MATH 150: Introductory Discrete Mathematics
Fall 2014 Section 014 3 Credit Hours

Instructor:	**Dr. Kristen Abernathy**	**Instructor's Teaching Schedule:**	MWF 9:30-10:45 MW 11:00-12:15 W 3:30-4:45 TR 12:30-1:45
Office:	Bancroft 148		
Office Phone:	803-323-4681	**Office Hours:**	M 3:00-4:30 W 2:00-3:30 and by appointment
Math Department:	803-323-2175		
Campus Email:	abernathyk@winthrop.edu		

The instructor reserves the right to make modifications to this syllabus. Students will be notified in class & by email.

A complete syllabus and schedule is available at: www.winthrop.edu/cas/math/syllabus.

Determination of Grade

Quizzes (15%) Regular homework will be assigned for each section. Homework will not be graded. There will be ten in-class quizzes as listed on the attached schedule. You are expected to take the quizzes at the scheduled time. Make-up quizzes are not given. Your two lowest quiz grades will be dropped. Quizzes are based on the material covered in class and the assigned homework.

Tests (60%) There will be four in-class tests as listed on the attached schedule. You are expected to take the hour tests and the final exam at the scheduled time. Make-up tests are not given. An unexcused absence will result in the grade of zero for any missed test. Excused absences from tests will be dealt with at the end of the term and may depend on individual circumstances. Anticipated absences should be reported and verified in advance; emergency absences must be verified within one week after returning to class. Any questions concerning grading of tests must also be resolved within one week after the tests are returned.

Final Exam (25%) The MATH150 final exam is scheduled for Wednesday, December 10, 2014, 3:00 PM.

Letter Grade Determination:

92-100 A	90-91.99 A-	87-89.99 B+	82-86.99 B	80-81.99 B-	
77-79.99 C+	72-76.99 C	70-71.99 C-	67-69.99 D+	62-66.99 D	60-61.99 D-

Text, Materials, and Resources

- Required Text: *Mathematics For Winthrop University*
- MATH150 students are expected to have a scientific calculator.
- Students are encouraged to use office hours as a way to receive extra help.
- A Blackboard review environment is available through https://bb-winthrop.blackboard.com/ using your Winthrop login information.
- The Mathematics Tutorial Center and large group review information is available at: www.winthrop.edu/mtc .

Course Policies (section specific policies may be added on the full syllabus)

1. Winthrop University is dedicated to providing access to education. If you have a disability and require specific accommodations to complete this course, contact the Office of Disability Services (ODS) at 323-3290. Once you have your official notice of accommodations from the Office of Disability Services, please inform me as early as possible in the semester.
2. Review the student code of conduct for university polices on academic misconduct. Academic misconduct will not be tolerated and will result in a failing grade on the assignment and/or in the course. The full handbook is available online at: (http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf)
3. All electronic devices (including cell phones) other than a calculator should be set to silent and kept in your book bag or purse throughout class time unless otherwise instructed.
4. Students may not use cell phones, MP3 players, or other electronic devices in place of a calculator. Students may not share calculators during quizzes, tests, or the final exam. Any student caught using an unapproved electronic device during a quiz, test, or the final exam will receive a grade of zero on that assessment and the incident will be reported to the Dean of Students.
5. Policies for the common final exam are provided on the full syllabus.

Course Goals/Student Learning Outcomes and Alignment with the General Education Goals

MATH150 meets the Quantitavive Reasoning requirement through the following goal alignment. Further when not used as the QR requirement, this course meets the Logic, Language, and Semiotics requirement through activities and requirements that require students to: (1) use logic and mathematical information to draw reasonable conclusions and (2) use the symbols and language of mathematics to communicate about problems and present solutions.

Course Goals/SLO	General Education Program Goals	University Level Competencies
Develop basic skills in set theory, logic, combinatorics, probability, and statistics. Use concepts in set theory, logic, combinatorics, probability, and statistics to demonstrate reasoning through solving problems. Use the notion of sets to analyze survey data and count responses of different types. Analyze data using descriptive statistics. Use formal logic to analyze complicated arguments carefully and discover whether they are valid. Use concepts within combinatorics and probability for the analysis of risk in various settings.	2.1 Solve mathematical problems of the type necessary for living in today's and tomorrow's world. 2.4 Understand the concept and application of quantitative relationships. 2.2 Make valid inferences from data. 2.3 Understand that quantitative analysis is important to almost every endeavor of humankind. 3.1 Identify sound and unsound reasoning. 3.2 Analyze and use a variety of information gathering techniques	**Competency 1** **Winthrop graduates think critically and solve problems.** Winthrop University graduates reason logically, evaluate and use evidence, and solve problems. They seek out and assess relevant information from multiple viewpoints to form well-reasoned conclusions. Winthrop graduates consider the full context and consequences of their decisions and continually reexamine their own critical thinking process, including the strengths and weaknesses of their arguments. **Competency 3** **Winthrop graduates understand the interconnected nature of the world and the time in which they live.** Winthrop University graduates comprehend the historical, social, and global contexts of their disciplines and their lives. They also recognize how their chosen area of study is inextricably linked to other fields. Winthrop graduates collaborate with members of diverse academic, professional, and cultural communities as informed and engaged citizens.

For purposes of departmental and general education program assessment of student learning in this course, performance on sections of the final exam may be tabulated for all students. Individual tests and course grades may also be used as an indication of progress toward the above goals.

Final Exam Policies: The following rules will be enforced at the final exam session:

a. The only materials that may be brought to the testing area are: a calculator, writing utensils, and your ID.
b. Paper for work will be provided.
c. Students may not wear a hat with a rim during the test.
d. Students may **not** bring a book bag, purse, etc. to their seat for the exam. (Bags can be left at the back of the room **AT YOUR OWN RISK**.)
e. Students caught with any electronic device other than a calculator will be removed from the exam area and will receive a zero on the final exam. (Note if you have some educational, health, or physical reason for an electronic device you must work with your professor before the testing period.)
f. All students must have their Winthrop student ID card and Winthrop ID number with them when they submit their exam.

Attendance Policy

The University attendance policy is stated in the current catalog (http://www.winthrop.edu/recandreg/default.aspx?id=7380).

Tentative Course Schedule

Date		Section	Topic	Key Ideas
T	8/26	M 3.1	Statements and Quantifiers	• Statements: Compound; Conditionals; Connections to symbolic notation; Connectives; Contrapositives; Converses; Disjunctions & conjunctions; Equivalence; Inverses; Negations; Qualifiers; Tautology • Notation: ∧, ∨, ↔, ~, →, ≡ • DeMorgan's Laws • Argument Analysis using Truth tables and Euler Diagrams
R	8/28	M 3.2	Truth Tables and Equivalent Statements Quiz 1 (3.1)	
T	9/2	M 3.3 & 3.4	The Conditional & More on the Conditional	
R	9/4	M 3.5	Analyzing Arguments with Euler Diagrams Quiz 2 (3.2 – 3.4)	
T	9/9	M 3.6	Analyzing Arguments with Truth Tables	
R	9/11		Review Quiz 3 (3.5 – 3.6)	
T	9/16		Test 1	
R	9/18	8.1	Sets	• Sets: notation, elements, subsets, complements, unions, intersections • Venn Diagrams: construct diagrams, solve word problems, apply addition rule for counting • Probability: definition of probability, sample spaces, events, addition rule, complement rule, odds, relative frequencies, product rule, dependence, independence, conditional probability
T	9/23	8.2	Applications of Venn Diagrams	
R	9/25	8.3	Introduction to Probability Quiz 4 (8.1 – 8.2)	
T	9/30	8.4	Basic Concepts of Probability	
R	10/2	8.5	Conditional Probability / Independent Events Quiz 5 (8.3 – 8.4)	
T	10/7	8.6	Bayes Formula	
R	10/9		Review Quiz 6 (8.5 – 8.6)	
T	10/14		Test 2	
R	10/16	9.1	Probability Distributions and Expected Value	• Probability: weighted averages using probability distributions, random variables, histograms • Counting: advanced counting problems, application to computation of probabilities, probability associated with binomial distributions, Bernoulli trials, expected value
T	10/21	9.2	Multiplication Principle, Permutations, Combinations	
R	10/23	9.3	Applications of Counting Quiz 7 (9.1 – 9.2)	
T	10/28	9.4	Binomial Probability	
R	10/30		Review Quiz 8 (9.3 – 9.4)	
R	11/6		Test 3	
T	11/11	10.1	Distributions	• histogram, frequency polygon, stem-and-leaf plots, summation notation, mean, median, mode, range, variances, standard deviations, continuous distributions, skew, normal curves, area, z-scores, quartiles • relationship between normal and binomial distributions
R	11/13	10.2	Measures of Central Tendency Quiz 9 (10.1)	
T	11/18	10.3	Measures of Variation	
R	11/20	10.4	Normal Distributions and Boxplots Quiz 10 (10.2 – 10.3)	
T	11/25		Review	
T	12/2		Test 4	
R	12/4		Extra Day for Review	

Drop/Add: Through 8/29 **SU and Course Withdraw Date:** F 10/24
Fall Break: F 10/17 and M 10/20 **Final Exam:** W 12/10, 3:00 p.m. location TBD
Make-up exam for documented final exam conflict: Saturday 12/13, 11:30 a.m. location TBD

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Suggested Homework Problems

Text: *Mathematics with Applications and Logic, Custom Edition for Winthrop University*, Boston: Pearson Learning Solutions, 2014.

Section	Homework
M 3.1	23, 25, 27, 29, 31, 33, 35, 49, 51, 53, 55, 57, 59, 61, 63, 75
M 3.2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71
M 3.3	11, 13, 15, 17, 19, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 81, 83, 85, 87, 89
M 3.4	1, 3, 5, 7, 9, 19, 21, 23, 25, 27, 29, 31, 33, 41
M 3.5	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 25, 27, 29
M 3.6	13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37
Chapter 3 Test	1, 3, 5, 7, 9, 11, 13, 15, 17, 25, 27, 29
8.1	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 51, 53, 55, 57, 59, 61, 63, 65, 67
8.2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 35, 37, 39, 41, 43
8.3	3, 5, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39
8.4	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 43, 45, 47, 49, 51, 53, 55, 57, 59
8.5	1, 3, 5, 15, 17, 19, 21, 23, 25, 27, 29, 31, 43, 45, 47, 49, 51, 53, 55, 57, 61
8.6	7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33
Chapter 8 Review	Exercises: 1, 3, 5, 7, 11, 13, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 59, 61, 63, 65, 67, 69, 71, 73, 79, 81, 85, 87, 89
9.1	1, 5, 9, 11, 13, 15, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 45
9.2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 25, 27, 29, 31, 33, 39, 41, 43, 45, 47, 49, 53, 55, 57, 59, 63
9.3	1, 3, 5, 7, 9, 11, 25, 27, 29, 31, 33, 35, 37
9.4	1, 3, 5, 7, 9, 11, 13, 15, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41
Chapter 9 Review	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 27, 29, 33, 35, 37
10.1	1, 3, 5, 7, 9, 11, 13, 15, 17, 19
10.2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31
10.3	3, 5, 7, 9, 11, 13, 23, 25, 27, 29, 35, 36, 37
10.4	5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 57, 59
Chapter 10 Review	1, 3, 5, 7, 11, 13, 21, 23, 25, 29, 31, 39, 41, 43, 51, 53