

Contemporary Mathematics

Math 105

Fall 2009 Syllabus

Section 002804

Independent Study offering with meetings Monday 3:30-4:45 along with weekly submissions of work and online quizzes.

Professor: Dr. Tim Harms
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Office: MacLean 375H
Office Hours: M, W, F 9-11:30, M, T, & R 2:30-3:30

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Required Text & Supplement:

Text: Excursions in Modern Mathematics, Tannenbaum, 6th ed.

Guided notes & DVD of lectures

Prerequisites:

An ACT Mathematics of 24 or higher, or a passing score on the math placement test, or successful completing of Math 090 or PDV 100/Math 099.

Recommended Supplies:

Three ring binder, pencil, & scientific calculator such as the TI30X or a graphing calculator

A Solution Manual to text book practice is on reserve in the Library under MAT

Course Description:

Students will study: Statistics & Probability, the Mathematics behind different Voting Systems, Fair Division, Euler & Hamilton Circuits, Finance of loans and investments. This course is intended for Education Major with a Math specialty emphasis or an upper classman who is under the old liberal studies program and needs a Division E requirement.

Learner Outcomes:

- Demonstrate Mathematical Communication skills through accurate and appropriate use of mathematical terms, formulas, and notation
- Identify statistical sampling techniques, their errors, and bias
- Calculate and interpret descriptive statistics
- Determine probabilities and odds of events
- Solve financial problems involving sequences and series
- Compare and contrast different voting systems
- Apply fair division to continuous and discrete cases
- Identify Euler and Hamilton Circuits/Paths
- Demonstrate an understanding of minimum spanning trees & shortest network

Student Expectations:

- Weekly meetings are important for questioning and give you a chance to communicate the mathematics is to be developed and assessed - Contact Professor Harms if you are going to be absent to make alternate meeting time arrangements
- Competition of your guided notes & homework is expected to prepare for online quizzes and exams.
- Learn more mathematics and hopefully experience some enjoyment in the learning
- Students will act in an honest and trustworthy manner. See your Student Handbook

http://www.mnstate.edu/sthandbook/academic_info/academicpolicies.htm#academichonesty

MSUM's standard is that one semester credit hour for undergraduates is meant to represent three hours of academic work per week for the average student who has the expected preparation for the courses that he or she is enrolled in. Since this is a 3-credit course, that means that you will be expected to work 9 hours per week, on average, for this course. Only one and a quarter hour will be in meeting together. Spending time reading the book, doing homework, watching lectures on the DVD, completing the Guided Notes, and studying for exams is meant to be a significant part of this course.

Evaluation

Assignments such as case studies and Middle School Connections (8-15 pts each)

Online quiz scoring 10 pts if 14-15 correct

9 pts if 12-13 correct

8 pts if 10-11 correct

7 pts if 9 correct

0 pts if 0 - 8 correct or late

Three Unit Exams (100 pts each)

Two Projects 30 pts each

Comprehensive Final Exam Dec. 10th (150 pts)

Grading Scale:

98-93 A+; 92-90 A;

89-88 B+; 87-83 B; 82-80 B-

79-78 C+; 77-73 C; 72-70 C-

69-68 D+; 67-63 D; 62-60 D-

59% - F

Special Accommodations:

Students with disabilities who believe they may need an accommodation in this class are encouraged to contact Greg Toutges, Coordinator of Disability Services at 477-5859 (Voice) or 1-800-627-3529 (MRS/TTY), CMU 114 as soon as possible to ensure that accommodations are implemented in a timely fashion.

Math 105 Fall Calendar of Assignments & Assessments

Part 1-Tutorial: Ratio, Proportion, and Percent

Week 1 Complete Guided Notes Pages 2-16

School Connections **Due August 31st**

- A) Include photo copies of examples of each of the following: Ratios, Proportions, & Percents presented in middle grade - gr 6-8 math book(s), list sources that have book name, authors, publisher, and copy right date.
- B) List the MN 2007 Math Standards
http://education.state.mn.us/mde/Academic_Excellence/Academic_Standards/Mathematics/index.html
or ND Math Standards
<http://www.dpi.state.nd.us/standard/content/math/index.shtm> that describe the standards or benchmarks that include Ratios, Proportions, & Percents
- C) Be prepared to explain how to solve a proportional problem in at least 2 different ways.

Part 2-Chapter 13: Collecting Statistical Data

Weeks 2-3 Complete Guided Notes Pages 17-50

Case Study #2 Due **Sept. 3rd**

Text book Homework: Pages 467-473 #1-3, 9-12, 9, 21-24, 29, 30, 39-42, 60, 63

Case Study #4 Due **Sept. 9th**

Online Quiz #1-Chap. 13 by **Sept. 10th**

Part 3 – Chapter 14: Descriptive Statistics

Weeks 4-5 Complete Guided Notes Pages 51-82

Textbook HW Pages 500-506 #7-11, 13, 14, 21, 23, 33, 41, 46, 55, 56, 61, 65, 69

Capture Recapture Lesson on Sept. 14th

Online Quiz #2 – Chap 14 by **Sept 17th**

Part 1-3 **Quiz** on Sept. 21st

Part 4 – Chapter 15: Chances, Probabilities, and Odds

Week 5 Complete Guided Notes Pages 83-112

Pages 531-536 #1, 3, 9, 11, 14, 15, 19, 30, 33, 34, 39, 59, 62, 69

Online Quiz – Chap 15 by Sept. 24th

Part 5 – Chapter 16: Normal Distributions

Week 6 Complete Guided Notes Pages 113-124

Pages 558-562 # 1, 3, 12, 15, 16, 25, 26, 31, 41, 47, 48, 49, 53

Online Quiz – Chap. 16 by Sept. 29th

Unit 1 Test over Parts 1-5 between Sept. 29th-Oct. 1st

Part 6 - Chapter 9: Spiral Growth in Nature Fibonacci Patterns

Week 7 Complete Guided Notes Pages 125-159

Pages 329-333 #1-4, 6, 7, 8, 13, 19, 21, 30, 35 - 37, 41, 48

Online Quiz Chapter 9 by Oct. 8th

Part 7 - Chapter 10: The Mathematics of Population Growth

Weeks 8-9 Complete Guided Notes Pages 160-179

Pages 364-369 #1, 5, 9, 10, 13 - 15, 19, 22, 25, 29, 30, 35, 36, 45, 47, 55, & 56

Online Quiz Chapter 10 by Oct. 15th

Exam 2 - Chapters 9-10 and key topics in Chapters 13-16 between Oct. 20th - 23rd

Loan Project due Oct. 23th

Part 8 – Chapter 1: The Mathematics of Voting

Week 10 Complete Guided Notes Pages 180-204

Pages 30 – 38 #1, 4, 6, 13, 19, 20, 24, 27, 34, 35, 36, 41, 44, 49, 51, 59

Online Quiz Chapter 1 by Oct. 29th

Part 9 – Chapter 2: Weighted Voting Systems

Week 11 Complete Guided Notes Pages 205-220

Pages 72 – 76 #1, 3, 4, 7, 12, 15, 23, 28, 45, 48 & 54

Online Quiz Chapter 2 by Nov. 5th

Part 10 – Chapter 3: Fair Division

Weeks 12-13 Complete Guided Notes Pages 221-259

Pages 111 – 122 # 1, 4, 5, 11, 21, 30, 27, 31, 33, 40, 41, 49, 59, 64, 67, 75

Online Quiz Chapter 3 by Nov. 12th

Exam 3 over Parts 1-10 on Nov. 16th

Part 11 – Chapter 5: Euler Circuits

Weeks 13-14 Complete Guided Notes Pages 260-282

Pages 185 – 191 #1, 4, 9- 11, 17, 41- 47, 51

online quiz on Chapter 5 by Nov 24th

Part 12 – Chapter 6: The Traveling-Salesman Problem

Weeks 15-16 Complete Guided Notes Pages 283-296

Pages 221 – 226 #1, 4, 9, 10, 14, 29, 33, 35, 37, 38, 43, 45, 49, 51

online quiz on Chapter 6 by Dec. 3rd

Map Project due Dec. 7th

Comprehensive Final Exam Thursday Dec. 10th at 3:30