

SYLLABUS FOR MTH U117 – sequence 4 – fall 2006

Instructors and Office Hours:

Instructor: Mark Mixer, 537 Nightingale Hall

Office hours: Mon, Tues, Wed, 11:30-12:30, or by appointment.

Course Objectives: This course is designed to develop problem-solving skills while learning to apply mathematics to real life situations. Mathematical concepts to be studied: normal distribution and standard deviation; graphs of linear and non-linear functions, the concept of derivative, derivatives for exponential functions, e ; topics in probability, binomial distributions, central limit theorem, polling theory.

Styles of Learning: This course will make extensive use of collaborative groups, although grading will be based on individual work. It is designed for the student who enjoys hands-on activities, social interaction and pondering mathematical questions.

Books: *The Pit and The Pendulum*, *Small World*, and *Pollsters Dilemma*. Purchase packet at the Northeastern Bookstore. You will need to bring the unit under investigation to class everyday.

Materials: A graphing calculator is required for this course equivalent to the TI 83. You will need to bring this to class everyday. You will need it by the second class meeting. You will also need graph paper.

Attendance: Daily attendance is required. Since emergencies may arise, students are allowed 4 absences. That is 4 absences **no matter what the reason**. Students who have more than four absences will be required to withdraw. **There are no make up tests. Do not miss a test!**

Cell Phones: Keep them turned off!

Help: Besides my office hours, assistance is available at the Math Tutoring Center in room 540 B Nightingale.

Grading: Daily Homework (due on time, 4 late accepted)	10%
Problems of the Week (POWs) (on time and typed)	20%
Portfolios (on time and typed)	20%
Tests	25%
Final	25%

Late Work: Three late home works are allowed, but they must be presented before the portfolio is due. POWs and Portfolios are due on time, they will not be accepted more than one class meeting late. If your printer isn't working you can e-mail me the work or hand in a disk. If you are sick, you can e-mail me your work and hand in attachments when you return.

Proficiency Requirement: Students passing this course with a C or better will satisfy the College of Arts and Sciences Category I mathematics requirement. Students who are seeking to satisfy this requirement but earn less than a C have two choices: 1) retake MTHU117 earn a C or better, or 2) take MTHU115 and receive a C or better.

Finals: Our final is on April 27 at 3:30. No student will be given a request for a special final exam unless it is due to a registrar created conflict. Do not make travel plans that conflict with the final exam.

Note: It is your responsibility to be aware of any changes to this syllabus that are announced in class. Students are responsible for all information given when they are absent.

If you have any concerns about the course that cannot be resolved with me, please see Prof. Eigen 373-5647, 527 Lake Hall. It is the University policy that no grade, including an incomplete, can be changed after one year. Exceptions must be authorized by the Academic Standing Committee.

Academic Honesty: Cheating will not be tolerated. All work submitted must be your own. If you get help from another individual on the POWs or portfolios, your write-up needs to be in your own words, and you must identify who you worked with. You will be randomly called on to explain your work, so if you get help, make sure you understand it. I will be monitoring the internet and any plagiarism will be cause for me to file a complaint against you.

During exams, cell phones must be put away and you cannot share calculators.

Please refer to the University's policies on cheating and related disciplinary actions that are detailed in your Student Handbook. Incidents of cheating will be reported to the Office of Judicial Affairs, which can lead to suspension or expulsion from the University.

<u>CLASSWORK</u>	<u>HOMEWORK</u> <u>(due next class unless specified)</u>
Sept 6 The Unit Question for Pit and the Pendulum p. 2-5	Building a Pendulum p. 5 POW
Sept 7 Time is Relative p. 6 Your Pulse p. 6 Start What's Rare p. 8-9	Flipping Coins p.7
Sept 11 finish What's Rare p. 8-9 Normal Distribution and Standard Deviation (of Pulse data) by hand p.10-13 Standard Deviation using TI 83 p.15	Do Standard Deviation on the Timing Data
Sept 13 The Standard Pendulum p. 17	a) Penny Weight p. 14 using Standard Deviation b) Deviation p. 16
Sept 14 Pendulum Variations p.19	Conclusions about the Standard Pendulum p. 18

Oct 2 Unit Question for Small World p. 34 Start graph for How Many People? P.35	Eggs and Amoebas p.36 POW
Oct 4 How Many People? p 35	
Oct 5 The Rescue p. 37	Doctor's Orders p.39
Oct 11 On a Tangent p. 38	More On A Tangent
Oct 12 Exponential Slopes p.41	
Oct 16 Finish Exponential Slopes	The Derivative of x^2 p.42
Oct 18 Find That Base! P.43 Logarithm Review p.44	Natural Logarithms p.45
Oct 19 Generalized Exponential Derivatives p. 46 California and Exponents p.47	Unit Portfolio p. 50 Instantaneous Rate of Change p. 48
Oct 23 Return to Small World Isn't It p. 49	
Oct 25 Review Unit	
Oct 26 Test	

Oct 30 Pollster's Dilemma; Start Sampling Seniors; p. 52-53	Throw back the Little Ones p.55
Nov 1 Finish Sampling Seniors Ice Cream Combinations and Permutations; p.56-57	Pizza Combinations p. 54
Nov 2 Probability p.59	Combinations and Permutations in Sports p.58
Nov 6 Play Ball p. 60 The Theory of Three-Person Polls started p. 62-63	More Probability p. 61
Nov 8 Finish the Theory of the Three Person Polls	Graphs of the Theory p. 64
Nov 9 The Central Limit Theorem Graphing Distributions Normal Areas p. 66-72	
Nov 13 Middletown Musings p. 73	Hand-out
Nov 15 A Plus for the Community p.74 Mean and Standard Distribution for Probability Distribution p.75-76 The Search is ON! p.77-78	Putting Your Formulas to Work p 80 POW Let's Vote On It p. 116 due
Nov 16 From Numbers to Proportion p.80 The Worst Case Scenario p.81	Is Twice As Many Twice As Good? P.83
Nov 20 P vs \hat{p} p. 82 What Does It Mean? P. 85	Portfolio due
Nov 27 Pollster's Dilemma Revisited p.88	
Nov 29 Review for test	
Nov 30 Test	
Dec 4 POW presentations	
Dec 6 Review for the final	

