

American University of Beirut

STAT 230: Introduction to Probability and Statistics

Course Syllabus (2023–2024 Fall; Section 3, MWF 13:00–14:00)

Summary: Statistics is the science of extracting reliable information from empirical data. Probability Theory is the mathematics of reasoning about chance and randomness. Although these are two distinct disciplines, they are inherently intertwined. This course is an introduction to probability theory and statistics for students of engineering, computer science and natural sciences. It is calculus-based in that the students are assumed to be comfortable with the concepts and techniques of calculus such as limits, (partial) derivatives and (multiple) integration. It is also calculus-styled meaning that its emphasis is on modeling, conceptual understanding and problem solving rather than on mathematical rigor.

Prerequisite: MATH 201

Textbook:

- Some lecture notes will be posted on Moodle.
- Supplementary: *Elementary Probability for Applications*, by R. Durrett
- Supplementary: *Introduction to Probability and Statistics for Engineers and Scientists*, by S. Ross

Note: The electronic versions of the above two books can be accessed via the [university library](#). You may be prompted to login with your AUB account.

Tentative Course Outline:

- Basic descriptive statistics
- Mathematical language of probabilities
- Counting techniques and their applications in probability
- Dependence and conditional probabilities
- Discrete and continuous random variables; their individual and joint distributions
- Expected value and variance of random variables and their covariance and correlation
- Important classes of random variables
- Bernoulli and Poisson processes
- Law of large numbers
- Central limit theorem
- Point estimation
- Confidence intervals (classical interval estimation)
- Statistical hypothesis testing (classical significance tests)

Exercises: Suggested exercises from the supplementary textbooks will be posted on Moodle.

Instructor: Siamak Taati (Email: st71@aub.edu.lb; Office: Bliss Hall 312B)

Office hours:

- Mondays 14:00–15:00 and Wednesdays 11:00–12:30 (to be updated at the beginning of the semester)

Feel free to drop by during the office hours if you need help or have questions or concerns.

Attendance: You are expected to attend every lecture, and to actively participate in class discussions.

Exams:

- Midterm 1 (Saturday, September 30, 9:00–12:00 — Bliss 203)
- Midterm 2 (Tuesday, October 31, 18:30–21:30 — Bliss 203)
- Final (to be determined by the Registrar's Office)

Grading Policy: The term grade will be calculated in two ways and the higher grade will be used.

	method 1	method 2
Active participation	5%	5%
Midterms	60%	30%
Final	40%	65%

Unique Learning Needs of Students with Disabilities: AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform your instructor so that we can privately discuss the options. In order to help establish reasonable accommodations and facilitate a smooth accommodation process, you are encouraged to contact the [Accessible Education Office](#) (Email: accessibility@aub.edu.lb; Phone: +961-1-350000 ext. 3168; Location: West Hall 304).

Academic Integrity: Please refer to AUB [Student Code of Conduct](#), in particular to Section 1.1, which concerns academic misconduct including cheating, plagiarism, in-class disruption, and dishonesty. Please be aware that misconduct is vigorously prosecuted and that AUB has a zero tolerance policy. The course policy is that credible evidence of cheating will result in failure in the course and referral to the disciplinary committee.

Non-Discrimination: AUB is committed to facilitating a campus free of all forms of discrimination including sex/gender-based harassment prohibited by [Title IX](#). The University's non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University's Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at [<https://www.aub.edu.lb/president/titleix>]. To report an incident, contact the University's Title IX Coordinator Trudi Hodges at +961-1-350000 ext. 2514, or titleix@aub.edu.lb. An anonymous report may be submitted online via EthicsPoint at [<http://www.aub.ethicspoint.com>].