Course Syllabus MTH107: Finite Mathematics Fall2014

Instructor: Dr. Glenn Faubert

Goal of the course

To provide students with a general elementary background in logic and probability that satisfies the university's "quantitative (Q)" component of the general education curriculum. This class is one of several math classes that are specifically designed for students who do NOT have pre-calculus or calculus requirements in their program of study.

Leaning Outcomes

Upon successfully completing this course a student will be able to:
– Distinguish an argument from other forms of verbal expression recognizing their premises and conclusions.
– Recognize valid and invalid, sound and unsound, syllogistic argument forms.
– Detect contradictions and lack of consistency among the premises of an argument.
– Represent propositions symbolically using variables and logic connectives.
– Give precise logical meanings of the logical connectives: NOT, AND, OR, IF, ONLY IF, IF AND ONLY IF.
– Parse a statement to detect the linguistic equivalent of parentheses.
– Build a Truth Table to evaluate a statement.
– Use the concept of "set" and "member" to represent relationships between objects and ideas.
– Reproduce key definitions used in set theory: negation, intersection, union, subset, superset, equivalence, and their notations.
– Determine the number of items in a set by counting in new and different ways using factorials, combinations, and permutations.
– Use a Venn Diagram to visually represent sets and facilitate counting.
– Calculate any probability given the cardinality of the appropriate sets involved.
– Calculate simple, conditional, and joint probabilities by counting the members in the appropriate sets.
– Apply rules of probability to real world situations like medical tests and casino games.
– Recognize simple random processes (like dice rolling etc..) and calculate their expected value.

Text

The required texts for the class are: (1) Mathematics: A Practical Odyssey (University of Rhode Island custom edition), by Johnson & Mowry, Cengage Learning 2011, ISBN: 978-1-133-44312-4, and (2) Game of Logic, by Lewis Carroll. The latter is in the Public Domain and available at no charge from Gutenberg Press, http://www.gutenberg.org/ebooks/4763. It is assumed that will you have access to the Carroll text by the first class meeting. There will be an assignment on class #2 from this text. You should have the Johnson & Mowry text by week 3. Both texts are required and special consideration will not be given to students who do not obtain these texts in a timely fashion.

Sakai

SAKAI will be used in this class for all student/teacher electronic correspondence. Important class announcements, a grade book, submission of homework, and student/teacher messaging will all be done on SAKAI. If this is your first semester at URI, get comfortable with SAKAI right away! Go to the URI main page and click on SAKAI and start poking around.

Calculators etc.

You must have daily access to a computer. A basic calculator may be helpful for some homework assignments, but the use of computers, cell phones, tablet computers, calculators etc. is not allowed for in-class assignments nor for in-class exams. All such electronics should be out of sight during class.

Grading

Your grade will be based on four in-class tests, classwork and homework. Minimum points for letter grades are also shown.

Grade	Minimum %
A	92
A-	90
B+	87
B	82
B-	80
C+	77
C	72
C-	70
D+	67
D	60
F	0

Component	Value
Semester Tests (5) (4 in-class, 1 online final)	50%
Class assignments (~24)	20%
Written Homework (~12)	20%
Online Quizzes (~20)	10%
Total	100%

Tests

Four tests will be given in class on the dates shown below. Tests are always closed-book. Tests will not be postponed unless class is officially canceled on the day of the test. No questions will be taken during tests. All electronics must be off and out of sight during tests. Cell-phone interruptions during a test will be penalized 1 point per second of interruption. Any visible electronic device is a 5-point score deduction. Use of any electronics during a test will be penalized 50 points. A missed test requires prior notification and written documentation satisfying the instructor before any make-up is allowed, or written documentation for a real emergency that prevented notification. If a make-up test is sanctioned but is not taken then the grade for the test will be zero. A fifth online exam will be given during finals week.

Classroom assignments

Classwork will consist group assignments done during class time. Some will directly follow from the text/ notes some will be challenging math puzzlers. Their purpose is to get you thinking mathematically. It encourages logical thinking and group skills. Secondarily, it will encourage rage regular attendance. Classwork need not follow the homework format. Each assignment will have its own answer sheet. One answer sheet per group will be collected. There are never make-ups for missed classwork. Valid written excuses and prior notification are required to be exempt from classwork.

Written Homework Assignments

Each written homework assignment should be thought of as a small writing project. Each written assignment grade is based 20% on format and 80% on content (see below). Each assignment must be typed or hand written neatly and scanned and returned via the SAKAI assignment tool (not email, not in a message) before 10:10 pm on the due date. The exact due dates will be posted on SAKAI. Late assignments will not accepted. SAKAI will enforce this rigidly. To be excused from missing a homework assignment, you must provide written documentation that is acceptable to the instructor. (Official URI functions, and illness with a doctor's note, are examples of acceptable excuses.) The excuse must cover the due date and one day prior. Start on the written assignments early! Some students score significantly lower on the written assignments than on the tests. Often this is for failing to follow the format or for starting written assignments at the last minute. These assignments will require a good deal of thinking and a reviewing of the text and notes. The specifics of some assignments and exact due dates will be provided to you via SAKAI. Students submitting identical or near-identical writing assignments will split the homework grade. (If two students hand in near-identical work their grades will be halved, for example.) Please read the section on the Honor Code below.

A perfect format grade for written assignments requires:
1. your name date and assignment number on top
2. each problem should numbered with the problem statement given for each problem followed by your answer
3. tidy exposition (a pdf file is best, please avoid bulky jpg files)
4. the assignment is submitted in one file with pages in order and right side up.

A perfect content grade for written assignments requires:
1. the correct answers.
2. the correct work and justification (unjustified, one word, or one number answers –even if correct– are worth zero.)
3. clear, grammatical, precise explanations when required.

Online Reading comprehension quizzes

Every reading assignment (there are about 20) will be accompanied by an online SAKAI quiz. The readings will be 30-60 minutes and the quiz should take 5-10 minutes after you have done the reading. The quizzes are due at 10:10 pm when assigned.

Attendance

Your attendance is required and expected for every class.

Honor code

If you are caught breaking the URI honor code, you could be given an F for the assignment or the entire class, or reported to the university for disciplinary action or dismissal. As a student of higher standards, you pledge to embody the principles of academic integrity. You may work with other students on your homework assignments as follows: You may discuss concepts, principles and methods with each other, however, you must prepare your own final submission separately. You are not to copy another student's homework. Collaboration among students is not permitted during examinations.

Special accommodations

Students with special requirements and proper documentation through Disability Services should inform their instructor as early as possible. University regulations require that documentation be provided at least one week before special consideration is given.

Course outline

On the next page is a week by week course outline; use it to keep up with the reading, plan your studying, find your homework assignments, know when your tests are, etc. We will follow the schedule quite closely, may be slightly ahead or slightly behind at any given time. Of course, it is subject to possible minor editing in the case of typos, unforeseen events, weather anomalies, etc.

Weekly Schedule for MTH107 Fall 2014				
Week	***Dates***	***Topics***	***Classwork***	***Homework (readings, online, & written)***
1	Sept 3,5	Deduction GOL lesson 1	Quiz GOL assignment 1	Read GOL lesson 1 & 2 Take SAKAI quizzes
2	Sept 8,10,12	GOL lesson 2,3,4	GOL assignments #2, 3, 4a.	Read GOL lesson 3 & 4 Take SAKAI quizzes
3	Sept 15,17,19	GOL lesson 4,5	GOL assign #4b, 5 **Test#1 Wed 9/17**	Read GOL lesson 5 Take SAKAI quiz
4	Sept 22,24,26	APO 1.2, 1.3 Symbolic Logic Truth Tables	Island of Liars, The Barber	Read APO sec 1.2 & 1.3 Take SAKAI quizzes Submit APO Ex1.2 #2,4,6,8,34,38,40
5	Sept 29 Oct 1,3	APO 1.3,1.4 Truth Tables Conditionals GOL lesson 6	GOL assignment 6a	Read APO sec 1.4 & GOL lesson 6 Take SAKAI quizzes Submit APO Ex1.3 #2,6,14,22,32,36,44,46
6	Oct 6,8,10	GOL lesson 6, 7 Induction, patterns	GOL assign #6b, 7 Chocolate Bar	Submit APO Ex1.4 #2,6,22,30,44,52 Read GOL lesson 7 Take SAKAI quiz
7	Oct 15,17	**Test#2** APO 2.1 Set Theory	**Test#2 Wed 10/15**	Submit APO Ex1.1#8,18,20,24,26,30, 34,36 Read APO sec 2.1 & 2.2 Take SAKAI Quizzes Submit APO Ex 2.1
8	Oct 20,22,24	APO 2.2, 2.3, 2.4 Venn Diagrams Counting Permutations	Handshakes, Digit Sequences	Read APO sec 2.3 & 2.4 Take SAKAI quiz Submit APO Ex2.2 #2,4,8,36,38 Submit APO Ex2.3 #4,10,14,22,36,38
9	Oct 27,29,31	APO 2.4, 3.2 Permutations Intro to Probability	APO Ex 2.4 “Regular Dice”	Read APO sec 3.2 Take SAKAI quiz Submit APO Ex3.2 #2-18even, 56,58,64
10	Nov 3,5,7	APO 3.3 Probability Rules Weird dice	Sicherman Dice, Coupons,Seating	Read APO sec 3.3 Take SAKAI quiz Submit APO Ex3.3 #12-18 even, 48,50,60,74
11	Nov 10,14	Very weird dice	**Test#3 Mon 11/10** Weird Dice	
12	Nov 17,19,21	APO 3.4, 3.5 Combinatorics Expected Value	Lotto, 3-way duel, Chuck-a-luck	Read APO sec 3.4 & 3.5 Take SAKAI quizzes Submit APO Ex 3.4 #8,12,18,24,32
13	Nov 24,26	APO 3.5, 3.6 Expected Value Conditional Probability		Submit APO Ex3.5 #14,18,20,26,30,32 Read APO sec 3.6 Take SAKAI Quiz
14	Dec 1,3,5	APO 3.6, 3.7 Conditional Probability Independence	3 Cards, Medical Tests, **Test#4 Fri 12/5**	Submit APO Ex3.6 #2-8even,12,16,18 Read APO sec 3.7 Take SAKAI quiz.
15	Dec 8, last class	APO 3.7	Quiz, APO Ex 3.7	

GOL = "Game of Logic" by Lewis Carroll
APO = "Mathematics: A Practical Odyssey" by Johnson & Mowry
SAKAI quizzes are taken online using SAKAI
Written Homework assignments: Submit via SAKAI by 10:10 pm on their due date given on SAKAI.
Precise due dates of all assignments (reading, online & written) will be given on SAKAI.