ISE 315: Engineering Statistics

Lecture 1: Overview and Course Introduction

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Lecture 1

Course Introduction & Logistics

Lecture 1 Outline

- About your instructor
- Course logistics and policies
- Why statistics for engineers?
- About you and your classmates
- Chapter 1: the role of statistics and first sample statistics

About Instructor: Mansur Arief

Background:

- PhD in Mechanical Engineering, Carnegie Mellon University
- Former Researcher, Stanford (AI Safety and Minerals Supply Chains)
- Former Executive Director, Stanford Center for AI Safety

Research Interests:

- AI safety & certification
- Decision-making under uncertainty

Contact Information:

Office:	22-219
Office Hours:	Weds, 3-4 PM

Feel free to reach out anytime via email: **mansur.arief@kfupm.edu.sa**

Course Information: ISE 315 – Engineering Statistics

Course Details:

- Credit Hours: 3
- Prereq: ISE 205 or STAT 319
- Term: 261

Class Schedule:

- Lectures: M W, 12:30-13:45 PM
- Location: 24 - 151

Required Textbook:
Montgomery & Runger, Applied Statistics and Probability for Engineers, 6th Ed.

Additional Resources:

- Course Handbook (tentative)
- Gradescope (HWs and grading)
- Blackboard (announcements, schedules, slides, solutions)
- Course web: `ise315.kfupm.io`

Course Syllabus

See in Blackboard

Course Overview: Why Statistics for Engineers?

AI Safety Testing

- Is this perception model's failure rate low enough to deploy?
- How many test cases we need?

Supply Chains & Transportation

- Did the new routes cut fuel use?
- How long ships stay at ports?

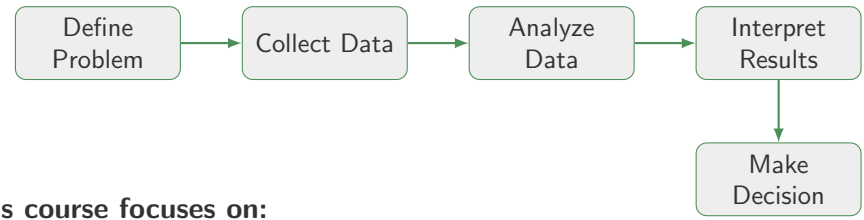
Building Own Startup

- Did the new app convert better?
- Is a price of SAR 49 or SAR 59 better for the product launch?

Common characteristics on all:

- Limited, noisy, costly data
- A decision must be made anyway

How to Solve using Engineering Statistics



This course focuses on:

- **Estimation**: What are the parameter values?
- **Hypothesis Testing**: Is there a significant effect?
- **Modeling**: What relationships exist in the data?
- **Uncertainty Quantification**: How confident are we?

Tips for Success

Do:

- ✓ Attend all lectures
- ✓ Practice problems regularly
- ✓ Start homework early
- ✓ Ask questions in class
- ✓ Visit office hours
- ✓ Form study groups
- ✓ Read each chapter as it is handed out

Don't:

- × Cram the night before
- × Skip homework
- × Wait until you're lost to ask
- × Memorize without understanding
- × Rely solely on lectures

We learn **procedures**. *The more you* **practice**, *the better you'll use them.*

Questions?

Any questions?

Your time to introduce yourself

Mention

- name
- department and year
- one thing you want the most from this course
  (grades, knowledge, friends, networks, etc.)
- one thing you'll try your best on this course
  (ask questions, come to class on time, help others, etc.)
- how I can I (course instructor)help you get the most out of this course?