

Appendix R Example of Syllabus

National Taipei University of Technology

Department of Industrial Engineering and Management

Syllabus of Bachelor Course 2013 year First Semester

國立台北科技大學工業工程與管理系大學部 102 年第 1 學期

教 學 大 綱

| | | | |
|--|---|----------------------------------|------------|
| Course Name (課程名稱) | Operations Research (II) 作業研究(二) | | |
| Course Code (課程代碼) | 3723034 | Department / Code (開課單位/單位代碼) | IEM 工管系 |
| Instructor (授課教師) | James Liou 劉建浩 E-mail: jhliou@ntut.edu.tw | Credit (學分數) | 3 |
| Prerequisites (先修課程) | None 無 | | |
| <p>Course Category 修課類別：<input checked="" type="checkbox"/> Required 必修 <input type="checkbox"/> Elective 選修</p> <p>Discipline 學域類別：</p> <p><input type="checkbox"/> Production management and manufacturing services 生產管理與製造服務</p> <p><input type="checkbox"/> E-industry and the application of information 產業電子化與資訊應用</p> <p><input checked="" type="checkbox"/> Management sciences and decision making 管理科學與決策</p> <p><input type="checkbox"/> Financial Management 財務管理</p> <p><input type="checkbox"/> Marketing, Service and Technology Management 市場，服務和科技管理</p> | | | |
| Course Objectives (課程目標) | <p>This course will teach the basic theory and algorithm of operations research. Students will understand many linear programming models to solve the real-world problem. The main topics will include the following: Transportation Problems, Network Models, Integer Programming, Dynamic Programming, Decision Analysis, Markov Chain etc.</p> <p>The main objective is to train students the ability to build mathematical models for the decision problems and solve the mathematical problems.</p> <p>本課程教授作業研究數學模式之基本理論與演算法。學生將學會各種線性規劃模式以處理各種實務問題。課程主題包括、運輸問題、網路模式、整數規劃、動態規劃、決策分析、與馬可夫隨機過程，重點在於訓練學生能建立決策問題的數學模式以及求解數學問題</p> | | |
| Textbook (課程教材) | Hillier, F.S. and Lieberman, G.J. (2010), Introduction to Operations Research, 9th Edition, McGraw-Hill | | |
| Reference (參考書目) | An introduction to management science Quantitative Approaches to Decision Making David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Kipp Martin, South-Western | | |

| <p>Evaluation (評量方式)</p> | <p><input type="checkbox"/> 課堂中的隨堂測試(Quiz) <u>20</u> %</p> <p><input type="checkbox"/> 心得/作業撰寫(Assignment) <u>20</u> %</p> <p><input type="checkbox"/> 課堂後測/期末考(筆試)(Final Test) <u>30</u> %</p> <p><input type="checkbox"/> 專題發表(Presentation) _____ %</p> <p><input type="checkbox"/> 個案分析報告撰寫(Case Report) _____ %</p> <p><input type="checkbox"/> 其他(Others) _____ %</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|------|-------|---|------|--------------|---|------|-------------------------|---|------|-------------------------|---|-------|---------------------|---|-------|----------------------------------|---|-------|--|---|-------|-----------------------|---|------|----------------------------|---|-------|---------------------|----|-------|-----------------------------|----|-------|-----------------------------------|----|-------|-----------------------------------|----|-------|---------------------|----|-------|---|----|-------|-------------------|----|-------|---------------|----|------|---------------|----|------|-------------------|
| <p>Pedagogical Methods (教學方法)</p> | <p><input checked="" type="checkbox"/> 講授(Lecture) <input checked="" type="checkbox"/> 專題實作(Seminar on Field Research)</p> <p><input checked="" type="checkbox"/> 個案教學(Case Study) <input type="checkbox"/> 競賽讀書會(Study Group)</p> <p><input type="checkbox"/> 電子教學(e-Learning) <input type="checkbox"/> 產業實習(Internship)</p> <p><input type="checkbox"/> 體驗教學(Project Adventure) <input type="checkbox"/> 服務學習實作(Service Learning)</p> <p><input type="checkbox"/> 角色扮演實境教學(Role Playing) <input checked="" type="checkbox"/> 自主學習(Independent Study)</p> <p><input type="checkbox"/> 企業競賽遊戲(Business Simulation Game) <input type="checkbox"/> 對話教學法(Dialogue Teaching)</p> <p><input type="checkbox"/> 管理電影(Theater Learning) <input type="checkbox"/> 其他_____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Course Web (課程網頁)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Course Outline (課程大綱進度)</p> | <table border="1" data-bbox="434 913 1289 1848"> <thead> <tr> <th>Week</th> <th>Date</th> <th>Topic</th> </tr> </thead> <tbody> <tr><td>1</td><td>9/16</td><td>Introduction</td></tr> <tr><td>2</td><td>9/23</td><td>Transportation problems</td></tr> <tr><td>3</td><td>9/30</td><td>Transportation problems</td></tr> <tr><td>4</td><td>10/07</td><td>Assignment problems</td></tr> <tr><td>5</td><td>10/14</td><td>Introduction to Network Problems</td></tr> <tr><td>6</td><td>10/21</td><td>Shortest Path Problems & Minimum Spanning Tree</td></tr> <tr><td>7</td><td>10/28</td><td>Maximum Flow Problems</td></tr> <tr><td>8</td><td>11/4</td><td>Minimum Cost Flow Problems</td></tr> <tr><td>9</td><td>11/11</td><td>期中考 (Mid-term Exam)</td></tr> <tr><td>10</td><td>11/18</td><td>Dynamic Optimization Models</td></tr> <tr><td>11</td><td>11/25</td><td>Deterministic Dynamic Programming</td></tr> <tr><td>12</td><td>12/02</td><td>Probabilistic Dynamic Programming</td></tr> <tr><td>13</td><td>12/09</td><td>Integer Programming</td></tr> <tr><td>14</td><td>12/16</td><td>Innovative Uses of Binary Variables in Models</td></tr> <tr><td>15</td><td>12/23</td><td>Decision Analysis</td></tr> <tr><td>16</td><td>12/30</td><td>Decision Tree</td></tr> <tr><td>17</td><td>1/06</td><td>Markov Chains</td></tr> <tr><td>18</td><td>1/13</td><td>期末考試 (Final Exam)</td></tr> </tbody> </table> | Week | Date | Topic | 1 | 9/16 | Introduction | 2 | 9/23 | Transportation problems | 3 | 9/30 | Transportation problems | 4 | 10/07 | Assignment problems | 5 | 10/14 | Introduction to Network Problems | 6 | 10/21 | Shortest Path Problems & Minimum Spanning Tree | 7 | 10/28 | Maximum Flow Problems | 8 | 11/4 | Minimum Cost Flow Problems | 9 | 11/11 | 期中考 (Mid-term Exam) | 10 | 11/18 | Dynamic Optimization Models | 11 | 11/25 | Deterministic Dynamic Programming | 12 | 12/02 | Probabilistic Dynamic Programming | 13 | 12/09 | Integer Programming | 14 | 12/16 | Innovative Uses of Binary Variables in Models | 15 | 12/23 | Decision Analysis | 16 | 12/30 | Decision Tree | 17 | 1/06 | Markov Chains | 18 | 1/13 | 期末考試 (Final Exam) |
| Week | Date | Topic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 9/16 | Introduction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 9/23 | Transportation problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 9/30 | Transportation problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 10/07 | Assignment problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 10/14 | Introduction to Network Problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 10/21 | Shortest Path Problems & Minimum Spanning Tree | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 10/28 | Maximum Flow Problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 11/4 | Minimum Cost Flow Problems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 11/11 | 期中考 (Mid-term Exam) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 11/18 | Dynamic Optimization Models | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 11/25 | Deterministic Dynamic Programming | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 12/02 | Probabilistic Dynamic Programming | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 12/09 | Integer Programming | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 12/16 | Innovative Uses of Binary Variables in Models | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 12/23 | Decision Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 12/30 | Decision Tree | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 1/06 | Markov Chains | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 1/13 | 期末考試 (Final Exam) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Contribution to learning goals (本課程能達成開課單位的哪些目標)</p> | <p>Undergraduates 大學部</p> <p><input checked="" type="checkbox"/> Acquire functional business knowledge and relevant abilities.</p> <p><input type="checkbox"/> Demonstrate effective oral and written communication by using appropriate technologies.</p> <p><input type="checkbox"/> Understand the ethical and social responsibilities of individuals and organizations.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- Be able to collaborate productively and function effectively in the accomplishment of group tasks.

MBA 部

- Apply the learned business knowledge to solve business and industry-related problems.
- Demonstrate effective oral and written communication by using appropriate technologies.
- Understand the ethical and social responsibilities of individuals and organizations.
- Be able to collaborate productively and function effectively in the accomplishment of group tasks.

EMBA 部

- Possess effective communication strategies on personal, corporate and global levels to build individual executive communication competencies.
- Understand the ethical and social responsibilities of individuals and organizations.
- Be able to analyze the impact of business actions on specific management situations.
- Demonstrate an understanding of the characteristics of effective leadership.

PhD 部

- Demonstrate effective oral and written communication
- Understand the ethical and social responsibilities of individuals and organizations.
- Be able to function independently and demonstrate a professional level of research that expands the fields of business-related research.

