

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 precalculus or calculus requirements in their program of study.

Learning 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.
- Draw a histogram to represent a set of data
- Calculate the mean, median, mode, standard deviation, and variance of a data set which is either grouped or ungrouped
- Determine z-scores and use a normal distribution table to solve problems involving data that is normally distributed.

Text

The required text for the class is: Mathematics: A Practical Odyssey (University of Rhode Island custom edition), by Johnson & Mowry, Cengage Learning 2011, ISBN: 978-1-133-44312-4. You should have the Johnson & Mowry text by the end of week 1. The text is required and special consideration will not be given to students who do not obtain the texts in a timely fashion. We will follow this text closely.

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.

Computers, Calculators etc.

You must have regular access to a computer to use SAKAI. 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 exams, unless otherwise noted. All such electronics should be out of sight during class.

Grading

Your grade will be determined as shown. Minimum points for letter grades are also shown.

Grade	Minimum %	Component	Value
A	93	4 Semester Exams (in-class)	60%
A-	90	On-line Final	20%
B+	87	13 Weekly on-line quizzes	20%
B	83		
B-	80		
C+	77		
C	73		
C-	70		
D+	67		
D	60		
F	0		

Exams

Four exams will be given in class on the dates shown below. Exams are always closed-book. Exams will not be postponed unless class is officially canceled on the day of the exam. No questions will be taken during exams. All electronics must be off and out of sight during exams. Cell-phone interruptions during an exam will be penalized 1 point per second of interruption. Any visible electronic device is a 5-point score deduction. Use of any electronics during an exam will be penalized 50 points. A missed exam 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 exam is sanctioned but is not taken then the grade for the exam will be zero. All make-up exams will be given during the final exam period. A final on-line exam will be given during finals week.

On-line Reading comprehension quizzes

Every week there will be an on-line quiz given on SAKAI. The readings should take approximately 1-2 hours and the quiz should take 5-10 minutes after you have done and understood the reading. The quizzes will be available each week on Friday and due at 10:10 pm every Sunday night.

Homework

Practice problems for each topic are provided in the course outline on the next page. The wise student will attempt all of them. The best way to prepare for an exam is to do the suggested practice problems. They should be done on the days they are listed to prepare you for subsequent lectures. Last minute cramming of homework problems is not effective. Each one is 1-2 hours long. The best strategy is to never fall behind.

Attendance

Your attendance is required and expected for every class, but if you are experiencing flu-like symptoms with a fever then please be considerate of your fellow classmates and stay home.

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. 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 exams are, etc. We will follow the schedule quite closely, but 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.

Class	Date	Topic	Text	Reading	Practice Problems
1	01/21/15	Introduction		Syllabus	
2	01/23/15	Deduction/Induction	1.1	Read 1.1	
3	01/26/15	continued	1.1		Ex1.1 #1,3,5,7,9,17,26,30,34
4	01/28/15	Symbolic Logic	1.2	Read 1.2	
5	01/30/15	continued	1.2		Ex1.2 #3,5,7,9,11,13,27,31,33,
6	02/02/15	Truth Tables	1.3	Read 1.3	Ex1.3
7	02/04/15	continued	1.3		#7,11,13,21,23,31,43,45,47
8	02/06/15	Conditionals	1.4	Read 1.4	
9	02/09/15	continued	1.4		Ex1.4 #5,7,9,11,21,25,27,31,35
10	02/11/15	Analyzing Arguments	1.5	Read 1.5	
11	02/13/15	continued	1.5		Ex1.5 #1,3,5,11,13,15,
12	02/18/15	Exam #1 chapter 1	...		
13	02/20/15	Sets & Set Operations	2.1	Read 2.1	
14	02/23/15	continued	2.1		Ex2.1#1,6,7,11-21odd,29,41,45
15	02/25/15	Venn Diagrams	2.2	Read 2.2	
16	02/27/15	continued	2.2		Ex2.2 #3,7,9,11,15,35,37
17	03/02/15	Intro to Combinatorics	2.3	Read 2.3	Ex2.3 #7,11,13,17,19,23,31,33
18	03/04/15	Permutations	2.4	Read 2.4	
19	03/06/15	Combinations	2.4		Ex2.4#1,3,5,7,15,16,19,25,45
20	03/09/15	Intro to Probability	3.2	Read 3.2	
21	03/11/15	Exam #2 chapter 2	...		
22	03/13/15	Intro to Probability	3.2		Ex3.2 #15-28,39,45,47,63,69
...SPRING BREAK...
23	03/23/15	Rules of Probability	3.3	Read 3.3	
24	03/25/15	continued	3.3		Ex3.3 #1,3,11,13,17,47,49,51,53
25	03/27/15	Combinatorics & Prob	3.4	Read 3.4	Ex3.4 #7,9,17,23,25,27,31
26	03/30/15	Expected Value	3.5	Read 3.5	Ex3.5 #13,15,17,19,27
27	04/01/15	Conditional Prob.	3.6	Read 3.6	
28	04/03/15	continued	3.6		Ex3.6 #1-9odd,15-25odd
29	04/06/15	Independence	3.7		Ex3.7#1,3,13,15,23
30	04/08/15	Exam #3 chapter 3
31	04/10/15	Data Distributions	4.1	Read 4.1	
32	04/13/15	Histograms, Frequency	4.1		Ex4.1#3ac,5,9,13,15
33	04/15/15	Mean, Median, Mode	4.2	Read 4.2	
34	04/17/15	continued	4.2		Ex4.2#5,9,11,15,17,19,27
35	04/20/15	Standard Deviation	4.3	Read 4.3	
36	04/22/15	continued	4.3		Ex4.3#1,3,7,9,17,19
37	04/24/15	Normal Distribution	4.4	Read 4.4	
38	04/27/15	continued	4.4		Ex4.4#3-19odd
39	04/29/15	Exam #4 chapter 4	...		