

## 課程大綱及進度表

|              |   |
|--------------|---|
| 開課系所         | 數學二   |
| 開課學年         | 100   |
| 開課學期         | 2   |
| 課程名稱(中文)     | 組合及圖論   |
| 課程名稱(英文)     | COMBINATIONS AND GRAPHS   |
| 課程碼          | C134200   |
| 分班碼          |   |
| 先修科目或先備能力    |   |
| 學分數          | 3   |
| 開課教師         | 江中宙   |
| e-mail       | ccjiang@math.ncku.edu.tw  |
| 電話           | 65124   |
| Office Hours | By Appointment  |
| 課程概述         | The goal of this course is to introduce basic knowledge on graph theory and develop facility at combinatorial reasoning, which are the bases for analyzing a wide of problems in computer science and discrete applied mathematics. |
| 教學目標         |   |
| 授課課程大綱明細     | <p>Fundamental Concepts</p> <ul style="list-style-type: none"> <li>• Graph Models             <ul style="list-style-type: none"> <li>i. Paths, Cycles and Trails</li> <li>ii. Vertex Degrees and Counting</li> </ul> </li> </ul>    |

|             |  |
|-------------|--|
|             | <ul style="list-style-type: none"> <li>iii. Isomorphism</li> <li>• Directed Graphs</li> </ul> <p><b>Trees and Distance</b></p> <ul style="list-style-type: none"> <li>• Basic Properties</li> <li>• Spanning Trees and Enumeration</li> <li>• Optimization and Trees</li> </ul> <p><b>Matchings and Factors</b></p> <ul style="list-style-type: none"> <li>• Matchings and Covers</li> <li>• Algorithms and Applications</li> <li>• Matchings in General Graphs</li> </ul> <p><b>Connectivity and Paths</b></p> <ul style="list-style-type: none"> <li>• Cuts and Connectivity</li> <li>• k-connected Graphs</li> <li>• Network Flow Problems</li> </ul> <p><b>Coloring of Graphs</b></p> <p><b>Planar Graphs</b></p> <ul style="list-style-type: none"> <li>• Embeddings and Euler's Formula</li> <li>• Characterization of Planar Graphs</li> <li>• Parameters of Planarity</li> </ul> |
| <p>參考書目</p> | <p>Introduction to Graph Theory 2<sup>th</sup> edition<br/>by Douglas B. West</p>  |
| <p>課程要求</p> |  |
| <p>評量方式</p> | <ul style="list-style-type: none"> <li>• 期中(40%)</li> <li>• 期末(40%)</li> <li>• 平時成績 (作業及不定時小考 20%)</li> </ul>  |

|      |  |
|------|--|
| 課程網址 |  |
| 助教資訊 |  |
| 備註   |  |