MATH 155: Mathematics, A Way of Thinking

Fall 2008, 4 credits, MWF 1:10-2:00 p.m., R 1:00 – 1:50 p.m., Murphy Center 436

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Catalog Course Description: An investigation of topics including the history of mathematics, number systems, geometry, logic, probability, and statistics. There is an emphasis throughout on problem-solving. Offered each semester. Prerequisite: placement score into 110 or grade of C or higher in 001. General education course: G9.

Text: *Excursions in Modern Mathematics*, 6rd Edition, Peter Tannenbaum

Graded item	**Percent of overall grade**
Four exams	50% total
Homework and group assignments	20% total
Labs and projects	10% total
Final Exam	20%

Grading

90% and above	A
80 – 89%	B
70 – 79%	C
60 – 69%	D

Exams

There will be four in-class exams and a final

Exam 1: Wed, 9/17 Exam 2: Wed, 10/8
Exam 3: Wed, 10/29 Exam 4: Wed, 11/19
Final Exam: Thursday Dec. 11, 3 – 5p.m., MRC 436

CORE SKILL OBJECTIVES:

These skills are related to the General Education core abilities document. They are also written to refer to the various INTASC standards for the purposes of the Elementary Education program.

Thinking Skills: The students will engage in the process of inquiry and problem solving that involves both critical and creative thinking.

Students will

(a) ... explore writing numbers and performing calculations in various numeration systems. (INTASC 1)

(b) ... solve simple linear algebraic equations. (INTASC 1)

(c) ... explore linear and exponential growth functions, including the use of logarithms, and be able to compare these two growth models. (INTASC 1)

(d) ... explore a few major concepts of Euclidean Geometry, focusing especially on the axiomatic-deductive nature of this mathematical system. (INTASC 1)

(e) ... develop an ability to use deductive reasoning, in the context of the rules of logic and syllogisms. (INTASC 1)
(f) ... explore the basics of probability. (INTASC 1)
(g) ... learn descriptive statistics, including making the connection between probability and the normal distribution table. (INTASC 1)
(h) ... solve a variety of problems throughout the course which will require the application of several topics addressed during the course. (INTASC 1)
Life Value Skills: The students will analyze, evaluate and respond to ethical issues from informed personal, professional, and social value systems.
Students will
(a) ... develop an appreciation for the intellectual honesty of deductive reasoning. (INTASC 9)
(b) ... understand the need to do one's own work, to honestly challenge oneself to master the material. (INTASC 1)
Communication Skills: The students will communicate orally and in writing in an appropriate manner both personally and professionally.
Student will
(a) ... do group work (labs and practice exams), involving both written and oral communication. (INTASC 4)
(b) ... turn in written solutions to occasional problems. (INTASC 1)
Cultural Skills: The students will understand their own and other cultural traditions and respect the diversity of the human experience.
Student will
(a) ... explore a number of different numeration systems used by other cultures, such as the early Egyptian and the Mayan peoples. (INTASC 1)
(b) ... develop an appreciation for the work of the Arab and Asian cultures in developing algebra during the European "Dark Ages". (INTASC 1)
(c) ... explore the contribution of the Greeks, especially in the areas of Logic and Geometry. (INTASC 1)

Course Content

Chapter 10	Population Growth
Chapter 1	Voting
Chapters 5 – 8	Graphs, Networks, and Scheduling
Chapters 13 – 16	Probability and Statistics
Chapters 9, 11, 12	Spiral Growth, Symmetry, and Fractals

Americans with Disabilities Act (ADA):
If you have a diagnosed disability and require services or accommodations for this class, please inform me and Jane Eddy, the disabilities (ADA) coordinator (MRC 332; 796-3194) within 10 days to discuss your needs.