

IE 300: Analysis of Data

Section BL1 | Fall 2026 | 3 credit hours

Course At A Glance

Lectures	Monday, Wednesday, and Friday, 11:00–11:50 a.m., 3025 Campus Instructional Facility (CIF)
Instructor	Prof. Grani A. Hanasusanto, 106 Coordinated Science Laboratory, gah@illinois.edu
Office hours	Weekly office hours will be posted on Canvas.
Course sites	Canvas is the official course site. Gradescope, accessed through Canvas, is used for assignment submission and feedback.
Required lab registration	One registered 50-minute discussion/lab section in L440 Digital Computer Laboratory (DCL)
Prerequisite	MATH 241

Discussion/lab sections

Section	Meeting time	Teaching assistant	Email
BD1	Tuesday, 5:00–5:50 p.m.	Tejaswi Sapkota	sapkota3@illinois.edu
BD2	Thursday, 5:00–5:50 p.m.	Eklavya Sharma	eklavya2@illinois.edu
BD3	Wednesday, 12:00–12:50 p.m.	Vivek Rajopanth	var4@illinois.edu
BD4	Thursday, 12:00–12:50 p.m.	Vivek Rajopanth	var4@illinois.edu

Teaching-assistant office hours and any temporary changes will be posted on Canvas.

Course Description

IE 300 develops probability and statistics tools for analyzing engineering data and making decisions under uncertainty. Topics include probability rules; discrete, continuous, and joint random variables; descriptive statistics; sampling distributions; point and interval estimation; hypothesis testing; two-sample inference; and regression models. The course combines mathematical reasoning with data-based computation.

Learning Outcomes

By the end of the course, students should be able to:

1. apply probability rules, conditional probability, independence, Bayes' theorem, and counting methods;
2. formulate and analyze discrete, continuous, and joint random-variable models;
3. summarize, visualize, and interpret engineering data;
4. construct and interpret point estimates and confidence intervals;
5. formulate, conduct, and interpret one-sample and two-sample hypothesis tests; and
6. build, assess, and interpret linear regression models.

Textbook

Douglas C. Montgomery and George C. Runger, *Applied Statistics and Probability for Engineers*, 5th, 6th, or 7th edition.

Assessment And Grading

Component	Weight
Homework	10%
Quizzes	20%
Two midterm exams	30%
Three projects	20%
Final examination	20%
Total	100%

Course percentages will be converted to letter grades using the scale below. The boundaries include the lower endpoint.

A 93	A- 90	B+ 87	B 83
B- 80	C+ 77	C 73	C- 70
D+ 67	D 63	D- 60	F: below 60

Homework

Homework will be assigned approximately every other week and posted on Canvas. Homework should be submitted to the course Gradescope site. Late homework will receive a deduction of 10% of the assignment's total points per calendar day, or part thereof, and will not be accepted after solutions are posted. Complete solutions will be posted on Canvas within 10 days of the due date. Students are responsible for reading the solutions to understand missed problems; ensuing questions can be addressed in office hours.

Quizzes

There will be approximately 12 short, 15-minute quizzes throughout the semester during lecture. Each quiz will be announced in the preceding lecture. No make-up quizzes will be offered at any point in the semester. The two lowest quiz scores will be dropped. Quizzes will be **closed book, closed lecture notes, and closed homework**. **No electronic devices will be allowed**.

Projects And Labs

Labs will begin in the second week of classes. Three projects will be completed through the discussion/lab sections.

Examinations

There will be two in-class midterm examinations and a cumulative final examination.

Assessment	Date and time	Status
Midterm 1	Wednesday, October 7, 11:00–11:50 a.m.	Held in the lecture room
Midterm 2	Monday, November 9, 11:00–11:50 a.m.	Held in the lecture room
Final exam	Wednesday, December 16, 8:00–11:00 a.m.	Registrar-assigned; room to be announced

- No makeup midterms will be granted except for verified illness or when required by University policy. Notify Professor Hanasusanto in advance whenever possible and as soon as possible otherwise.
- Midterms and the final examination will be **closed book, closed lecture notes, and closed homework**. **No electronic devices will be allowed**. One 8.5-by-11-inch page of notes, handwritten on both sides, will be allowed.

Communication

Canvas announcements are the primary channel for course-wide updates. For personal matters, email the instructor and teaching assistants, and include "IE 300" in the subject line. Questions about course content are especially welcome in office hours. Grades should be reviewed promptly; requests to correct a recording or grading error should be submitted within one week after the graded work is returned.

Tentative Topic Outline

Part	Reading	Topics
Probability foundations	Chs. 1–2	Course overview; sample spaces and events; addition and multiplication rules; conditional probability; independence; Bayes' theorem; combinatorics
Random variables	Chs. 3–5	Discrete and continuous random variables; probability mass, density, and cumulative distribution functions; moments; common distributions; joint distributions; covariance and correlation; functions of random variables
Data and sampling	Chs. 6–7	Descriptive statistics and visualization; point estimation; sampling distributions; central limit theorem; estimation error
Statistical inference	Chs. 8–10	Confidence intervals; one-sided and two-sided hypothesis tests; p -values; Type I and Type II errors; sample-size selection; proportions; two-sample and paired inference
Regression models	Chs. 11–12	Simple and multiple linear regression; least squares; model assessment; confidence and prediction intervals; correlation; analysis-of-variance ideas for regression

Attendance

Lecture attendance is strongly encouraged, as it is essential for understanding the material and performing well in the course. Important discussions and activities will take place during lecture time. Students are responsible for all material covered in lectures, including announcements and any changes to the syllabus.

University Policies

Sexual Misconduct Policy And Reporting

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report instances of sexual misconduct to the University's Title IX Office. A Title IX Office representative will provide information about rights and options, including supportive measures, resources, the campus disciplinary process, and law-enforcement options. Designated counselors, confidential advisors, and medical professionals may maintain confidentiality. A list of confidential resources and other reporting information is available through We Care.

Academic Integrity

Students must follow Article 1, Part 4 of the University of Illinois Student Code.

Academic dishonesty may result in a failing grade. Ignorance is not an excuse for academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding.

Religious Accommodations

The University reasonably accommodates students whose religious beliefs, observances, or practices conflict with class attendance or a scheduled examination or work requirement. Requests must be directed to the instructor reasonably in advance so they can be considered and alternate procedures prepared; a delayed request may result in a delayed or denied accommodation. For an examination conflict, notify the instructor within one week after the examination schedule is announced. An accommodation need not fundamentally alter an educational requirement or impose an undue hardship. See Student Code § 1-107.

Disability-Related Accommodations

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, visit 1207 S. Oak St., Champaign; call 217-333-1970; email disability@illinois.edu; or go to go.illinois.edu/DRES. Students are welcome to discuss implementation of an approved Letter of Academic Accommodations privately with the instructor.

Family Educational Rights And Privacy Act (FERPA)

The federal Family Educational Rights and Privacy Act (FERPA) gives students rights concerning their education records, including rights to inspect records, seek amendments, and control disclosure except where the law permits disclosure without consent. Grades and other non-directory course information will be communicated through authorized University channels. See the Office of the Registrar's FERPA information.

Syllabus Updates

The contents of this syllabus may be revised when circumstances require. Changes will be announced through Canvas, and the most recent version posted there will govern.