MERCY COLLEGE

School of Liberal Arts

Department of Mathematics & CIS

**Discrete Structures Distance Learning Course SYLLABUS**

**MATH 244 DLA**

Created by Dr. Elaine Paris

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**OBJECTIVES**: To develop those mathematical skills necessary to the computer and information sciences;

To build the student's mathematical maturity by:

* Determining truth of statements
* Analyzing arguments
* Understanding and constructing proofs
* Proving relations about arbitrary sets
* Using definitions of set operations and the laws of Boolean Algebra
* Understanding and applying the concepts of functions and relations
* Constructing proofs by mathematical induction
* Understanding and applying the concepts of graphs and trees

**PREREQUISITE:** Pre-calculus [MATH201] with a minimum grade of **C**

**RESOURCES**: Discrete Mathematics with Applications, Susanna S. Epp, 4th ed.

PWS Publishing Company, 2011.

**ERRATA:** Even though this is a well-written textbook it does contain errors. Check the ERRATA website for textbook errors. Print out the list [several pages] and keep it as a handy reference guide.

<http://condor.depaul.edu/~sepp/Errata4e.htm>

**ASSIGNMENTS**

**& ATTENDANCE**: Problems from the text are selected from those at the end of each section. They have ‘blue’ numbers and solutions are in the back of the textbook. There will be a couple of other problems selected that do NOT have solutions in the back of the book. Those you must also do and begin a DISCUSSION that others in the class will participate. Each week, I hope another student will begin the string and ALL the others can critique, add their solutions and comments. This activity is mandatory attendance for the online course and will represent 20% of your final grade..

**EVALUATION**: (1) PROCTORED Midterm and Final Exams taken on a Mercy College campus.

Midterm and Final exams 80%

(2) Communicating on line is critical to success!!

Homework Assignments & Postings 20%

**FINAL COURSE GRADES:**

94-100 A | 90-93 A– | 87-89 B+ | 83-86 B | 80-82 B– | 77-79 C+ | 73-76 C | 70-72 C– | 60-69 D | 0-59 F

**OFFICE HOURS**: Thursday, 1:00-2:30 PM, Department of MATH/CIS in Maher Hall or in the Cafeteria. We could also meet by appointment at a different mutually convenient time. Please send me an email to set up **any** appointment: eparis@mercy.edu

**BIBLIOGRAPHY**: Rosen, Kenneth. Discrete Mathematics and Its Applications. McGraw-Hill.

**Enabling Activities:** Lecture notes, on-line teamwork, homework, and exams

**COMPETENCIES:**

* Writing: Students will increase their ability to communicate clearly and effectively through the written word by completing projects and by writing about mathematics concepts. These require students to organize ideas effectively, write in a unified and coherent manner, use sentence structure and vocabulary appropriate to the purpose and support positions taken with logic.
* Critical Thinking and Quantitative Reasoning: Problem solving in their homework, projects and exams require students to analyze a complex problem by identifying its components, recognize unstated, but necessary assumptions and premises, read, analyze, and understand technical writing, choose and define one course of action among alternatives, perform mathematical computations to solve mathematical problems and recognize the reasonableness of answers.
* Oral Communication: Articulation of questions and answers to questions in class.
* Information Literacy: The students will learn to recognize the extent and nature of a need for information, where to locate it, and effectively use the needed information to solve problems.

**MATH 244 DLA Spring 2015 --READING & TEXTBOOK Homework ASSIGNMENT SCHEDULE**

***Post page/example numbers of any problems you want to review in open postings so all can respond during the week.***

***REQUIRED: Post under week DISCUSSION in BLACKBOARD the SOLUTION to ONLY the starred (\*) example(s) in each assignment below. This is a requirement of the course. Post comments on other students’ solutions, offer a different solution – get involved! If you began a problem solution post one week, wait a couple of days to permit another student to start the DISCUSSION the next week.***

REMEMBER: The campus LEARNING CENTERs are open Monday - Saturday for free, drop-in tutoring help.

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| **CLASS MEETING** | **CHAPTER** | **SECTIONS & ASSIGNMENTS due at next class meeting** |
| Week #1 1/19/15 | Chapter 1: Speaking Mathematically  Chapter 2: The Logic of Compound Statements  Sections 2.1, 2.2 | 1.1 begins on p.5/ex. 1,3,5,7ac, 8,10  **Understand THM 2.1.1. on Page 35**  2.1 begins on p.37/ ex. 6,8ad, 10a, 15\*, 16, 21, 23, 25, 27, ,32,34, 40,41,48,50 , 51\*  2.2 p.49/ex. 9, 19, 20ad, 22ad, 23ad, 29,47,48\* |
| Week #2 1/26 | Chapter 2: continued | 2.3 p.61/1,3,8,22, 24,36,37,39  2.4 p.76/1,3,5,7,9,11,13,16,18,26,28\*,30, 31\* |
| Week #3 2/2 | Chapter 3: The Logic of Quantified Statements,  Chapter 4: Elementary Number Theory and Methods of Proof | 3.1 p.106/2,3,4b,5a,c,7a,c,9,11,13,16ac, 30,32  3.2 p.115/11,13, 16,26, 22,32  4.1 p.161/1,2,4,7,9,11, 12\*, 13\*,14,17,19,24,25,35,38,39,43,45 |
| Week #4 2/9 | Chapter 4 [continued] | 4.2 p.168/4,9,16,18,21,24,37  4.6 p.205/8,11,14, 18, 20\*, 21,25a,b,27  Read through PROOF on p.208: Irrationality of |
| Week #5 2/16 | Chapter 5 : Sequences, Mathematical Induction | 5.1 p.242/1,3,5,10,12,14, 15\*, 19,20,23,27, 29, 43,46,47,49, 53, 54\*, 55, 56, 62, 65,73 |
| Week #6 2/23 | Chapter 5 [continued]  Recursion | 5.2 p.256/3,5,6, 8,10, 11\*, 13,15,33  5.6 p.302/1,3 , 6\*, 7, 10\*,11 |
| Week #7 3/2 | **POSTED REVIEW ASSIGNMENT** on Chapters 1-5 | |
| Midterm  Thursday 3/12 or  Friday 3/13 or  Saturday 3/14 | MIDTERM EXAM Chapters 1 - 5  See posted Exam Schedule in Blackboard for Distance Learning exams.  Check posted schedule for distance learning exams to select the day, time and campus that works best for you | |
| Week #9 3/16 | Chapter 1:  Chapter 6: Set Theory | 1.2 p.13/1,2a,c, 3,5,6,7a,8a,9a, 10a,11a,d  6.1 p.349/1ae,3ab,9a,10abcde,11acehi, 15a,16a,17a,18ab, 27ab,31bc, 32b\*, 34c\*, 35a |
| **3/23- 3/29 SPRING BREAK**  **Good time to get a head start on the new material coming up. See posted LECTURE & assignment for next class.** | | |
| Week #10 3/30 | Chapter 6 [continued] | 6.2 p.364/2,3,6,20,23a,25  6.3 p.372/1,3,5, 8\*, 17,18, 24\*, 25abc,27,31,36,39 |
| Week #11 4/6 | Chapter 1:  The Language of Relations & Functions  Chapter 7:Functions | 1.3 p.21/1,3,5ab, 13, 15abde, 16, 19  7.1 p.393/1, 2 all\*, 4a,8ab,9ab,13,17ab\*c,18ab\*, 26a,27a, 28a, 29a ,32a  7.2 p.413/6,7a, 8 all\*, 9a,10,13a,14,15,16,20,24b,44,45  7.3 p.426/1,3,6,8a, 9,11,18,23 |
| Week #12 4/13 | Chapter 9: Counting and Probability | 9.1, 9.2, 9.3, 9.4  9.1 p.523/2,7,9,11a,12ab(i), 21ab,23c,24ab,26,31  9.2 p.536/1,3,6,9a, 11ab,12a, 14ab, 16ab, 18a, 19, 24ab, 27, 32ab, 37a  9.3 p.549/4,6, 8 all\*,9a,11abc, 33abd  9.4 p.563/5ab,9ab; p581/6,8 |
| Week #13 4/20 | Chapter 10: Graphs and Trees | 10.1 p.639/1,3, 5, 8,12, 15,17,18,21,27a  10.2 p.657/1,4,12, 14, 19, 22\*, 23 [Hamilton] |
| Week #14 4/27 | Chapter 10 continued | 10.3 p.673/1a,2a,3a,4a,5a, 9a,10abc\*ij,19ab\*, 20ab  10.5 p.693/1a,8-14,22,25,27  10.6 p.700/1,4-11, 20a,b\*c\* |
| Week #15 4/30 | **POSTED REVIEW ASSIGNMENT** on Chapters 1,6,7,9,10 | |
| Final  Thursday 5/7 or  Friday 5/8 or  Saturday 5/9 | Final Exam Chapters 1, 6,7,9,10  Check posted schedule for distance learning exams to select the day, time and campus that works best for you. | |