

American University of Beirut
STAT 230: Introduction to Probability and Statistics

Course Syllabus (2026–2027 Fall; Sections L5 + E9/E10)

General course information:

- Number of credits: 3
- Course level: Undergraduate
- Course format: Lectures + exercise sessions
- Pre-requisites: MATH 201

Instructors, schedule, locations:

Section	Instructor	Days	Time	Location	Email	Office
L5	Siamak Taati	MWF	9:00–9:50	Nicely 108	st71@aub.edu.lb	Bliss 312B
E9	Mohamad Menhem	M	14:00–14:50	Nicely 414	mm410@aub.edu.lb	Bliss 113
E10	Ibrahim Nasr	M	10:00–10:50	Nicely 107	ign02@mail.aub.edu	

Office hours:

- Tuesdays 9:30–10:30 and Wednesdays 12:00–13:00, or by appointment
- Location: Bliss 312B

Course description: *Statistics* is the science of extracting reliable information from empirical data. *Probability Theory* is the mathematics of reasoning about chance and randomness. Although distinct, these two disciplines are inherently intertwined. This course offers an introduction to probability theory and statistics for students of engineering, computer science and the natural sciences. It is calculus-based, in that the students are expected 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.

Course learning outcomes: Upon successful completion of this course, you should be able to

1. Use the formal language and notation of probability theory to describe random experiments and stochastic phenomena precisely.
2. Translate real-world descriptions of randomness into mathematical probabilistic models, clearly stating assumptions and relevant variables.
3. Apply mathematical reasoning and tools (including calculus, combinatorics, and probability laws) to analyze probabilistic models and extract quantitative information.
4. Interpret analytical results in context, using the modeling–analysis–interpretation framework to reason about randomness and uncertainty, and to recognize the limitations of probabilistic models.
5. Apply foundational probabilistic and statistical principles to data-based reasoning, including basic summary statistics, simulations, and introductory ideas of estimation and hypothesis testing, and interpret their outcomes appropriately.
6. Communicate probabilistic and statistical reasoning clearly, using appropriate mathematical language.

Textbooks: The course does not follow a single textbook. The following books are recommended and will be used as sources for suggested exercises:

- *Probability and Statistics for Engineering and the Sciences*, by Jay Devore.
- *Elementary Probability for Applications*, by Rick Durrett.
- *Introduction to Probability and Statistics for Engineers and Scientists*, by Sheldon Ross.
- *Applied Probability and Statistics* by Mario Lefebvre.

Supplementary materials may be provided during the semester.

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

Contents:

- 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)

Homework: Suggested problems will regularly be posted. These will not be graded.

Assessment:

- Class activities: Regularly during lectures or exercise sessions
- Quizzes: Occasionally during lectures or exercise sessions
- Midterm 1: Monday, October 5, @18:00, Bliss 203 (to be confirmed)
- Midterm 2: Monday, November 9, @18:00, Bliss 203 (to be confirmed)
- Final: To be scheduled by the Registrar's office
- Puzzles: Occasional (bonus)

Class activities will include individual or collaborative tasks. The midterms will focus (though not entirely) on recent materials. The final exam will be cumulative.

Grading policy: The term grade will be calculated in three ways, and the highest grade will be used.

	Consistent	Balanced	Exam
Active participation	5%	5%	5%
Class activities	40%	25%	0%
In-class quizzes	10%	5%	0%
Midterms	20%	30%	35%
Final exam	25%	35%	60%
Total	100%	100%	100%

The class activities grade will be the average of the best 85% of the activity scores. The quiz grade will be based on the best 80% of the quiz scores. Each puzzle solution will count for up to 3 extra points (depending on the difficulty of the puzzle and the correctness of the solution), with a maximum of 5 extra points in total.

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: In line with its commitment to the principle of equal opportunity in education and employment, AUB policies protect you from discrimination on the basis of protected characteristics, including discriminatory harassment and sexual harassment. Protected characteristics include: race, color, religion, age, national or ethnic identity, sex, gender or gender identity, sexual orientation, pregnancy, marital status, disability, genetic predisposition or carrier status, alienage or citizenship status, and political affiliation.

If you think you have experienced discrimination, discriminatory harassment, or sexual harassment, we encourage you to inform the Equity/Title IX Coordinator, Mitra Tauk at +961-1-350000 ext. 2514, or titleix@aub.edu.lb, report to a Title IX deputy at your faculty or at any other faculty [<https://www.aub.edu.lb/titleix>], or report online [<http://www.aub.ethicspoint.com>]. Reports may be submitted anonymously or not. Please know that the University will maintain the confidentiality of the complaint and privacy of the persons involved to the greatest extent possible, consistent with its goal of conducting a thorough and complete investigation and to the extent permitted by law.