

STT 441 -001 & 003: Probability and Statistics I (Probability), Fall Semester, 2020

Instructors: Dr. Dennis Ikpe and Dr. Frederi G. Viens;

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Virtual Classroom and Time:

<https://msu.zoom.us/j/6512918044>

(Meeting ID: 651 291 8044, Passcode: probab)

M W 3:00 pm - 3:50 pm.

Virtual Group Office Hours:

F 3:00 p.m. – 3:50 p.m,

Additional individual office hours: TBD per instructor, and by appointment.

Grader: Ms. Meiqi Liu

Course Description

This is the first course in a two-course sequence of introductory probability and statistical inference for students with calculus background. STT 441 covers the introductory probability theory and models part of the sequence at an intermediate mathematics level. The course covers basic Probability, conditional probability and independence. Random variables - Discrete and continuous; univariate and multivariate distributions; Expectation and its properties; Moment generating functions; Law of large numbers and central limit theorem. The course will cover Chapters: 1-10 of the textbook. We will make use of computers where they will help to improve our understanding of fundamental concepts of the course, or where they will perform tedious calculations quickly.

Prerequisite: MTH 234 or MTH 254H or LB 220 or approval of college.

Required Textbook:

Introduction to Probability

Author: David F. Anderson, Timo Seppäläinen, Benedek Valkó

ISBN: 9781108415859

Publisher: Cambridge University Press, 2017, first edition

Required Technologies

The technologies we will use for this course include internet access to msu.zoom.us and d2l.msu.edu. These sites require an MSU login and a stable internet connectivity, though they can operate on low bandwidth (e.g. minimum of 600 kbits/sec is typically sufficient, if this minimum bandwidth is stable). Please check availability in your current location.

Course Guidelines and materials, Open/Close times

This online course is built on a bi-weekly framework of material. Homework assignments, and associated lecture notes and class recordings will typically be posted by 5pm on a Friday before the week they are due. Homework assignments may be completed and submitted at any time during the week they are due, before the announced due date, which will typically be approximately one week from the posting date, usually 11:55 pm Eastern Time on Saturday evening following the week of class during which the assignment is posted.

Posted course materials, including slide for the lectures, and recordings of the synchronous lectures, will remain open throughout the semester. In this fashion, students who are unable to attend the lectures for technical or personal reasons, such as unexpected difficulties with information technology, personal or family illness, or the need to become a family caretaker, will have access to all the same class materials as students who attend the lectures.

Access to Desire2Learn (D2L)

- In your browser window, type the URL <http://d2l.msu.edu> and press return. You will be taken to the D2L Login page.
- Click the Login button. You will be taken to a login screen. Type in your MSU NetID (or Community ID). In the Password box, type your password. Click the "Login". You will be taken to your D2L My Home page.
- If you have forgotten your MSU NetID password:
<https://netid.msu.edu/netid/password/index.html>.
- Help Desk at MSU Distance Learning Services: Local: (517) 432-6200 or Toll Free: (844) 678-6200 (North America and Hawaii)
- Help Desk at MSU Distance Learning Services: Go to HELP in the main toolbar, then under NEED HELP? click on the D2L Contact Form. Complete and submit the form. You should receive a response within 2 hours.

Attendance Policy

Attendance is expected and encouraged in all Monday and Wednesday lectures, but is not required. Excuses for absences are not required. Friday class time is reserved for each of the instructors to engage in office hours in a virtual group setting with students from their respective sessions.

Feedbacks and Communications

- All course announcements will be made in the msu.zoom.us virtual lecture or using [D2L](#). Please check D2L regularly, and please view the lecture recordings when you miss a lecture.
- The best way to contact your instructors is via their work emails: ikpedenn@msu.edu and viens@msu.edu. Please give us typically up to 24 hours for email response. Response times may be longer over weekends.

- Please ***do not*** reply to mass emails sent via D2L, you should create an email with a new subject line if and when you wish to respond to mass emails.

Homework

There will be **eight** homework assignments for 3% of the course score each during the semester. On or before the specified due date, all homework are to be turned in on d2l. All homework will be graded and the due date will be posted on D2L when they are assigned. Homework will be due mostly every other Fridays except during an exam week. Late homework will not be accepted and there will be no make-up for homework.

Examinations

There will be two midterm exams and one final exam. Though exams will not be cumulative, this course’s material builds on itself, so the final exam will require an understanding of the entire course. All exams will open-notes, open-book, “take-home” exams. The midterm exams will become available on D2L, 24 hours before they are due in scanned form back on D2L. Tentatively, the final exam will be available by the start of finals week, and will be due by the end of finals week. Please see the ***tentative*** dates for the exams on the schedule below:

Midterm exam 1	Friday, Oct. 02, 2020	Due at 11:59pm
Midterm exam 2	Friday, Nov. 06, 2020	Due at 11:59pm
Final Exam	Available Friday, Dec. 11, 2020	Due on Friday, Dec 18, 2020

Extra Credit: There may be opportunities to earn modest amounts of course percentage points via extra credits, such as challenging problems on homework assignments or exams.

Grading Policy

This class will be curved based on the instructors’ satisfaction with the class’s overall performance as a group, and using a combination of statistical modes and percentiles from students’ course scores. However, grades will not follow a normal distribution: for instance we expect a significantly larger proportion of high grades (e.g. 4.0) than of low grades (e.g 1.0).

Your course score will be computed from your assessment scores based on the following proportions:

- **24%** of your course score will be determined by **eight** homework assignments 3% each.
- **50%** of your course score will be determined by **two** midterm exams, 25% each.
- **26%** of your course score will be determined by **the final exam**.

The instructors will use the following expectations to determine the conversion from course score to course grade:

Grade	Expectations
4.0	The student demonstrates a critical orientation to the material, incorporating an extensive knowledge base, reflection, discovery of tacit meanings, highly original thinking, and critical analysis and synthesis; consistent ability to integrate theory and practical experience.
3.5	The student demonstrates some evidence of a critical orientation to the material, incorporating a wide knowledge base, and using reflections, discover or tacit meanings, some original thinking, critical analysis and synthesis able to integrate theory and practical experience.
3.0	The student demonstrates an interpretive orientation to the material, incorporating a sound knowledge base, identification of underlying principles or themes, examples of situations or experiences, and some original thinking, critical capacity and analytic ability; able to integrate theory and practical experience to some extent.
2.5	The student demonstrates some evidence of an interpretive orientation to the material, incorporating and adequate knowledge base, identification of underlying principles or themes, examples or situations or experiences, and some original thinking, critical and analytic ability; integrates theory and practical experience to a limited extent.
2.0	The student demonstrates a descriptive orientation to the material, incorporating a satisfactory knowledge base, some ability to analyze and evaluate critically, and some original thinking; limited integrations of theory and practice.
1.5	The student demonstrates some evidence of a descriptive orientation to the material, incorporating a fairly narrow knowledge base, some ability to analyze and evaluate critically and demonstrating limited original thinking; negligible integration of theory and practice.
1.0	The student demonstrates a limited knowledge base, uses concrete problem-solving, limited critical evaluation, and negligible original thinking; no integration of theory and practice.

Academic Integrity and Honesty

The Department of Statistics and Probability adheres to the policies of academic honesty as specified in the General Student Regulations 1.0, Protection of Scholarships and Grades, and in the All-University of Integrity of Scholarship and Grades which are included in Spartan Life: Student Handbook and Resource Guide. Student who plagiarize will receive a grade 0.0 on the assignment. Severe cases of academic dishonesty can give rise to more severe disciplinary action.

Plagiarism is the act of presenting someone else's work as one's own. Contrary to popular belief, plagiarism in mathematical assignments is particularly easy for instructors to detect.

All students are encouraged to work in small study groups on their homework assignments, but each student must present original work for their homework assignments, which reflects their own individual understanding of the material, not work which duplicates parts of other students' work, since that would be considered plagiarism.

Students must not collaborate with anyone on their midterm and final exams, or otherwise communicate with anyone to discuss these exams. Any indication to the contrary would be considered plagiarism.

Statement on Disability:

Accommodations for Students with Disabilities (from the Resource Center for Persons with Disabilities (RCPD): Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation ("VISA") form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (test, project, etc.). Requests received after this date will be honored whenever possible. If you have a documented physical, psychiatric/emotional, medical or learning disability that may impact your ability to carry out assigned course work or will require extra time on exams, please notify the instructor within the first week of the course so that appropriate arrangements can be made.

Contingency plans for COVID-19 uncertainties

Any student who is or becomes unable to attend class lectures because of COVID-19 will have access to all course materials, including recorded videos of lectures. Students who need accommodations for COVID-19 beyond this must contact their instructors as soon as the need arises, and may use the resources of the RCPD office as outlined above.

It is also possible that one of your two instructors will fall ill or otherwise become incapacitated because of COVID-19. The other instructor would then ensure course continuity for both sections 001 and 003. The likelihood of both instructors becoming incapacitated at the same time is extremely remote, and will be referred to the STT department leadership for course continuity.

Relationship Violence and Sexual Misconduct Policy:

Michigan State University is committed to fostering a culture of caring and respect that is free of relationship violence and sexual misconduct, and to ensuring that all affected individuals

have access to services. For information on reporting options, confidential advocacy and support resources, university policies and procedures, or how to make a difference on campus, visit the Title IX website at www.titleix.msu.edu.

Disclaimer

The instructors reserve the right to make small- or large-scale changes to this syllabus as academically appropriate, including in response to rapid societal changes. If and when such changes occur, the instructors will make a formal announcement to the class via multiple media.

Tentative schedule and weekly learning goals

The schedule below is **tentative and subject to change. It is given as an indication of pace only.** All homework assignment should be submitted through d2l on the respective due dates.

Week 01, 08/31 - 09/04: Section 1.1 - 1.2

Week 02, 09/07 - 09/11: Section 1.3 & HW01: Due - 09/12

Week 03, 09/14 - 09/18: Section 1.4 - 1.5 & HW02: Due - 09/19

Week 04, 09/21 - 09/25: Section 2.1 - 2.3,

Week 05, 09/28 - 10/02: Section 2.4-2.5 & HW03: Due - 10/03

Week 06, 10/05 - 10/09: Section 3.1-3.2, & Exam 1 (10/09)

Week 07, 10/12 - 10/16: Section 3.3 - 3.4, & HW04: Due - 10/17

Week 08, 10/19 - 10/23: Section 3.5, 4.1-4.2

Week 09, 10/26 - 10/30: Section 4.3-4.5, & HW05: Due - 10/31

Week 10, 11/02 - 11/06: Section 5.1, 5.2, 6.1 & HW06: Due – 11/07

Week 11, 11/09 - 11/13: Section 6.2 -6.3, 7.1, & Exam 2 (11/13)

Week 12, 11/16 - 11/20: Section 7.2, 8.1

Week 13, 11/23 - 11/25: Section 8.2 - 8.4 & HW07: Due - 11/25

Week 14, 11/30 - 12/04: Sections 9.1- 9.3 & HW08: Due – 12/04

Week 15, 12/07 - 12/11: Review for Final Exam (exam available Dec 11, 2020, due Dec 18)

Important Dates Fall, 2020

Last day to drop with refund (8:00pm) 9/28/2020

Wednesday, 9/02	Classes begin
Monday, 9/7	Holiday – University closed
Wednesday, 10/21	Middle of semester
Thursday, 11/26 – Friday, 11/27	Holiday – University closed
Friday, 12/11	Classes End
Monday, 12/14 – Friday 12/18	Finals Week