The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name: EngineeringMathema

Course Syllabus

1	**Course title**	**Engineering Mathematics (1)**	
2	**Course number**	0301202	
3	**Credit hours**	3	
	Contact hours (theory, practical)	3	
4	**Prerequisites/corequisites**	0301201	
5	**Program title**	B.Sc.	
6	**Program code**		
7	**Awarding institution**	The University of Jordan	
8	**School**	Science	
9	**Department**	Mathematics	
10	**Course level**	College requirement	
11	**Year of study and semester (s)**	all Semesters	
12	**Other department (s) involved in teaching the course**	None	
13	**Main teaching language**	English	
14	**Delivery method**	■Face to face learning ☐Blended ☐Fully online	
15	**Online platforms(s)**	■Moodle ■Microsoft Teams ☐Skype☐Zoom ☐Others…………	
16	**Issuing/Revision Date**		

17 Course Coordinator:

Name:Dr.SalamAlnabulsi	Contact hours:
Office number:	Phone number: 22104
Email:s.alnabulsi@ju.edu.jo	

18 Other instructors:

Name:Ahmad abdalla

Office number:

Phone number: 22087

Email:farah@ju.edu.jo

Contact hours:

Name:Mohammad Alhorani

Office number:

Phone number: 22109

Email:horani@ju.edu.jo

Contact hours:

19 Course Description:

Ordinary differential equations, linear differential equations of second and higher order, systems of differential equations, phase plane, stability, series solutions of differential equations, orthogonal functions, Laplace transforms, linear systems of equations, matrices and determinants.

20 Course aims and outcomes:

A- Aims:

1- Model some real life problems using ODEs.
2- Solve some special types of ODEs, such as first order ODEs, Linear ODEs, Cauchy Euler ODEs.
3- Use series solutions to solve ODEs.
4- Use Laplace transforms to solve ODEs.

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

Successful completion of the course should lead to the following outcomes:

SLOs / SLOs of the course	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)
1 Master the basic concepts of ordinary differential equation (ODE).	●	.		.			●	
2 Solve a system of linear ODE's	.	●			●			●
3 Select proper procedure to solve a given ODE and solve it	●						●	●
4 Find series solution of 2nd order linear differential equations.	●						●	
5 Find Laplace transform and the inverse Laplace transform of given functions. Solve the IVP by using Laplace transform	. ●				●		●	

QF-AQAC-03.02.01

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous/ Asynchronous Lecturing	Evaluation Methods	Resources
1-3	1.1	Basic concepts: differential (Classifications)	1,2,5,7,8	Face to Face	Moodle		Exam	Text Book
	1.3	Separable ODEs		Face to Face	Moodle		Exam	Text Book
	1.4	Exact ODEs. Integrating Factors		Face to Face	Moodle		Exam	Text Book
	1.5	Linear ODEs. Bernoulli Equation		Face to Face	Moodle		Exam	Text Book
2	2.1	Independence-Wronskian	1,2,5,7,8	Face to Face	Moodle		Exam	Text Book
	2.2	Homogeneous Linear ODEs of Second Order		Face to Face	Moodle		Exam	Text Book
	2.3	Homogeneous Linear ODEs with Constant Coefficients		Face to Face	Moodle		Exam	Text Book
	2.4	Euler–Cauchy Equations		Face to Face	Moodle		Exam	Text Book
	2.5	Nonhomogeneous ODEs		Face to Face	Moodle		Exam	Text Book
	2.6	Undetermined Coefficients		Face to Face	Moodle		Exam	Text Book
	2.7	Solution by Variation of Parameters		Face to Face	Moodle		Exam	Text Book
3	3.1	Higher-Order Homogeneous and Undetermined	1,2,5,7,8	Face to Face	Moodle		Exam	Text Book

		Coefficients			Moodle			
	3.2	Higher-Order-Variation		Face to Face	Moodle		Exam	Text Book
4	4.1	Homogeneous System-I	1,5	Face to Face	Moodle		Exam	Text Book
	4.2	Homogeneous System-II		Face to Face	Moodle		Exam	Text Book
	4.3	Nonhomogeneous System		Face to Face	Moodle		Exam	Text Book
5	5.1	Basic properties of power series	2,7	Face to Face	Moodle		Exam	Text Book
	5.2	Solution of ODE near ordinary points		Face to Face	Moodle		Exam	Text Book
	5.3	Solution of ODE near regular singular points		Face to Face	Moodle		Exam	Text Book
6	6.1	Definition of Laplace and inverse of Laplace	1,7,8	Face to Face	Moodle		Exam	Text Book
	6.2	Laplace Transform of derivative and of integral Solving initial value problem using Laplace transform		Face to Face	Moodle		Exam	Text Book
	6.3	Unit step function , : Dirac δ-function		Face to Face	Moodle		Exam	Text Book

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First Exam	30		1+2+5+7+8		On Campus
Second Exam	20		1+2+5+7		On Campus
Final Exam	50		1+2+5+7+8		On Campus

23 Course Requirements

NA

24 Course Policies:

1. Attendance is absolutely essential to succeed in this course. You are expected to attend every class; please notify your instructor if you know you are going to be absent. All exams must be taken at the scheduled time. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor.
2. If a student is absent for more than 10% of lectures without an excuse of sickness or due to other insurmountable difficulty, then he/she shall be barred from the final examination also he/she will get a failing grade in this course.
3. Medical certificates shall be given to the University Physician to be authorized by him. They should be presented to the Dean of the Faculty within two weeks of the student's ceasing to attend classes.

4. Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return.
5. Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on home works.

25 References:

A- Required book(s), assigned reading and audio-visuals:
Advanced Engineering Mathematics by E. Kreyszig, 10th Edition
B- Recommended books, materials, and media:
Advanced Engineering Mathematics by Dennis G. Zill and Warren S. Wright, 5th edition.

Advanced Engineering Mathematics by K. A. Stroud and Dexter J. Booth, 5th edition

26 Additional information:

Name of Course Coordinator: ---------------------------------Signature: ---------------------- Date: -------------------

Head of Curriculum Committee/Department: Prof. Ahmad Al Zghoul-- Signature: ------------------------------------

Head of Department: -Prof. Manal Ghanem - Signature: -M. Ghanem

Head of Curriculum Committee/Faculty: --------------------------------------- Signature: ----

Dean: Mahmoud Jaghoub Signature: ---