**MTH 6617-Discrete Mathematics**
**Course Outline and Syllabus**
**Fall 2008**

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OBJECTIVES

To develop mathematical problem solving skills and introduce students to a wide variety of applications of discrete mathematics. Topics covered are combinatorial counting, logic, set theory, induction, relations, generating functions, recurrence relations, network graphs, discrete optimization, and combinatorial games.

COURSE MATERIALS

Required: *Discrete and Combinatorial Mathematics an Applied Introduction*
5th Edition, R. Grimaldi, Addison Wesley. A solution guide is also available.

Class Notes, available on Prof. Rispoli's faculty webpage.
www.dowling.edu/faculty/Rispoli/

ADDITIONAL REFERENCES

1. *Discrete Mathematics and its Applications* 6th Edition, K. Rosen, McGraw Hill.
2. *Discrete Mathematics*, Schaum's Outline by S. Lipschutz and L. Lipson, McGraw Hill.

GRADES

One Semester Exam worth 30% each of final course grade
Comprehensive Final Exam worth 40% of final course grade
Graded Homework Assignments worth 15% of final course grade
Applications of Discrete Math Paper worth 15% of final course grade

Cheating on exams and papers will not be tolerated. Procedures outlined in catalog will be strictly enforced. Homework should be written individually by each student, even if working in groups. Credit will not be given for identical papers.

OFFICE HOURS and EXTRA HELP

Mondays and Wednesdays 9:30 AM – 10:00 AM and 5:30 PM – 6:00 PM,
Mondays 2:00 PM - 3:00 PM,
Tuesdays 10:00-11:00 AM, and by appointment.
Extra help is also available from Academic Services via study groups run by Paul Guzzardo.

**MTH 6617- DISCRETE MATH Syllabus**

HOMEWORK: students should do as many odd problems as possible in each section that we cover. Exams are based on a thorough understanding of these problems.

| LECTURE /TOPIC | TEXT Chapter | Sections | Exercises |
|---|---|---|---|
| 1. Principles of Counting | Chapter 1 | | |
| 1.1 & 1.2 | | 1,3,5,7,9,11,13,15,19,21,23,25,27 | 1.3 |
| | | 1,2,3,5,6,7,9,11,13,15,21,23,29 | |
| 1.4 | | 1,2,3,5,7,9,13,15,18 | |
| 1.5 | | 1,3,4 | |
| 2. Fundamentals of Logic | Chapter 2 | | |
| | 2.1 | 1,3,4,5,6,7,8,9,11 | |
| | 2.2 | 1,3,5,7,9,13,18,19 | |
| | 2.3 | 1,5,7,8,9,10,11,12 | |
| | 2.4 | 1,3,4,5,6,7,8,9,12,13,14,15,18,21 | |
| 3. Set Theory | Chapter 3 | | |
| | 3.1 | 1,3,5,6,7,8,9,10,12,13,14,19,21 | |
| | 3.2 | 1,2,3,4,5,7,8,913,14,15,16,17 | |
| | 3.3 | 1,2,3,5,7,8,9 | |
| | 3.4 | 1,3,5,6,7,8,9,11,15,16 | |
| 4. Integers and Induction | Chapter 4 | | |
| | 4.1 | 1,2,3,6,7,9,13,14,15,18,23,24 | |
| | 4.2 | 1,2,3,11,12,13,14,15,16, | |
| | 4.3 | 3,5,7,9,11,12,13,14,15,16,17, | |
| | 4.4 | 1,3,5,7,9,11,15 | |
| | 4.5 | 1,5,7,13,15,17 | |
| 5. Relations and Functions | Chapter 5 | 5.1, 5.2, 5.3, 5.4, 5.5 | |
| 6. Recurrence Relations | Chapter 10 | 10.1, 10.2 | |
| 7. Intro to Graph Theory | Chapter 11 | 11.1, 11.2, 11.4, 11.6 | |
| 8. Hexagonal Systems | In classnotes | | |