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
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	Number of Pages	09

1.	**Course Title**	**Ordinary Differential Equations I**
2.	**Course Number**	0301221
3.	**Credit Hours (Theory, Practical)**	3
	Contact Hours (Theory, Practical)	3
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
11.	**Other Department(s) Involved in Teaching the Course**	None
12.	**Main Learning Language**	English
13.	**Learning Types**	☐Face to face learning ☑Blended ☐Fully online
14.	**Online Platforms(s)**	☑Moodle ☑Microsoft Teams
15.	**Issuing Date**	28 October 2024
16.	**Revision Date**	

17. Course Coordinator:

Name: Dr. Salam Alnabulsi Contact hours: 10:30am – 12:30 pm

Office number: 302 Phone number:22100

Email:s.alnabulsi@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 order, second order, and higher orders) with applications to mechanics and physics, series solutions, 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. Master the basic concepts of ordinary differential equation (ODE).
2. Model some real- life problems using ODEs.
3. Solve some special types of ODEs, such as first order ODEs, Higher order Linear ODEs with constant coefficients, Cauchy- Euler ODEs.
4. Use series solutions to solve ODEs.
5. Use Laplace transforms to solve 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:

Program SO's / Course CLO'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, Classification of a D.E according to order, and linearity. Prob. 1-20	1	BL	Moodle Teams	S		Textbook
	1.2	Linear and integrating factors. Prob. 1-22, 28	3	BL	Moodle Teams	S		Textbook
	1.3	Linear prob. 1-20, 37*-41 (Bernoulli equations)	3	BL	Moodle Teams	A		Textbook
2	2.1	Separable equations. Prob. 1-21	3	BL	Moodle Teams	S		Textbook
	2.2	Modeling with linear-equations prob. 1-6, 15-28	1,2	BL	Moodle Teams	S		Textbook
	2.3	Some problems in Mechanics prob. 1-16	1,2	BL	Moodle Teams	A	Quizz1	Textbook
3	3.1	Exact equations Integrating factors. Prob. 1-23	3	BL	Moodle Teams	S		Textbook
	3.2	Homogeneous equations. Prob. 1-12, 15*-17 (Linear coefficients)	3	BL	Moodle Teams	S		Textbook
	3.3	Homogeneous equations. Prob. 1-12, 15*-17 (Linear coefficients)	1	BL	Moodle Teams	A		Textbook
4	4.1	Hom. Equations with constant coefficients. Prob. 1-22, 28*-43 (Equations with non-constant coefficients with y or x missing)	3	BL	Moodle Teams	S		Textbook
	4.2	Fundamental solutions, the Wronskian	3	BL	Moodle Teams	S		Textbook

	4.3	Complex roots of the Char. Eq'n. prob. 1-14, 38*-42 (Euler equation)	3	BL	Moodle Teams	A	Quizz2	Textbook
5	5.1	Repeated roots & Reduction of order. Prob. 1-14, 41*, 42* (Euler equation)	3	BL	Moodle Teams	S		Textbook
	5.2	Non-hom. Equations: Method of undetermined coefficients. Prob. 1-26	3	BL	Moodle Teams	S		Textbook
	5.3	Variation of parameters. Prob. 1-20	3	BL	Moodle Teams	A		Textbook
6	6.1	Mechanical and electoral vibrations Prob. 1-20	1,3	BL	Moodle Teams	S		Textbook
	6.2	Forced vibrations. Prob. 1-12.	3	BL	Moodle Teams	S		Textbook
	6.3	Forced vibrations. Prob. 1-12.	3	BL	Moodle Teams	A		Textbook
7	7.1	General theory. Prob. 1-18	3	BL	Moodle Teams	S		Textbook
	7.2	Homo. Eq'ns with constant coefficients. Prob. 1-28	3	BL	Moodle Teams	S		Textbook
	7.3	Method of undetermined coefficients. Prob. 1-17	3	BL	Moodle Teams	A	Midtea rm	Textbook
8	8.1	Variation of parameters. Prob. 1-4 *add – Given a sol'n, find the d.e. that has a sol'n as the given.	3	BL	Moodle Teams	S		Textbook
	8.2	Variation of parameters. Prob. 1-4 *add – Given a sol'n, find the d.e. that has a sol'n as the given.	3	BL	Moodle Teams	S		Textbook
	8.3	Invited speaker: Application of ODEs in real-life physical problems	2	BL	Moodle Teams	S		Textbook
9	9.1	Review of power series. Prob. 1-22	4	BL	Moodle Teams	S		Textbook
	9.2	Series solution near an ordinary point. Prob. 1-19	4	BL	Moodle Teams	S		Textbook
	9.3	Series solution near an ordinary point. Prob. 1-19	4	BL	Moodle Teams	A		Textbook

10	10.1	Series solution near an ordinary point. Prob. 1-19	4	BL	Moodle Teams	S		Textbook
	10.2	Regular singular points. Prob. 1-18	4	BL	Moodle Teams	S		Textbook
	10.3	Regular singular points. Prob. 1-18	4	BL	Moodle Teams	A		Textbook
11	11.1	Euler equations. Prob. 1-16, 24-29	4	BL	Moodle Teams	S		Textbook
	11.2	Series solution near a regular singular point, I. Prob. 1-11	4	BL	Moodle Teams	S		Textbook
	11.3	Series solution near a regular singular point, I. Prob. 1-11	4	BL	Moodle Teams	A	Quiz3	Textbook
12	12.1	Series solution near a regular singular point, II. Prob. 1-16	4	BL	Moodle Teams	S		Textbook
	12.2	Series solution near a regular singular point, II. Prob. 1-16	4	BL	Moodle Teams	S		Textbook
	12.3	Series solution near a regular singular point, II. Prob. 1-16	4	BL	Moodle Teams	A		Textbook
13	13.1	Definition of Laplace transform. Prob. 1-20	5	BL	Moodle Teams	S		Textbook
	13.2	Definition of Laplace transform. Prob. 1-20	5	BL	Moodle Teams	S		Textbook
	13.3	Definition of Laplace transform. Prob. 1-20	5	BL	Moodle Teams	A		Textbook
14	14.1	Solution of I. V. P. by Laplace transform. Prob. 1-23	5	BL	Moodle Teams	S		Textbook
	14.2	Solution of I. V. P. by Laplace transform. Prob. 1-23	5	BL	Moodle Teams	S		Textbook
	14.3	Step functions. Prob. 1-25	5	BL	Moodle Teams	A	Quiz4	Textbook
15	15.1	Differential eq´ns with discontinuous coefficients. Prob. 1-13	5	BL	Moodle Teams	S		Textbook
	15.2	Differential eq´ns with discontinuous coefficients. Prob. 1-13	5	BL	Moodle Teams	S		Textbook
	15.3	Differential eq´ns with discontinuous coefficients. Prob. 1-13	5	BL	Moodle Teams	A		Textbook
16							Final Exam	

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):

Datashow
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 ifyou 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 insurmountabledifficulty, 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 theDean 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 examsor 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 returnedto 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, 3rded.

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:

Name of the Instructor or the Course Coordinator: **Dr. Salam Alnabulsi**	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: ……