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學期	1082
流水號	21071
課號	MA8018
授課教師	陳建隆
課程名稱(中文)	微分方程II
課程名稱(英文)	Differential Equations II
學分	3
課程目標	<p>The objects of this course are the followin:</p> <p>(1) Study the Basic mathematical models coming from the areas of Biology, data science and physics, etc.</p> <p>(2) Learn the fundamental theorems of ODE</p> <p>(3) Investigate the principles of stability</p> <p>(4) Further topic of the related Dynamical Systems and patterns</p>
授課內容	<p>In this course, we study the following contents:</p> <p>(1) The Basic mathematical models coming from the areas of Biology, data science, image processing and physics, etc.</p> <p>(2) Differential equations of the first order, linear systems of ordinary differential equations:</p> <p>(3) Linear System with constant and periodic coefficients, Floquet theory;</p> <p>(4) Phase plane analysis for 2-D autonomous system;</p> <p>(5) Elementary qualitative properties of nonlinear differential equations, Dulac Q., Omega limit sets and Invariant sets,</p> <p>(6) Poincare-Bendixson Theorem and Dynamical System.</p> <p>(7) Related applications of ODEs.</p>

教科書/ 參考書	Reference books:(1) Sze-Bi Hsu; Ordinal Differential Equations (2) Jack Hale: Ordinal Differential Equations (3) F. John: Partial Differential Equations, 2nd Edition	
授課方 式	講授 研討 實習/實驗	
評量配 分比重	(1) Exercises (40%) (2) Reports(30%) (3)Final Exam (30%)	
辦公時 間	Tuesday 1:00–2:00 PM; Friday 1:00–200 PM	
課程領 域	理論數學,計算數學	
跨系課 程領域	N/A	
系所核心能 力	強度指 數	評量方式
專業知識	(4) 高	紙筆測驗/會考,作業練習,實作/實驗,出席/課堂表現,
學術研究	(4) 高	紙筆測驗/會考,作業練習,實作/實驗,出席/課堂表現,
獨立思考	(4) 高	紙筆測驗/會考,作業練習,專題研究報告(書面),實作/實驗,出席/ 課堂表現,
國際視野	(4) 高	紙筆測驗/會考,作業練習,實作/實驗,出席/課堂表現,
終身學習	(4) 高	紙筆測驗/會考,作業練習,專題研究報告(書面),實作/實驗,出席/ 課堂表現,