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M 115.03C: Probability and Linear Mathematics

Jeff J. Arends
University of Montana - Missoula, jeff.arends@umontana.edu

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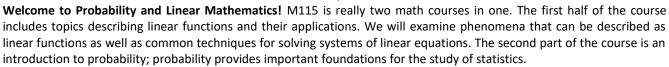Follow this and additional works at: https://scholarworks.umt.edu/syllabi

Section:
Instructor: Jeff Arends
Office: MC324
Office Hours: TBA
Instructor E-mail: jeff.arends@umontana.edu
eText: *Finite Mathematics-10th Edition*, Lial, Greenwell, Ritchey

Welcome to Probability and Linear Mathematics! M115 is really two math courses in one. The first half of the course includes topics describing linear functions and their applications. We will examine phenomena that can be described as linear functions as well as common techniques for solving systems of linear equations. The second part of the course is an introduction to probability; probability provides important foundations for the study of statistics.

Placement in M115 is based on your individual mathematics assessment (ALEKS, ACT, COMPASS, or SAT) or completion of either M090 (Introductory Algebra) with a grade of RC- or better or M095 (Intermediate Algebra) with a grade of RC- or better. (The "R" designation indicates that the course is remedial or developmental.) *Be certain that you are enrolled in the proper math class at the beginning of the semester. You may not be able to switch into a more appropriate class after the first week. If you have any concerns about your placement see me* <u>*immediately*</u>*.*

This course has been designed for you, the student. Your willing participation is essential if you plan to succeed in this course. Attendance is not part of your final grade, but no one can teach you if you are not in class engaged and ready to learn. Turn off your cell phone (and yes, that includes text messaging). Come to class and come prepared. Please understand that it is impossible for any instructor to cover every example in class. You need to do your part by reading the book on your own to the best of your ability. Don't fall behind. Pay attention and participate! You are an important part of this class — in fact, you ARE the class and have everything to do with how the class "feels." You can make this class lively and interesting or you can make it silent and boring. If you keep up with the homework, you will find the material makes sense and the challenges are manageable.

Our classroom environment is based on mutual respect and appreciation. I will respect your efforts and appreciate your contributions, and you should do the same for me and your classmates. Support your classmates' efforts as well as your own and it will make our entire class stronger.

I cannot emphasize enough how important it is for you to be diligent in your study habits. You cannot learn math by wishful thinking alone; you need to put in the effort in order to be able to learn the material. Different students have different learning styles, but every student can improve with effort. Find the technique that works best for you.

COURSE CONTENT:
1. Linear Functions (Slopes and Equations of Lines, Linear Functions and applications, linear vs. exponential functions)
2. Uses of Percentages
3. Systems of Linear Equations and Matrices
4. Linear Programming, The Graphical Method (Graphing Linear Inequalities, Solving Linear Programming Problems Graphically, Applications)
5. Sets and Probabilities (Sets, Applications of Venn Diagrams, Basic Concepts of Probability, Conditional Probability; Independent Events, Bayes' Theorem)
6. Counting principles; Further Probability Topics (The Multiplication Principle, Permutations, Combinations, Probability Applications of Counting Principles, Binomial Probability, Probability Distributions; Expected Value)
7. Statistics (Frequency Distributions; Measures of Central Tendency, Measures of Variation, The normal distribution, Normal Approximation to the Binomial Distribution)

COURSE OBJECTIVES:
Upon successful completion of the course, students will be able to perform each of the following:
1. Master basic concepts of lines, linear systems, matrices and linear programming (graphical method only).
2. Understand basic probability concepts: probability models (Venn diagrams, two-way tables), sample spaces with equally likely outcomes (counting), conditional probability (tree diagrams), Bayes' theorem, binomial probabilities, probability distributions.

3. Understand the rudiments of statistics: measures of center and spread, the normal distribution and the normal approximation to the binomial distribution.
4. Use the above concepts to solve application problems (this includes learning to precisely formulate a problem and to interpret solutions).

CALCULATOR: A graphing calculator is required for M115; the Department of Applied Arts and Sciences uses and recommends Texas Instruments models TI-83 or TI-84. Calculators with symbolic manipulation capabilities (e.g., TI-89, TI-92) and cell phones will not be allowed in testing situations.

MYLABSPLUS (MLP): MyLabsPlus is an innovative way for you to do homework with immediate feedback. Every section of the M115 text covered in class has a corresponding assignment in MyLabsPlus. Homework questions can be submitted up to three times until the assignment closes. There is a chapter quiz for each of the chapters covered in class; each quiz can be taken three times with only the highest score affecting your grade. **NOTE:** these assignments and chapters are open for specific times and in a specific order. Check the MyLabsPlus calendar frequently to be sure you are keeping current with your assignments. You must keep up with the progression in order to succeed in this course. *Late homework is subject to a 20% penalty.* Late homework assignments can be submitted up until 5 PM on the last day of regular class meetings.

You may access your MyLabsPlus course shell through http://my.umt.edu by clicking the MyLabsPlus icon at the top of the page and using your NetID/Password.

IN-CLASS TESTS: Three tests will be given in class, as well as several quizzes. All scratch work must be done directly on the exam and returned to me when leaving the classroom. A single page (8½"x11") of notes (both sides) may be used to assist you during tests.

When circumstances prevent you from taking a test at the scheduled time, contact me PRIOR to the time of the test to announce your absence. Absences are excused only for reasons of illness, injury, family emergency, or a University-sponsored activity. Arrangements for a make-up exam must occur within one week of the scheduled exam date. Failure to arrange a make-up exam within a week of the scheduled exam date will result in a score of zero for the exam.

Corrected tests will be returned one week after the test date. If you have questions regarding the grading of your test, please wait until after class to discuss it.

ATTENDANCE: Attendance does not directly contribute to your grade in M115, but regular attendance can only strengthen your learning. You cannot expect to succeed in this course if you miss most classes; important information may be shared at any time that may not be posted on MyLabsPlus.

FINAL EXAM: The final exam for this class is comprehensive and is worth 150 points. The final exam for this class will be given in class during finals week. You are allowed to use a calculator and one 8½"x11" page of notes (front and back). **You are not permitted to use a cell phone**.

ACADEMIC CONDUCT: All students must practice academic honesty as defined by the Student Conduct Code, available at http://www.umt.edu/student-affairs/dean-of-students/default.php Academic misconduct is subject to an academic penalty by the instructor and a disciplinary sanction by the university.

REASONABLE ACCOMMODATIONS: Students with disabilities may request reasonable modifications. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult https://www.umt.edu/dss/. Examples of reasonable accommodations include extra time or use of a quiet room for tests and/or quizzes. To qualify for reasonable accommodations you must provide a letter from DSS. You are responsible for making the necessary arrangements with DSS (for the Mountain Campus) or the ASC (for the Missoula College campus). If you have any questions, please contact me.

DROPPING AND ADDING COURSES OR CHANGING SECTIONS, GRADING OR CREDIT STATUS:
Students are expected, when selecting and registering for their courses, to make informed choices and to regard those choices as semester long commitments and obligations. **Documented justification is required for dropping courses by petition**. Some examples of documented circumstances that may merit approval are: error in registration, accident or illness, family emergency, or other circumstances beyond the student's control. Reasons that are not satisfactory include

forgetting to turn in a drop slip and protecting a student's grade point average. The opportunity to drop a course for the current term ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended).

GRADING POLICIES: The final grade for M115 will be computed as follows:

3 normal exams	40% of your grade
Final exam	25% of your grade
Quizzes	15% of your grade
Homework	20% of your grade

GRADE OPTION: M115 must be completed with a grade of C- or better in order to contribute towards satisfying the UM Math Literacy requirement. Auditing M115 or taking it with the C/NC option will not fulfill the requirement.

Letter grades correspond to numerical scores according to this plan:

A	B	C	D	F
90-100%	80-89%	70-79%	60-69%	Below 60%

EXTRA CREDIT: There is no extra credit available for this course.

INCOMPLETES: A grade of incomplete will only be considered when all three of the following are true:
1. The student has been in regular attendance and passing up to three weeks before the end of the academic semester.
2. Factors beyond the student's control make it impossible to complete the course on time.
3. The instructor and the student agree that there is a reasonable probability that the student will be able to make-up the work required to complete the course and specific arrangements are drawn up and signed by both.

A student who receives an incomplete has one calendar year to resolve the incomplete (I) before it automatically reverts to a failing grade (F).