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|---|---|--------------------|---|--------------------|-----|
| 課程名稱<br>(course name)   | (中) 工程數學(一) (U006)  |                    |   |                    |     |
|   | (Eng.) Engineering Mathematics (I)  |                    |   |                    |     |
| 開課系所班級<br>(dept. & year)  | 材料系大學部  | 學分<br>(credits)    | 3   | 授課教師<br>(teacher)  | 蔡銘洪 |
| 課程類別<br>(course type)   | <input checked="" type="checkbox"/> 必修(Mandatory)<br><input type="checkbox"/> 選修(Elective)  | 授課語言<br>(language) | 中文  | 開課學期<br>(semester) | 上學期 |
| 課程簡述<br>(course description)  | (中)   |                    |   |                    |     |
|   | (Eng.)<br>The content of the lectures help students to understand the mathematics equations applied in any field. The content of the course is fairly standardized and a text in Advanced Engineering Mathematics is a compendium of many mathematics topics. All the topics are related by the expedient of either being needed or useful in course and subsequently careers in research, science and engineering. |                    |   |                    |     |
| 先修課程名稱<br>(prerequisites)   |   |                    |   |                    |     |
| 課程目標與核心能力關聯配比(%)<br>(relevance of course objectives and core learning outcomes) |   |                    | 課程目標之教學方法與評量方法<br>(teaching and assessment methods for course objectives) |                    |     |
| 課程目標(中/Eng.)  | 核心能力  | 配比(%)              | 教學方法  | 評量方法               |     |
| 使學生熟習工程數學之原理與計算、了解工程數學於相關工程領域之應用、並能以工程數學解決工程相關問題                                | <input checked="" type="checkbox"/> 1.運用數學、科學及材料工程知識能力  | 50                 | 講授  | 測驗<br>出席狀況         |     |
|   | <input checked="" type="checkbox"/> 2.設計與執行材料實驗及分析數據之能力   | 50                 |   |                    |     |
|   | <input type="checkbox"/> 3.執行材料工程實務所需之技術與能力   |                    |   |                    |     |
|   | <input type="checkbox"/> 4.製程整合及元件實作之能力   |                    |   |                    |     |
|   | <input type="checkbox"/> 5.溝通協調之能力與團隊合作之精神  |                    |   |                    |     |
|   | <input type="checkbox"/> 6.獨立思考、解決問題、終身學習之習慣與能力   |                    |   |                    |     |
|   | <input type="checkbox"/> 7.培養國際觀及認識綠色材料對全球環境的影響   |                    |   |                    |     |
|   | <input type="checkbox"/> 8.瞭解材料工程人員的社會責任與專業倫理   |                    |   |                    |     |
| 授課內容(單元名稱與內容、習作/考試進度、備註)<br>(course content and homework/ tests schedule)       |   |                    |   |                    |     |

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| Part 1 Ordinary Differential Equations                                     |                |
| Ch1 Introduction to differential equations                                 |                |
| Ch2 First order differential equations                                     |                |
| Ch3 Higher order differential equations                                    |                |
| Ch4 The Laplace Transform  |                |
| Ch5 Series solutions of linear differential equations                      |                |
| <b>學習評量方式<br/>(evaluation)</b>   |                |
| Quiz 1 15%   |                |
| Mid-term 30%   |                |
| Quiz 2 15%   |                |
| Final test 35%   |                |
| Attendance 5%  |                |
| <b>教科書&amp;參考書目 (書名、作者、書局、代理商、說明)<br/>(textbook&amp; other references)</b> |                |
| Advanced Engineering Mathematics, D. G. Zill & W. S. Wright, 5th Ed.       |                |
| <b>課程教材 (教師個人網址請列在本校內之網址。)<br/>(teaching aids &amp; teacher's website)</b> |                |
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| <b>課程輔導時間(office hours)</b>  | By appointment |