

國立中正大學機械工程學系 109 學年度第二學期教學大綱表

課程名稱：(中文) 工程分析(二) (英文) Engineering Analysis (II)					開課單位	機械系
					課程代碼	4205051
授課教師	陳世樂	學分數	3	選修	開課年級	大四、碩博士班
先修科目或先備能力：工程數學(一)、工程數學(二)						
課程概述： 1、分析工程問題的技巧與法則。使學生在工程問題依其存在系統空間定義出問題。 2、由所建立的分析法則，轉化成數學模式，再由解決各類模式的數學方法，依工程數學解題技巧與物性意義的定義及合理的假設條件，先由簡易的工程問題賦予其合理答案，再做分析的能力，建立更深層問題的分析與數學模式，使學生可以由其研究領域，推廣至不同性質的工程問題之分析與解答其數學模式的能力，進而應用其結果，探討物性意義的應用，以達到工程分析的目標。 目標： 1、使學生能具有對工程問題分析的能力、技巧與分法。 2、具有解決工程數學的技巧與能力。 3、將工程數學模式與物性意義相配合，建立合理假設的方法以做探討深層工程問題的應用。						
教科書	1. F. B. Hildebrand, <i>Methods of Applied Mathematics</i>, 2nd ed., Englewood Cliffs, N. J.: Prentice-Hall, 1965. 2. G. Strang, <i>Introduction to Applied Mathematics</i>, Wellesley-Cambridge Press, 1986. 3. T. M. Apostol, <i>Mathematical Analysis</i>, 2nd ed., Menlo Park, California: Addison-Wesley, 1974. 4. Jerrold E. Marsden and Michael J. Hoffman, <i>Basic complex analysis</i>, 2nd ed., New York, N.Y. :W.H. Freeman, 1987. 5. A. Papoulis, <i>Probability, Random Variables, and Stochastic Processes</i>, 3rd ed., McGraw-Hill, 1991. 6. Ronald E. Walpole and Raymond H. Myers, <i>Probability and statistics for engineers and scientists</i>, 6th ed., New Jersey :Prentice Hall International., 1998.					
課程大綱				分配時數		可達成核心能力
單元主題	內容綱要	講授	示範	習作	其他	
Introduction	Scope of this course	3				D1, D2, D3, D4, D5, D6, D7, D8
Optimization	Theory and applications of optimization	6	1			D1, D2, D4, D5
Calculus of Variations	Theory and applications of calculus of variations	9	1			D1, D2, D4, D5
Stochastic Process	Theory and applications of stochastic process	7	2			D1, D2, D4, D5
Basics of Statistics	Theory and applications of statistics	6	1			D1, D2, D4, D5
Complex Variables	Theory and applications of complex variables	12	2			D1, D2, D4, D5

可達成核心能力		核心能力達成指標
D1	具機械領域之專業知識。	
D2	策劃及執行機械及其相關領域專題研究之能力。	
D3	撰寫機械專業論文之能力。	
D4	創新思考及獨立解決機械問題之能力。	
D5	與不同領域人員協調整合之能力。	
D6	良好的國際觀。	
D7	領導、管理及規劃之能力。	
D8	終身自我學習成長之能力。	

教學要點概述:

上課時間	上課地點	學習成果評量方式	Office hour	教學品質評量方式
星期二、四 08:45~10:00	工二館 214 右	作業 20% 期中考兩次 每次 25% 期末報告 30%	星期二 10:00AM-12:00 PM Rm. 315, Engineering Building II Tel: 2720411-33320 E-mail: imeslc@ccu.edu.tw	教學意見調查核心 能力重要性及達成 度分析問卷
週次	教 學 與 作 業 進 度		備 註	
1	Introduction			
2~4	Optimization		Homework(1) due at the end of week 2	
4~7	Calculus of Variations		Homework(2) due at the end of week 4 Homework(3) due at the end of week 5	
7~11	Complex Variables		Homework(4) due at the end of week 6 Exam#1 in week 8 Homework(5) due at the end of week 9 Homework(6) due at the end of week 10	
11~13	Stochastic Process		Homework(7) due at the end of week 11 Exam#2 in week 13	
14~16	Basics of Statistics		Homework(8) due at the end of week 14 Homework(9) due at the end of week 15	
17	Final Exam		Final exam	

Engineering Analysis (II)

Instructor: Shyh-Leh Chen (陳世樂)

Office: EB315 (Phone – ext. 33320)

Email: imeslc@ccunix.ccu.edu.tw

Class Schedule: TueB, ThuB @ EB215R

Class Level: senior undergraduate or first-year graduate

Contents:

1. Introduction to Optimization
2. Calculus of Variations
3. Complex Variables
4. Stochastic Process
5. Basics of Statistics

References:

7. F. B. Hildebrand, *Methods of Applied Mathematics*, 2nd ed., Englewood Cliffs, N. J.: Prentice-Hall, 1965.
8. G. Strang, *Introduction to Applied Mathematics*, Wellesley-Cambridge Press, 1986.
9. T. M. Apostol, *Mathematical Analysis*, 2nd ed., Menlo Park, California: Addison-Wesley, 1974.
10. Jerrold E. Marsden and Michael J. Hoffman, *Basic complex analysis*, 2nd ed., New York, N.Y. :W.H. Freeman, 1987.
11. A. Papoulis, *Probability, Random Variables, and Stochastic Processes*, 3rd ed., McGraw-Hill, 1991.
12. Ronald E. Walpole and Raymond H. Myers, *Probability and statistics for engineers and scientists*, 6th ed., New Jersey :Prentice Hall International., 1998.

Grading Policy:

Homework	20%
Midterm Exam	2×25%
Final Report	30%
100%	

Class regulations:

- Homework will be assigned and collected on a weekly basis. No late homework is accepted.
- All exams are open books and notes.
- Any comments/suggestions at any time are welcome.