DEPARTMENT: Mathematics

COURSE: MA 540

TITLE: Discrete Structures II and Algorithms

TEXTS:
- Sequential and Parallel Algorithms
  By Kenneth A. Berman and Jerome L. Paul
  PWS Publishing Company
- Discrete Mathematics and its Applications
  5th edition
  By Kenneth H. Rosen
  McGraw-Hill

CREDITS: 3 (2 class hours, 2 lab hours)

Fall 2004

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A. Testing Guidelines:
The following exams should be scheduled:
  i. A one-hour exam at the end of the First Quarter
  ii. A one-session exam at the end of the Second Quarter
  iii. A one-hour exam at the end of the Third Quarter
  iv. A one-session Final Examination

B. A Computer Algebra System will be used in class and for a project.
<table>
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<th>Week</th>
<th>Discrete Mathematics</th>
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<td>1</td>
<td><strong>Chapter 1</strong> Introduction and Preliminaries MATLAB review</td>
<td>P. 30: 1.1, 1.5, 1.8, 1.13, 1.15, 1.20, 1.23</td>
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| 2    | 9.2 (Rosen) Applications of Trees **pages** 644 – 656  
9.4 (Rosen) Spanning Trees **pages** 674 – 685  
MATLAB m-files a review | *P. 656*: 1-7 odd, 11, 19, 20, 21, 22, 37  
*P. 685*: 2 – 6 all, 29, 30, 32 |
| 3    | 9.5 (Rosen) Minimum Spanning Trees **pages** 688 – 693  
First Examination | *P. 693*: 1, 2, 3 |
| 4    | **Chapter 2** Elementary Data Structures MATLAB | P. 70: (Project 2.3), 2.2, 2.8, 2.10, 2.12, 2.13 |
| 5    | **Chapter 2** Elementary Data Structures MATLAB code for  
**Linear Search** | P. 73: 2.16, 2.17, 2.19 |
| 6    | **Chapter 2** Elementary Data Structures MATLAB code for  
**Binary Search** | P. 74: 2.24, 2.25, 2.26, 2.27 |
| 7    | **Mid-semester Examination**  
**Chapter 3** Design and Analysis of Sequential Algorithms 3.1 – 3.5 MATLAB code for **Insertion Sort** | P. 109: 3.1, 3.2 |
| 8    | **Chapter 3** Design and Analysis of Sequential Algorithms 3.1 – 3.5 MATLAB code for **Selection Sort** | P. 109: 3.3, 3.4, 3.8 |
| 9    | **Chapter 3** Design and Analysis of Sequential Algorithms 3.1 – 3.5 MATLAB code for **Bubble Sort** | P. 110: 3.13, 3.15 (b),3.16 |
| 10   | 2.2 (Rosen) The Growth of Functions **pages** 131 – 142 | P. 111: 3.17, 3.18, 3.21, 3.22, 3.29 |
| 11   | 6.1 (Rosen) Recurrence Relations **pages** 401 – 408  
**Third Examination** | *P. 409*: 4, 6, 9, 29, 31, 44, 47, 49 |
| 13   | **Chapter 12** Elementary Data Structures 12.1 – 12.2 | P. 443: 12.1, 12.3, 12.4 |
| 14   | Project Presentation | |
| 15   | Review/ MATLAB Presentation | |
|      | **Final Examination** | |