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	09

1.	**Course Title**	**Partial Differential Equations II**
2.	**Course Number**	0331422
3.	**Credit Hours (Theory, Practical)**	3
	Contact Hours (Theory, Practical)	3
4.	**Prerequisites/ Corequisites**	0331321
5.	**Program Title**	B. Sc.
6.	**Program Code**	
7.	**School/ Center**	Faculty of Science
8.	**Department**	Mathematics
9.	**Course Level**	College requirement
10.	**Year of Study and Semester (s)**	Fourth 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**	Nov. 6, 2024
16.	**Revision Date**	

17. Course Coordinator:

Name: Dr. Salam Alnabulsi Contact hours:10:30-12:30

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18. Other Instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:
Name:
Office number:
Phone number:
Email:
Contact hours:

19. Course Description:

As stated in the approved study plan. First order differential equation in two independent variables; semilinear and quasilinear equations; first order non-linear equations; second order linear equations; canonical forms; Green's function method; transforms 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. Classify PDEs as linear, semi-linear, quasilinear and nonlinear
2. Solve first-order PDEs in two independent variables
3. Find the canonical forms of PDEs of second order
4. Solve second-order PDEs by characteristics method
5. Use transform methods for solving PDEs

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	Review on differential equation	1	FF	Moodle Microsoft Teams	S		Text book
	1.2	Classification of function and PDE	1	FF	Moodle Microsoft Teams	S		Text book
	1.3	Construction of PDE	1	FF	Moodle Microsoft Teams	S		Text book
2	2.1	Solution of quasi-linear	1	FF	Moodle Microsoft Teams	S		Text book
	2.2	Lagrange method	1	FF	Moodle Microsoft Teams	S		Text book
	2.3	Lagrange method	1	FF	Moodle Microsoft Teams	S		Text book
3	3.1	Cauchy problem	2	FF	Moodle Microsoft Teams	S		Text book
	3.2	Characteristics method	4	FF	Moodle Microsoft Teams	S		Text book
	3.3	Characteristics method	4	FF	Moodle Microsoft Teams	S		Text book
4	4.1	Fully nonlinear	4	FF	Moodle Microsoft Teams	S		Text book

	4.2	Fully nonlinear	4	FF	Moodle Microsoft Teams	S		Text book
	4.3	Complete integral	2	FF	Moodle Microsoft Teams	S		Text book
5	5.1	Exercises	2	FF	Moodle Microsoft Teams	S	First exam	Text book
	5.2	Classification of second order PDE	1,2	FF	Moodle Microsoft Teams	S		Text book
	5.3	Classification of second order PDE	1,2	FF	Moodle Microsoft Teams	S		Text book
6	6.1	Reduction to canonical form	3	FF	Moodle Microsoft Teams	S		Text book
	6.2	Reduction to canonical form	3	FF	Moodle Microsoft Teams	S		Text book
	6.3	General solution	3	FF	Moodle Microsoft Teams	S		Text book
7	7.1	Exercises	3	FF	Moodle Microsoft Teams	S		Text book
	7.2	Boundary value problem	2	FF	Moodle Microsoft Teams	S		Text book
	7.3	Applications	2	FF	Moodle Microsoft Teams	S		Text book
8	8.1	Applications	2	FF	Moodle Microsoft Teams	S		Text book
	8.2	Fourier Series-review	2	FF	Moodle Microsoft Teams	S		Text book
	8.3	Separation of variables – review	2	FF	Moodle Microsoft Teams	S		Text book

9	9.1	Applications (Two variables)	2	FF	Moodle Microsoft Teams	S		Text book
	9.2	Higher order BVP – Heat	2	FF	Moodle Microsoft Teams	S		Text book
	9.3	Higher order BVP – Heat	2	FF	Moodle Microsoft Teams	S		Text book
10	10.1	Higher order BVP – Wave	2	FF	Moodle Microsoft Teams	S		Text book
	10.2	Higher order BVP – Wave	2	FF	Moodle Microsoft Teams	S		Text book
	10.3	Higher order BVP – Laplace	2	FF	Moodle Microsoft Teams	S		Text book
11	11.1	Higher order BVP – Laplace	2	FF	Moodle Microsoft Teams	S		Text book
	11.2	Exercises	2	FF	Moodle Microsoft Teams	S		Text book
	11.3	Non homogenous BVP-Heat	2	FF	Moodle Microsoft Teams	S		Text book
12	12.1	Non homogenous BVP-Wave	2	FF	Moodle Microsoft Teams	S	Mid Term Exam	Text book
	12.2	Non homogenous BVP-Laplace	2	FF	Moodle Microsoft Teams	S		Text book
	12.3	Integral Transform	5	FF	Moodle Microsoft Teams	S		Text book
13	13.1	Integral Transform	5	FF	Moodle Microsoft Teams	S		Text book
	13.2	Finite Transform	5	FF	Moodle Microsoft Teams	S		Text book

	13.3	Application (Heat)	5	FF	Moodle Microsoft Teams	S		Text book
14	14.1	Application (Wave)	5	FF	Moodle Microsoft Teams	S		Text book
	14.2	Application (Laplace)	5	FF	Moodle Microsoft Teams	S		Text book
	14.3	Infinite Transform	5	FF	Moodle Microsoft Teams	S		Text book
15	15.1	Applications	5	FF	Moodle Microsoft Teams	S		Text book
	15.2	Applications	5	FF	Moodle Microsoft Teams	S		Text book
	15.3	Applications	5	FF	Moodle Microsoft Teams	S		Text book
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
First Exam	20	1-3	1,2,4	5	On Campus
Mid Term	30	3-5	3,5	12	On Campus
Final Exam	50	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.):

- Computer
- Account on Microsoft Teams

26. Course Policies:

A. Attendance policies: 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

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 home works.

E. Grading policy: Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return.

F. Available university services that support achievement in the course:

27. References:

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

1- Partial Differential Equations for Scientists and Engineers by TynMyint-U and LokenathDebnath.
2- Applied Partial differential Equations by DonaldW.Trim.
3- Partial Differential Equations by W.E. Williams.

B- Recommended books, materials, and media:

28. Additional information:

Name of the Instructor or the Course Coordinator: **Dr.Salam Alnabulsi**	Signature: ……	Date: 6/11/2024
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: ……