

## Course Description Form

<b>1. Course Name:</b>					
Solutions of ODE					
<b>2. Course Code:</b>					
MATH216					
<b>3. Semester / Year:</b>					
Second / Second					
<b>4. Description Preparation Date:</b>					
2024					
<b>5. Available Attendance Forms:</b>					
Physical attendance					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
60 Hours/ 4 Units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Dr. Fatimah Al-Taie Email: fatimah.altaie@nahrainuniv.edu.iq					
<b>8. Course Objectives</b>					
<b>Course Objectives</b>		<ul style="list-style-type: none"> <li>Learning the basic concepts of mathematics, application in reality, solution of ordinary differential equations with first-, and higher-order and their applications. In addition, different classes of ODEs are considered.</li> </ul>			
<b>9. Teaching and Learning Strategies</b>					
<b>Strategy</b>	The learning and teaching strategy is presented by: Providing the students with a sufficient amount of mathematical terms and definitions by attending lectures and presenting on the whiteboard to connect the students with the lecturer to solve as many real-life applications as possible. The pdf lectures, homework, quizzes, and exercises are shared on Google Classroom.				
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>
1-2	8	Introduction to DE	Definition and classification of Differential Equations (DE's)	lectures	

3-6	16	First-order DE's	Methods for solving first order ODE's	lectures	
7-9	12	Higher DE's	The general form of higher-order DE's	lectures	
10-11	8	Homogeneous DE's	Definition and method on solving homo. DE's	lectures	
12-13	8	Nonhomogeneous DE's	Definition, properties, and methods of solving non-homo. DE's	lectures	
14-15	8	Laplace transform	Definition/properties of Laplace transform and then using Laplace transformation in solving DE's	lectures	

## 11. Course Evaluation

**Pre-final exam: 40%**  
(Quizzes, homework: 10%, Mid-Exams 30%).

**Final exam: 60%**

**Total: 100%**

## 12. Learning and Teaching Resources

Required textbooks (curriculum books, if any)	Earl D. Rainville and Phillip E. Bedient, Elementary Differential Equations, Collier Macmillan Publishers, fifth Edition, New York, 1974.
Main references (sources)	[1] C. Henry Edwards and David E. Penney, Differential Equations and Linear Algebra, ser. Pearson International Edition, third edition. Pearson Education, United States of America, 2010.  [2] William E. Boyce, and Richard C. DiPrima, Elementary Differential Equations and Boundary Value Problems, John Wiley and Sons, Inc. Seventh edition, United State of America. 2001
Recommended books and references (scientific journals, reports...)	Applications of ODE's
Electronic Websites	1- Google.com 2- <a href="https://www.khanacademy.org/math/differential-equations">https://www.khanacademy.org/math/differential-equations</a>