

Syllabus

STAT 516 Spring 2020

Basic Probability and Applications

Time and Location: TTh, noon-1.15 pm, REC 114

Instructor: Professor Michael Levine

Office: HAAS 154

Office Hours: TTh 1.30pm-2.30pm or by appointment

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Purdue Honors Pledge

As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do.
Accountable together - we are Purdue.

Textbook: No required textbook

Approximate Course Coverage:

1. Equally likely outcomes, probability rules, conditional probability and independence
2. Discrete random variables and discrete distributions
3. Continuous random variables and univariate continuous distributions
4. Multivariate (joint) continuous distributions
5. Dependence; conditional distributions and expectations; covariance and correlation; bivariate normal.
6. Order statistics and the method of Monte-Carlo
7. Law of large numbers and a central limit theorem

Web Page: <https://www.stat.purdue.edu/~mlevins/courses/STAT%20516/index.html>

Objective: By the end of this course, students should be comfortable with probability distributions and random variables. They are also expected to master many of the distribution finding techniques, such as transformation and moment generating methods, know a number of specific distributions (e.g. Bernoulli, Binomial, Poisson, Normal, t-, F-distributions etc.), and understand order statistics, law of large numbers and the central limit theorem.

Prerequisites: MA 261, 172, or equivalent

Lectures: The online notes will be made available to you on the class web page. You can print them to facilitate taking notes in class.

Final Grade: Your final grade will be based on the following components: homework (35%), midterm (35%), and final exam (30%). The percentage grades needed to achieve an A, B, C, or F will follow approximately the following scale: 85 – 100 = A, 70 – 84 = B, 55 – 69 = C, 40 – 55 = D, anything below 40 means F. This course has "+" and "-" scores.

Examinations: There will be one midterm examination and one final examination. The final examination will not be cumulative. Contact me as soon as possible if you are unable to take an exam at the scheduled time. Students having exam conflicts or requesting special accommodations (these should be documented) must inform me as early as possible so that alternative plans may be arranged. It is YOUR responsibility to contact me IN ADVANCE to check if a make-up is possible. Please have a calculator with you at either exam. The exams are closed book/open notes. For both exams, you can bring two standard size cheat sheets of paper, written or typed on both sides.

Homework: The homework will be assigned approximately one week before its due date and will also be posted on the class web page. The homework must be finished (written) independently. Discussion is okay, but identical copies are not acceptable since your homework must reflect YOUR understanding of the material. If identical solutions are found, all the parties involved will receive a 0 on that assignment. Late homework will not be accepted under any circumstances (late = during the class meeting on the due date). Usually, homework solutions will be posted on the class web page shortly after the due time. To allow for illness, family emergencies, etc., two lowest homework scores will be dropped at the end of the fall semester. Homework must always be stapled if it is longer than one page. The first page of each homework set handed in must contain the following information:

- i. your name
- ii. the number of the homework set (e.g. Homework #2)
- iii. the due date
- iv. Stat 516

This information is necessary to ensure that your grades are recorded correctly and that your homework is returned to you promptly.

Rules of Politeness:

1. No food, open laptops, texting, IM'ing etc. during the class. Coffee or a soft drink are ok
2. Barging in late into the class is very disruptive and rude. Please try to be on time for class as much as possible.

Academic Dishonesty: Penalties for academic misconduct range from a 0 on the assignment to failure in the course with referral to the Dean of Students for further sanctions. Note that we punish not only the person who cheats but also the person who enables the cheater.

Grief Absence Policy for Students: Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.

Students with Disabilities: Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University. It is the student's responsibility to notify the Disability Resource Center of an impairment/condition that may require accommodations and/or classroom modifications. University wide disability resources can be found at <http://www.purdue.edu/odos/drc>

How to deal with stress:

1. If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack, <https://purdue.welltrack.com/>. Sign in and find information and tools at your fingertips, available to you at any time.
2. If you need support and information about options and resources, please see the Office of the Dean of Students, <http://www.purdue.edu/odos>, for drop-in hours (M-F, 8 am- 5 pm).
3. If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Emergencies: in the event of a major campus emergency or other circumstances beyond the instructor's control, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar. Relevant changes to this course will be posted onto the course website; you can also e-mail me at mlevins@purdue.edu with any questions you may have if/when this happens.