課程流水號 Serial Number	21027
課號 Course Number	MA2041
班次 Class	A
科目名稱(中文) Course Title(in Chinese)	微分方程 I
科目名稱(外文) Course Title(In English or other languages)	Elementary Differential Equations I
授課老師(中文) Instructor(in Chinese)	陳建隆
授課老師(外文) Instructor(In English or other languages)	Jann-Long Chern
辦公時間(中文) Office Hour(in Chinese)	Monday 15-17 or Make a point
辦公時間(外文) Office Hour(In English or other languages)	Monday 15-17 or Make a point
課程目標(中文) Course Objective(in Chinese)	Learn the fundamental theory of ODEs. he aim of this course is to help the undergraduate students to learn the applications of calculus and linear algebra in solving some basic ordinary differential equations and partial differential differential equations.
課程目標(外文) Course Objective(In English or other languages)	Learn the fundamental theory of ODEs. he aim of this course is to help the undergraduate students to learn the applications of calculus and linear algebra in solving some basic ordinary differential equations and partial differential differential equations.
授課內容(中文) Course Description(in Chinese)	1. Introduction: Solutions of some differential equations, classification of differential equations. 2. First order differential equations: Linear equations, separable equations, population dynamics, exact equations and integrating factor, Euler method, the existence and uniqueness theorem. 3second order equations: homogeneous equations with constant coefficients, fundamental solutions, linear independence and Wronskian, complex roots, repeated roots, method of

	undetermuned coefficients, variation of parameter. 4. Higher order equations homogeneous equations with constant coefficients, method of undetermuned coefficients, variation of parameter.
授課內容(外文) Course Description(In English or other languages)	1. Introduction: Solutions of some differential equations, classification of differential equations. 2. First order differential equations: Linear equations, separable equations, population dynamics, exact equations and integrating factor, Euler method, the existence and uniqueness theorem. 3second order equations: homogeneous equations with constant coefficients, fundamential solutions, linear independence and Wronskian, complex roots, repeated roots, method of undetermuned coefficients, variation of parameter. 4. Higher order equations homogeneous equations with constant coefficients, method of undetermuned coefficients, variation of parameter.
教科書/參考書(中文) Textbook/References(in Chinese)	References: (1) Elementary Differential Equations: Boyce, Richard C. DiPrima (2) Related Topics of Lectures
教科書/參考書(外文) Textbook/References(In English or other languages)	References: (1) Elementary Differential Equations: Boyce, Richard C. DiPrima (2) Related Topics of Lectures
自編教材比例 Self-compiled Textbook/References Proportion	30%
授課方式 Requirements	講授Lecture 研討Seminar 實習/實驗 Internship/Experiment
評量配分比重(中文) Grading(in Chinese)	(Quiz+Exercises/Lectures report)+(Mid-Exam)+(Final Exam)=100%
評量配分比重(外文) Grading(In English or other languages)	Quiz+Exercises/Lectures report)+(Mid-Exam)+(Final Exam)=100%
課程所屬學制 Educational System	學士班(Undergraduate Programme)
課程領域 Course Domain	理論數學（Pure Mathematics）
跨系課程領域 Cross Department Course Domain	

系所核心能力 Core Competencies of Department	強度指數 Overall Rating						評量方式
	0 不具備 Zero	1 非常低 Very Low	2 低 Low	3 普通 Medium	4 高 High	5 非常高 Very High	Corresponding Assessments
發掘問題 Exploring problems	○	○	○	○	○	◉	☑ 紙筆測驗/會考(Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試(Presentation/Oral Exam) ☑ 專題研究報告(書面)(Research Report(printed on paper)) ☑ 實作/實驗(Practices/Experiments) ☑ 出席/課堂表現(Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☐ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☐ 作品/創作展演(Products/Creative Performance) ☑ 其他(Others) ☐ 無(No assessment)
邏輯分析 Logical analysis	○	○	○	○	◉	○	☑ 紙筆測驗/會考(Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試(Presentation/Oral Exam) ☑ 專題研究報告(書面)(Research Report(printed on paper)) ☑ 實作/實驗(Practices/Experiments) ☑ 出席/課堂表現(Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☐ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☐ 作品/創作展演(Products/Creative Performance) ☑ 其他(Others) ☐ 無(No assessment)

系所核心能力 Core Competencies of Department	強度指數 Overall Rating 0	1 2	3	4	5 評量方式	
	不具備 Zero	非常低 Very Low	低 Low	普通 Medium	高 High	非常高 Very High	Corresponding Assessments
演算能力 Math skills	○	○	○	○	◉	○	☑ 紙筆測驗/會考 (Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試 (Presentation/Oral Exam) ☑ 專題研究報告(書面) (Research Report(printed on paper)) ☑ 實作/實驗 (Practices/Experiments) ☑ 出席/課堂表現 (Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☐ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☐ 作品/創作展演 (Products/Creative Performance) ☑ 其他(Others) ☐ 無(No assessment)
電腦應用 Computer applications	○	○	○	○	○	◉	☑ 紙筆測驗/會考 (Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試 (Presentation/Oral Exam) ☑ 專題研究報告(書面) (Research Report(printed on paper)) ☑ 實作/實驗 (Practices/Experiments) ☑ 出席/課堂表現 (Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☑ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☑ 作品/創作展演 (Products/Creative Performance) ☑ 其他(Others) ☐ 無(No assessment)

強度指數 Overall Rating 系所核心能力 Core Competencies of Department	0	1 2		3	4	5 評量方式
	不具備 Zero	非常低 Very Low	低 Low	普通 Medium	高 High	非常高 Very High
語文溝通 Communication skills	○	○	○	⦿	○	○

Corresponding Assessments
- ☑ 紙筆測驗/會考 (Test/Exam)
- ☑ 作業練習(Assignments)
- ☑ 口頭報告/口試 (Presentation/Oral Exam)
- ☑ 專題研究報告(書面) (Research Report(printed on paper))
- ☑ 實作/實驗 (Practices/Experiments)
- ☑ 出席/課堂表現 (Attendance/Performance)
- ☑ 學習檔案評量(Portfolios Assessment)
- ☑ 自我評量/同儕互評(Self Assessment/ Peer Assessment)
- ☑ 作品/創作展演 (Products/Creative Performance)
- ☑ 其他(Others)
- ☐ 無(No assessment)

獨立思考 Independent thinking	○	○	○	⦿	○	○

- ☑ 紙筆測驗/會考 (Test/Exam)
- ☑ 作業練習(Assignments)
- ☑ 口頭報告/口試 (Presentation/Oral Exam)
- ☑ 專題研究報告(書面) (Research Report(printed on paper))
- ☑ 實作/實驗 (Practices/Experiments)
- ☑ 出席/課堂表現 (Attendance/Performance)
- ☑ 學習檔案評量(Portfolios Assessment)
- ☑ 自我評量/同儕互評(Self Assessment/ Peer Assessment)
- ☑ 作品/創作展演 (Products/Creative Performance)
- ☑ 其他(Others)
- ☐ 無(No assessment)

系所核心能力 Core Competencies of Department	強度指數 Overall Rating	0	1	2	3	4	5	評量方式
		不具備 Zero	非常低 Very Low	低 Low	普通 Medium	高 High	非常高 Very High	Corresponding Assessments
團隊合作 Team work		○	○	○	○	○	●	☑ 紙筆測驗/會考 (Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試 (Presentation/Oral Exam) ☑ 專題研究報告(書面) (Research Report(printed on paper)) ☑ 實作/實驗 (Practices/Experiments) ☑ 出席/課堂表現 (Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☑ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☑ 作品/創作展演 (Products/Creative Performance) ☑ 其他(Others) ☐ 無(No assessment)
博雅通識 Liberal education		○	○	●	○	○	○	☑ 紙筆測驗/會考 (Test/Exam) ☑ 作業練習(Assignments) ☑ 口頭報告/口試 (Presentation/Oral Exam) ☑ 專題研究報告(書面) (Research Report(printed on paper)) ☑ 實作/實驗 (Practices/Experiments) ☑ 出席/課堂表現 (Attendance/Performance) ☑ 學習檔案評量(Portfolios Assessment) ☑ 自我評量/同儕互評(Self Assessment/ Peer Assessment) ☑ 作品/創作展演 (Products/Creative Performance) ☐ 其他(Others) ☐ 無(No assessment)