Form (H)
Short course description

Course title: **Introduction to Differential Equations**	Course number and code: **M. 225**
Previous course requirement**: M.201**	Language of the course: **Arabic**
Course level:**5th. Th. year.**	Effective hours**: 4(3+2+0)**

Course description **وصف المقرر :**

First differential equations , linear homogeneous differential equations of higher order with constants coefficients and variables .Linear non homogeneous differential equations (Undetermined coefficients and variation of parameters methods.). Method of reduction of order , method of power series to find the solutions of linear differential equations of second order with polynomial functions around an ordinary point. Linear system differential equations. Laplace Transform and its applications.	

Course objectives **أهداف المقرر**

1- Give the basic concept of the differential equations.	
2- Learn some method to solve many differential equations.	
3- using power series for solving some linear differential equations.	
4- Solving some differential equations by using Laplace transform.	

Learning outcomes (understanding, knowledge, and intellectual and scientific skills)

After studying this course, the student is expected to be able to:

1- **Classify the differential equations and find their solutions.**	
2- study the existence and uniqueness for some initial value problems (IVP).	
3- Solve some linear D.E. with higher order homogeneous and nonhomogeneous ,also Cauchy – Euler 's equation.	
4-Use power series.	
5- Solve linear system differential equations.	

Textbooks adopted and supporting references

Title of the book	Author's name	Publisher's name	Date of publication
1- Introduction to differential equations (Arabic).	**Dr.Ibrahim Sarmini , Dr.Moustafa Damlakhi ,Dr.Sadon Ibrahim Al Ibrahim.**		
2-Elementary differential equations.	**Raivill and Badint.**		
differential equations and boundary values problem.	**Zill**.		