn how to represent and analyze data through the use of graphs and mathematical equations, allowing them to effectively interpret numerical and quantitative phenomena. Students become able to employ mathematics in applied fields such as physics, economics, and engineering, enhancing their understanding of the relationships between mathematics and other sciences. Students also gain the ability to use digital technologies and tools such as mathematical software for calculation and modeling, which develops their skills in dealing with modern applications and prepares them for the demands of the labor market.
Indicative Contents Indicative Contents	The instructional contents of the Mathematics module include a set of basic topics aimed at building a solid base of mathematical concepts. The module begins by reviewing basic principles of algebra, such as arithmetic, equations, and inequities, with a focus on solving linear and quadratic equations. The module also includes the study of basic geometry, including geometric shapes, measurements, and geometric theories such as the Pythagorean theorem, as well as the applications of geometry in solving practical problems. The basics of calculus, including derivatives and integrals and their applications in the study of variations and their rates, are discussed. Contents include the study of statistics and probability, where students are taught how to collect, analyze, and represent data using graphs and tables. Emphasis is also placed on solving problems using mathematical models and digital technologies such as custom software. The module concludes with practical applications that link mathematical concepts to everyday life and specialized fields such as physics, economics, and engineering, enhancing students' understanding of the role of mathematics in explaining phenomena and solving real-world challenges.

Learning and Teaching Strategies Learning and Teaching Strategies	
Strategies	The teaching strategy in the Mathematics module is based on combining theoretical explanation with practical application to ensure a deep understanding of the concepts. Real-life examples are used and linked to life problems to illustrate the importance of mathematics and its applications. It also encourages interactive activities such as teamwork and problem solving, as well as the use of technology such as digital tools and mathematical software to enhance learning. Lessons conclude with periodic reviews and tests to assess students' comprehension of content.

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	64	**SWL regulator (h / s)** Regular student load per week	4
SWL غير منظم (h / sem) Irregular academic load of the student during the semester	61	**Unregulated SWL (h/s)** Irregular student academic load per week	4
SWL إجمالي (h / sem) The student's total academic load during the semester	125		

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	Additional technologies in retail integration.
Week 3+2	Tabular integration, trigonometric integrals, trigonometric substitution.
Week4++5+6	Partial fractions, integrals, incorrect integrals.
Week 7	Convergence and divergence theory: definition and characteristics.
Week 8	Types of sequences, their limits, etc.
Week 9	Infinite series: definition and characteristics.
Week 10	Partial sets of engineering series: 3 tests, engineering series, Nth.
Week 11	Boundary test, alternate series, ratio test, root test, comparison test.

Week12 +13	Harmony Series, P, Triple Exponential Series, Taylor's theorem, McLaurin Series, T Period
Week 14+15	Matrices and selections, properties, cofactors and facilities.

Learning and Teaching Resources

Learning and Teaching Resources

	text	Available in the library?
Required texts	All solid scientific fields that have a relationship with the broad concept of mathematical theories and their results	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.