

## Course Description Form

<b>1. Course Name:</b>	
Partial differential equation 1	
<b>2. Course Code:</b>	
<b>3. Semester / Year:</b>	
First 2024/2025	
<b>4. Description Preparation Date:</b>	
1-10-2024	
<b>5. Available Attendance Forms:</b>	
My presence	
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>	
60 hours	
<b>7. Course administrator's name (mention all, if more than one name)</b>	
Name: Mohammed Jasim Mohammed Email: <a href="mailto:Mohadmath87@uoanbar.edu.iq">Mohadmath87@uoanbar.edu.iq</a>	
<b>8. Course Objectives</b>	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>The student acquires sufficient knowledge about partial differential equations. Concepts and definitions</li> <li>Methods of forming a differential equation</li> <li>The student acquires sufficient knowledge about linear partial differential equations.</li> <li>The student acquires sufficient knowledge about non-linear partial differential equations</li> </ul>
<b>9. Teaching and Learning Strategies</b>	
<b>Strategy</b>	<p>Managing the lecture in a practical way related to the reality of daily life to attract the student to the topic of the lesson</p> <p>Without straying from the heart of the matter, so that the material is flexible and subject to understanding and analysis.</p> <p>Assigning the student some group activities and duties.</p> <p>Allocate a percentage of the grade for daily assignments and tests.</p> <p>Active participation in the classroom is evidence of the student's commitment and responsibility.</p> <p>Commitment to the deadline for submitting assignments and research.</p> <p>Quarterly and final exams reflect commitment and knowledge and skill achievement.</p> <p style="text-align: center;">Daily applications, exercises and homework</p>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4		An introduction to partial equations Concepts and definitions	theoretical	General questions and discussion
Week 2	4		Methods of forming a differential equation	theoretical	General questions and discussion
Week 3	4		Methods for solving linear partial differential equations, the direct method, and Lagrange's equation	theoretical	General questions and discussion
Week 4	4		Method for solving nonlinear partial differential equations of the first order, first case $P(x,y,z)p + Q(x,y,z)q + R(x,y,z)r = 0$ + Example Solutions	theoretical	General questions and discussion
Week 5	4		Methods for solving nonlinear partial differential equations of the first order, second case $Z = px + qy + f(p,q)$ + Example solutions	theoretical	General questions and discussion
Week 6	4		Methods for solving nonlinear partial differential equations of the first order, third case $F(x,y,z) = 0$ + Examples solutions	theoretical	General questions and discussion
Week 7	4		Methods for solving nonlinear partial differential equations of the first order, second case $F_1(x,p) = f_2(y,q)$ + Examples solutions	theoretical	General questions and discussion
Week 8	4		General review of methods for solving partial equations for all previous cases	theoretical	General questions and discussion
Week 9	4		Homogeneous linear partial differential equations with constant coefficients of higher order when $f(x,y) = 0$ ;	theoretical	General questions and discussion
Week 10	4		Homogeneous linear partial differential equations with constant coefficients of higher order when $F(x,y) \neq 0$ . The first and second case	theoretical	General questions and discussion
Week 11	4		Solving some examples for first and second case.	theoretical	General questions and discussion
Week 12	4		Homogeneous linear partial differential equations with constant coefficients of higher order when $F(x,y) \neq 0$ . The third and fourth	theoretical	General questions and discussion
Week 13	4		Solving some examples for Third and fourth case	theoretical	General questions and discussion
Week 14	4		Homogeneous linear partial differential equations with constant coefficients of higher order when $F(x,y) \neq 0$ . The Fifth and sixth case	theoretical	General questions and discussion
Week 15	4		Solving some examples for Fifth and sixth case	theoretical	General questions and discussion

## 11. Course Evaluation

Monthly 40%  
Daily preparation and oral 10%  
Final exam 50%

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Introduction to Partial Differential Equations and Boundary value problems, by Rene Denmeyer, Mac Graw- Hill, 1968.
Main references (sources)	2- Partial Differential Equations , Methods and Applications, by R. C. Mcowen, Prentice Hall,1995