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M 115.00: Probability and Linear Math

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Mathematics 115 – Section 00
Grading and Policies Fall 2020

Contact Professor:

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Catalog Description:

(<http://www.umt.edu/catalog/colleges-schools-programs/humanities-and-sciences/mathematical-sciences/default.php>.)

M 115 - Probability and Linear Mathematics

Credits: 3. Offered every term. Prereq. M 090 with a grade of B- or better, or M 095, or M01 placement ≥ 17 , or ALEKS placement ≥ 3 , or ACT score of 22, or SAT score of 550 (with the new test). Systems of linear equations and matrix algebra. Introduction to probability with emphasis on models and probabilistic reasoning. Examples of applications of the material in many fields.

Learning Outcomes: Upon completion of this course, students will be able to:

1. Find, understand and use linear equations to solve application problems.
2. Set up and solve systems of linear equations, and apply them appropriately.
3. Set up and solve linear programming problems (graphical method only).
4. Use linear regression and understand its uses as well as its limitations.
5. Use basic probability: sample spaces with equally likely outcomes, counting, conditional probability, Bayes' theorem, binomial probabilities, probability distributions, tree diagrams, Venn diagrams, two-way tables.
6. Use probability distributions: the binomial and normal distributions, and the normal approximation to the binomial distribution.
7. Use descriptive statistics: graphical displays, measures of center and spread.
8. Solve word problems involving the above concepts (this includes being able to precisely formulate a problem, and to interpret solutions).

General Education Learning Outcomes:

Upon completion of the mathematical literacy requirement, a student will be able to effectively apply mathematical or statistical reasoning to a variety of applied or theoretical problems.

Course Content:

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

Text:

We will use a compilation of Open Educational Resource texts all of which are free of charge and available to download through a link on the MyOpenMath site. You can order a printed copy as well through Lulu.com for a small fee. Access to MyOpenMath and a graphing calculator are also required. Classroom demonstrations will be done with a TI-84. A graphing calculator with symbolic capability, such as a TI-89, TI-92 or anything CAS will not be allowed on quizzes or exams. Please note that there are downloadable calculators and apps that are fairly inexpensive if not completely free of charge.

For an orientation on enrolling and getting started with the MyOpenMath, please view:

https://www.youtube.com/watch?v=_IdFpaVYsgU&feature=youtu.be

To enroll in our course on MyOpenMath: go to www.myopenmath.com and note that our course ID is **75330** and the enrollment key is: **mathiscool**

This is the site where you can access the texts, online homework and videos that are linked to the text, tests, and the online homework gradebook. Regarding the online homework, you will have the opportunity to try each question several times, and if you continue to get it incorrect, you can click “similar problem” for additional attempts. It is strongly recommended that if you do not get the question correct on the first couple of tries; that you access the associated video (if one exists) that is linked to that particular homework question. It is essential that you do these assignments daily.

Please note that within each course topic on MyOpenMath, there are several short videos available that provide brief explanations and examples of various relevant topics. I encourage you to view these for additional explanations, as needed. You will also see such videos linked to random homework problems throughout the course.

Grading:

Your course grade will be based on the following:

- 40% of your grade: Unit Tests, schedule TBA (the tests occur after Lessons 6 and 11)
- 20% of your grade: Final Exam. Note this is a cumulative final exam and the first half covers lessons 12-17.
- 20% of your grade: Lab Activities, with the lowest two dropped (there are **no** make-ups).
- 20% of your grade: Online Homework with the lowest two scores dropped.

Please note that this class is highly interactive hence attendance and participation in both the ‘lecture’ and lab are essential for success in the class. You are expected to be in class every day it meets, although recordings for the MWF sessions will be available for listening/viewing in the case you have to miss.

When any assignment is returned, there is one week from the date of return for contesting the grading. After that time, the grade will be accepted as final. All tests and assignments to be turned in are announced well before-hand and an email will also be sent to the class alerting you of an upcoming due date. It is your responsibility to keep up to date on all such announcements.

<i>Grade</i>	<i>Grading Scale by Percentages</i>
A	90%+
B	89-80%
C	79-65%
D	64-55%
F	Less than 55%
CR	

*** If you are taking this course to fulfill a general education requirement or a requirement for your major or minor, you must take it for a traditional letter grade (not CR/NCR). If you decide anyhow to take this course with CR/NCR grading, a grade of “D-“is considered passing and will earn you credit for the course, BUT it will NOT fulfill your general education requirement NOR any requirement for your major or minor.***

Make-ups:

THERE ARE NO MAKE-UPS for the lab activities, regardless of the reason (e.g. sickness, sports, family emergency, etc.); this is why the lowest two are dropped as well as why there is a fairly large window in which they can be submitted. It is your responsibility to notify me as soon as you know you will miss any exam and it must be either prior to or within 24 hours of the exam. **If I do not receive an email within that period, the test score will be a 0. At most one make-up exam will be given.**

The last day to add/drop or change grading option to Audit by Cyberbear is **9/9**. The last day to change sections and to change grading options is **10/21**. This is also the last day to drop. Changes after this deadline and until **11/18** must be done by Petition to Drop/Add after deadline and approved by me, your advisor and the appropriate Dean. Approval requires genuine extenuating circumstances as listed in the university catalog.

Extenuating circumstances are:

1. Missing a substantial number of classes due to illness, accident or family emergency.
2. A change in work schedule that makes it impossible to attend class or devote adequate time to the course.
3. Registration in the course by error and never attending class.

Reasons that are not satisfactory include:

1. Forgetting to turn in a drop slip.
2. Protecting your grade point average.

Incomplete (I) Grades:

To be eligible for an "I", the following conditions must be met:

1. The student must have been in attendance and passing the course up to 3 weeks before the semester ends; and
2. The student is unable to complete the course due to extenuating circumstances, which usually means serious illness or death in the family.

Incompletes are not given under any other circumstances and are always given at the discretion of the instructor. See the 2020-2021 catalog for further information.

Misconduct:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

Disability modifications:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Important University-Wide Info and Dates:

- Monday, 7 September: Labor Day. No school.
- Tuesday, 3 November: Election Day. No school.
- Wednesday, 11 November: Veteran's Day. No school.

Student expectations:

Attendance: Attendance is a required component of the course. If you must be absent, you are responsible for obtaining missed assignments and announcements (such as upcoming tests and activities), and being prepared for the next class. In the case that you miss a class, recordings will be posted on the BOX folder.

Email: Students are expected to maintain an active email account and to check email daily.

Preparation: Students are expected to come to all classes prepared, with assignments complete, even if they have been absent.

Electronics: Students are expected to keep all phones and other personal electronics away/off during class. Calculators and laptops being used for class work will be acceptable.

Attendance/Participation: Students are expected to attend every class, to be on time for class, and to stay for the entire class period. Students who miss class are expected to complete the day's work and stay on schedule. Attendance is very important in this course. The only excused absences will be those due to required participation in university-sanctioned events such as athletic competitions, musical performances, and class trips. Students are expected to participate in all class activities, including individual work, group work, and work shared with the rest of the class. Full class participation involves bringing all relevant materials, staying on task, contributing to group activities, fostering a positive learning environment, answering questions when called upon by your instructor, and keeping all non-essential electronic devices away. *Sometimes you may think that you don't have time to attend class due to other matters, but past experience has shown that students who miss class actually spend far more than 50 minutes making up what they missed.*

A portion of class time will be spent working in small groups. The benefit of discussion while working in small groups to develop and use mathematical concepts has been shown to increase success rates. Brain research has shown that sharing multiple viewpoints and verbally articulating questions and answers strengthens the connections your brain makes between concepts. Strong connections improve your ability to recall and use concepts. Even if you think you already understand a concept, explaining your understanding to others benefits others while strengthening your own understanding. If you ask a question of your group or class, you are providing an opportunity for good discussion, so don't be shy about asking questions! The only bad question is one that is left unasked!

On coronavirus: All students are expected to follow UM's face covering policy (see www.umt.edu/policies/browse/facilities-security/covid-19-face-covering-policy).

Resources:

Student Hours: My student/office hours are for you to seek direct help from me. I am available during all announced hours as well as other times by appointment. Please come see me with any concerns you have during the semester, especially if there is something going on that is having an impact on your ability to succeed in the class. You can also come see me during these hours for help on math, just as you would get help in the math lab. Don't wait until you are way behind to get help! It is strongly recommended that you communicate with me as much as possible so that we can work together to get you through the course successfully.

The Math Department has tutors available at the Math Learning Center and hours will be announced as soon as they are provided.

Student: As a student, you may experience a range of challenges that can interfere with learning, such as health: strained relationships, increased anxiety, substance abuse, feeling down, difficulty concentrating, and/or lack of motivation. These mental health concerns or stressful events may diminish your academic performance and/or reduce your ability to participate in daily activities. Counseling is available and treatment does help. The professional staff at Curry Health Center offers free confidential counseling to full-time students. I am always happy to help you find the resources you need.

A Statement on Digital Access and Equality:

Digital devices (like laptops and cell phones) are becoming increasingly important to success in college. In this course, you may need digital devices to access readings, complete and submit written assignments, complete online quizzes, verify your attendance, take in-class polls, coordinate with other students regarding group projects, complete and submit group projects.

I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students. Given those challenges, I encourage students to contact me if they experience a technology-related problem that interferes with their work in this course. This will enable me to assist students in accessing support.

Here is some information in case you or another student you know faces challenges securing food or housing. There are some campus resources that might be helpful:

Food Pantry Program

UM offers a food pantry that students can access for emergency food. The pantry is open on Tuesdays from 9 to 2, on Fridays from 10-5. The pantry is located in UC 119 (in the former ASUM Childcare offices). Pantry staff operate several satellite food cupboards on campus (including one at Missoula College). For more information about this program, email umpantry@mso.umt.edu, visit the pantry's website (<https://www.umt.edu/uc/food-pantry/default.php>) or contact the pantry on social media (@pantryUm on twitter, @UMPantry on Facebook, um_pantry on Instagram).

ASUM Renter Center

The Renter Center has compiled a list of resources for UM students at risk of homelessness or food insecurity here: <http://www.umt.edu/asum/agencies/renter-center/default.php> and here: <https://medium.com/griz-renter-blog>.

Students can schedule an appointment with Renter Center staff to discuss their situation and receive information, support, and referrals.

Accessing Online Homework in MyOpenMath**If you do not already have a MyOpenMath account:**

- 1) Open up your web browser (like Internet Explorer, FireFox, Safari, or Chrome)
- 2) Enter the address: **www.myopenmath.com**
- 3) Click "Register as new student"
- 4) Enter the requested information.
- 5) Where it says "Select the course you'd like to enroll in", leave "My teacher gave me a course ID (enter below)" selected, and enter this class's course id and key:
Course ID: **75330**
Enrollment key: **mathiscool**

- 6) Click "Sign-up"
- 7) You will taken back to the login page. Enter your username and password you selected
- 8) You may see a "Browser Check" page. If so, click the "Continue with Image-based display" button.
- 9) The course name will now show up in the "Courses You're Taking" box on your home page. Click on the course name to enter the course.

The next time you want to access the course, you will just need to enter your username and password at the login page, then click on the course name to re-enter the course.

If you already have a MyOpenMath account:

- 1) Log into myopenmath.com
- 2) Click the "Enroll in a New Course" button.
- 3) Enter the course ID and enrollment key from #5 above, and click Sign Up.
- 4) The course name will now show up in the "Courses You're Taking" box on your home page. Click on the course name to enter the course.

The following syllabus **is** subject to modifications (and in all probability will be changed due to timing!). **It is your responsibility to keep up to date on all such announcements.**

Monday	Tuesday	Wednesday	Thursday	Friday
Aug 17	Aug 18	Aug 19 Intro	Aug 20 lab intro	Aug 21 Lesson 1
Aug 24 Lesson 1	Aug 25	Aug 26 Lesson 1	Aug 27 Lab Activity 1	Aug 28 Lesson 2
Aug 31 Lesson 2	Sep 1	Sep 2 Lesson 2	Sep 3 Lab Activity 2	Sep 4 Lesson 3
Sep 7 Labor Day	Sep 8	Sep 9 Lesson 3	Sep 10 Lab Activity 3	Sep 11 Lesson 4
Sep 14 Lesson 4	Sep 15	Sep 16 Lesson 5	Sep 17 Lab Activity 4	Sep 18 Lesson 5
Sep 21 Lesson 6	Sep 22	Sep 23 Lesson 6	Sep 24 Review for Test 1	Sep 25 Lesson 7
Sep 28 Lesson 7	Sep 29	Sep 30 Lesson 8	Oct 1 Lab Activity 5	Oct 2 Lesson 8
Oct 5 Lesson 9	Oct 6	Oct 7 Lesson 10	Oct 8 Lab Activity 6	Oct 9 Lesson 10
Oct 12 Lesson 11	Oct 13	Oct 14 Lesson 11	Oct 15 Lab Activity 7	Oct 16 Lesson 11
Oct 19 Lesson 12	Oct 20	Oct 21 Lesson 12	Oct 22 Review for Test 2	Oct 23 Lesson 13
Oct 26 Lesson 13	Oct 27	Oct 28 Lesson 14	Oct 29 Lab Activity 8	Oct 30 Lesson 14
Nov 2 Lesson 15	Nov 3 Election Day	Nov 4 Lesson 15	Nov 5 Lab Activity 9	Nov 6 Lesson 15
Nov 9 Lesson 16	Nov 10	Nov 11 Veterans Day	Nov 12 Lab Activity 10/Review	Nov 13 Lesson 16
Nov 16 Lesson 17	Nov 17	Nov 18 Lesson 17	Nov 19 Finals	Nov 20 Finals
Nov 23 Finals	Nov 24 Finals	Nov 25 Finals	Nov 26	Nov 27