



Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	07

1.	Course Title	Ordinary Differential Equations I
2.	Course Number	0341221
3.	Credit Hours (Theory, Practical)	2
	Contact Hours (Theory, Practical)	2
4.	Prerequisites/ Corequisites	0301102
5.	Program Title	B.Sc.
6.	Program Code	
7.	School/ Center	The University of Jordan
8.	Department	Mathematics
9.	Course Level	College requirement
10.	Year of Study and Semester (s)	Second year, All semesters
11.	Other Department(s) Involved in Teaching the Course	None
12.	Main Learning Language	English
13.	Learning Types	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams
15.	Issuing Date	16 Feb 2025
16.	Revision Date	

17. Course Coordinator:

Name: Dr. M. Al Horani	Contact hours: 10:30am – 12:30 pm
Office number: 302	Phone number: 22100
Email: s.horani@ju.edu.jo	



18. Other Instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19. Course Description:

Classification; Solutions of differential equations (first and second order ODEs) with applications to Mixing problems; Laplace transform method.

20. Program Student Outcomes (SO's):

(To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

1. Identify, formulate, and solve broadly-defined technical or scientific problems by applying knowledge of Mathematics and Science and/or technical topics to areas relevant to the discipline.
2. Formulate or design a system, process, procedure or program to meet desired needs.
5. Reflect the impact of technical and/or scientific solutions in economic, environmental, and societal contexts.

21. Course Intended Learning Outcomes (CLO's):

(Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. To master the basic concepts of ordinary differential equation (ODE).
2. To model some real- life problems using ODEs.
3. To solve some special types of ODEs, such as first order ODEs, second order Linear ODEs with constant coefficients.
4. To solve differential equations with variable coefficients.
5. To apply Laplace transforms on some ODEs.



Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1	•	•				
2		•	•		•	•
3					•	
4	•	•		•	•	
5	•	•	•		•	

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Course CLO's	Program SO's							
	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)	SO (6)	SO (7)	SO (8)
CLO (1)	•							
CLO (2)	•	•			•			
CLO (3)	•							
CLO (4)	•							
CLO (5)	•							



23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types Face to Face (FF) Blended (BL) Fully Online (FO)	Platform Used	Synchronous (S) Asynchronous (A)	Evaluation Methods	Learning Resources
1	1.1	Definition of a D.E. and its solution	1	BL	Moodle Teams	S		Textbook
	1.2	Classification of DEs				S		
2	2.1	Separable equations	3	BL	Moodle Teams	S		Textbook
	2.2	First-Order Linear DEs	1,2	BL	Moodle Teams	S		Textbook
3	3.1	Bernoulli DEs	3	BL	Moodle Teams	S		Textbook
	3.2	Homogeneous equations.	3	BL	Moodle Teams	S		Textbook
4	4.1	Exact ODEs	3	BL	Moodle Teams	S		Textbook
	4.2	Exact ODEs	3	BL	Moodle Teams	S		Textbook
5	5.1	Integrating Factors	3	BL	Moodle Teams	S		Textbook
	5.2	Integrating Factors	3	BL	Moodle Teams	S		Textbook
6	6.1	Mixing Problem	1,3	BL	Moodle Teams	S		Textbook
	6.2	Mixing Problem	3	BL	Moodle Teams	S		Textbook
7	7.1	Second-Order ODEs: Basic concepts	3	BL	Moodle Teams	S		Textbook
	7.2	Independent Solutions and Wronskian	3	BL	Moodle Teams	S		Textbook
8	8.1	x and y missing	3	BL	Moodle Teams	S		Textbook
	8.2	Reduction of order	3	BL	Moodle Teams	S		Textbook



9	9.1	Characteristic equation: distinct roots	4	BL	Moodle Teams	S		Textbook
	9.2	Characteristic equation: equal roots	4	BL	Moodle Teams	S		Textbook
10	10.1	Characteristic equation: complex roots	4	BL	Moodle Teams	S		Textbook
	10.2	Cauchy-Euler Equations	4	BL	Moodle Teams	S		Textbook
11	11.1	Undetermined Coefficients	4	BL	Moodle Teams	S		Textbook
	11.2	Undetermined Coefficients	4	BL	Moodle Teams	S		Textbook
12	12.1	Variation of Parameters	4	BL	Moodle Teams	S		Textbook
	12.2	Laplace Transform-Definitions and basic concepts	4	BL	Moodle Teams	S		Textbook
13	13.1	Inverse Laplace Transform	5	BL	Moodle Teams	S		Textbook
	13.2	Unit Step Function	5	BL	Moodle Teams	S		Textbook
14	14.1	Dirac's Delta Function	5	BL	Moodle Teams	S		Textbook
	14.2	Transforms of derivatives and integrals	5	BL	Moodle Teams	S		Textbook
15	15.1	Solutions (using Laplace) of linear ODEs	5	BL	Moodle Teams	S		Textbook
	15.2	Solutions (using Laplace) of linear ODEs	5	BL	Moodle Teams	S		Textbook

**24. Evaluation Methods:**

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

Evaluation Activity	Mark	Topic(s)	CLO/s Linked to the Evaluation activity	Period (Week)	Platform
Midterm exam	30	1-4	1,2,3	7	On Campus
Assignments	10	2-4	2,3	During semester	On Campus
Quizzes	20	2-5	1,2,3,4	2,5,11, 14	On Campus
Final exam	40	All topics	1,2,3,4,5	16	On Campus

25. Course Requirements:

e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Data
Shows
Computers
Internet

26. Course Policies:**A. Attendance policies:**

Attendance is 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

B. Absences from exams and submitting assignments on time:

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

C. Health and safety procedures:

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.

D. Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on homework.

E. Grading policy:

Solutions for the exams questions and marks will be announced at the webpage of the instructor, Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return

27. References:

A- Required book(s), assigned reading and audio-visuals:

Elementary Differential Equation, By: W. E. Boyce and R.C. Di Prima 7th. ed.

B- Recommended books, materials, and media:

(1) Elementary Differential Equations with boundary value problem by C. H. Edwards, R. and David E. Penney, 3rd ed.

(2) Introduction to Differential Equations, by R. K. Miller. Latest ed.

(3) A first course in Differential equations with Applications, 4th ed by Dennis G Zill

28. Additional information:

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Name of the Instructor or the Course Coordinator: Dr. M. Al Horani	Signature:	Date:
Name of the Head of Quality Assurance Committee/ Department: Prof. Manal Ghanem	Signature:	Date:
Name of the Head of Department: Prof. Baha Alzalg	Signature:	Date:
Name of the Head of Quality Assurance Committee/ School of Science: Prof. Emad A. Abuosba	Signature:	Date:
Name of the Dean or the Director: Prof. Mahmoud I. Jaghoub	Signature:	Date: