MA 110-06: Finite Mathematics   **Spring 2015**
TR 11:00-12:15   **3 Credits**
Mathematics Building Room 10

Instructor: Dr. Lee Raney   **e-mail:** lraney@una.edu
Office: Mathematics Building 126   **Phone:** (256) 765-4125
Office Hours: MWF 8:00-8:50, TR 8:00-9:50, or by appointment
Course Website: http://www.buildingthepride.com/faculty/lraney/ma110

Mathematics Fellow: Alex Edwards   **e-mail:** aedwards1@una.edu
Lab Meetings: Wednesdays 1:00-1:50 in Stevens Hall Room 402

Prerequisites: Minimum mathematics ACT score of 22 and credit in high school Algebra I, Algebra II, and Geometry; or grade of C or better in MA 100 (Intermediate Algebra) or MA 105 (Introduction to Finite Mathematics).

Course Description: This course is intended to give an overview of topics in finite mathematics together with their applications and is taken primarily by students who are not required to take calculus. The course includes sets, counting, permutations, combinations, basic probability (including Bayes' Formula), an introduction to statistics (including normal distributions), matrices and their applications to Markov chains and decision theory. Additional topics may include the binomial distribution, symbolic logic, linear models, linear programming, the simplex method and applications.

Course Objectives: The student shall demonstrate knowledge of counting techniques (including permutations and combinations), basic probability (including Bayes' Formula), basic statistics, matrices and their applications to Markov chains and decision theory.

Course Outline:
  A. Set Theory
       1. Introduction to sets
       2. Subsets
       3. Complement, union, and intersection of sets
       4. Venn diagrams
       5. Applications

  B. Probability
       1. Basic concepts
       2. Conditional probability
       3. Bayes' formula

  C. Counting Principles
       1. Permutations and combinations
       2. Applications of counting
       3. Binomial Probability
       4. Probability distributions and expected value

  D. Statistics

1. Measures of central tendency
2. Measures of variation
3. The normal distribution
4. Binomial distribution (optional)

E. Matrices
1. Addition and scalar multiplication
2. Matrix multiplication

F. Application
1. Markov chains and applications
2. Decision making (game theory)

Textbook/Software:

- *Finite Mathematics, Tenth Edition* by Lial, Greenwell, and Ritchey.

- MyMathLab (MML) Student Access Kit. *(Note: The textbook is included as an electronic version in your MML subscription. You do not need to purchase the textbook separately unless you want a printed version. It is likely that you can find a hard copy of an older edition of our text at an inexpensive price.)*

Calculators: A simple *scientific* calculator is required. Graphing calculators are not permitted. Cell phones may not be used as calculators.

Grading Scale: Grades will be assigned according to the following scale.
A: 90-100%   B: 80-89%   C: 70-79%   D: 60-69%   F: 0-59%

Grading Plan:

Lab Grade	10%
Best 3 out of 4 during-term exams	35%
Quizzes (drop lowest)	15%
(Online) Homework	15%
Final exam	25%
Total	100%

Lab: Our section of MA 110 is enhanced with a lab session. The purpose of the lab is to enhance students' understanding of the material by providing a peer-led learning environment in which open discussion is encouraged. Each lab meeting will be led by a Mathematics Fellow and will contain a graded worksheet.

During-Term Exams: There will be four during-term exams. Each exam is graded on a 50-point scale. The exam format is free response, but some multiple choice or short answer questions may be included. The lowest exam grade is dropped. The date of each exam will be announced one week in advance. Tentatively, the material to be covered on each exam is as follows:

- Exam 1: Sections 7.1-7.4
- Exam 2: Sections 7.5, 7.6, 8.1, 8.2
- Exam 3: Sections 8.3-8.5
- Exam 4: Sections 9.1-9.3, 2.3, 2.4, 10.1, 11.1

Quizzes: Several quizzes will be given in class or online through MML during the semester. All in-class quizzes will be announced at least one class day in advance and may be given at any time during class. Many quizzes will be administered online through MML, in which case the student will be given at least a 12-hour window in which to complete the quiz. The lowest quiz score is dropped.

Homework: Several online homework assignments will be given through the MML system. Students are required to check MML regularly for new assignments. No extensions will be given on homework. Additional supplemental homework problems from the textbook will; be posted at the course website.

Final Exam: The final examination will be given on *Friday, May 1, 10:15-12 Noon*, in our classroom. The final exam is mandatory and comprehensive. The format of the final exam is multiple choice, and it is written by a departmental committee.

Makeup Policy: Makeups are given only at the discretion of the instructor and on a case-by-case basis. The only exception is a legitimate, documented excuse in accordance with the University's excused absence policy. In the event of a missed assignment, the student should contact the instructor *immediately*. If you anticipate missing an exam or quiz, you must contact the instructor *at least one week in advance.*

E-Mail and Course Website: Students are required to check their University e-mail account regularly, as announcements will often be sent via e-mail. Students must also have access to the course website where additional information may also be posted.

Student Conduct: It is expected that all students will conduct themselves in a professional manner. Students are responsible for keeping track of their own course standing. Students with any questions regarding their course grades should contact the instructor immediately.

Attendance Policy: Regular and punctual attendance is expected of all students. Whenever a student's cumulative absences (excused or unexcused) exceed the equivalent of

three weeks of scheduled classes (about four class periods during Summer sessions), it is possible that no credit may be earned for the course. The student will either withdraw from the course or receive an F for the course grade. Any exceptions to this policy will be in accordance with the University policy.

Extra Help: In addition to the instructor's office hours and lab, help is available through the Mathematics Learning Center. Students may schedule a *free* individual session with a Mathematics Consultant at http://www.una.edu/successcenter/mlc.

Accommodations: In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, the University offers reasonable accommodations to students with eligible documented learning, physical and/or psychological disabilities. Under Title II of the Americans with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Amendment Act of 2008, a disability is defined as a physical or mental impairment that substantially limits one or more major life activities as compared to an average person in the population. *It is the responsibility of the student to contact Disability Support Services to initiate the process to develop an accommodation plan.* This accommodation plan will not be applied retroactively. Appropriate, reasonable accommodations will be made to allow each student to meet course requirements, but no fundamental or substantial alteration of academic standards will be made. Students needing assistance should contact Disability Support Services at (256) 765-4214.

Academic Honesty Policy: Students are expected to be honorable and observe standards of conduct appropriate to a community of scholars. Additionally, students are expected to behave in an ethical manner. Individuals who disregard the core values of truth and honesty bring disrespect to themselves and the University. A university community that allows academic dishonesty will suffer harm to the reputation of students, faculty, and graduates. Incidents of possible student academic dishonesty will be addressed in accordance with University guidelines found at the following link:
`http://www.una.edu/student-conduct/student%20rights%20and%20responsibilities/academic-honesty.html`