

Statistical Thinking for Forensic Practitioners

Part 0: Course Details

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Welcome to Statistical Thinking for Forensic Practitioners!

This slide set will cover the following details:

- ▶ Course structure
- ▶ Scheduling details
- ▶ Administrative information

1. Understand the differences between populations and samples and methods to make inferences from the sample to the population, and the consequent need for well-designed experiments and surveys.
2. Be able to critically assess the designs used in published scientific papers and their impact on the findings presented by investigators. Students will be asked to evaluate designs and their strengths and weaknesses.
3. Be able to read the course textbook and similar texts to update their knowledge as their need for additional statistical knowledge evolves. Students should be able to identify situations where additional professional statistical help is called for.
4. Be able to calculate minimum sample sizes for basic experimental designs and surveys, and other basic statistics.

Divided into 9 section covering various aspects of probability & statistics and how they apply to forensics.

Refer to the [Course Syllabus](#) for topics covered in each part.

Lectures are provided as recorded videos. Each of the 9 sections has between 2-5 lecture videos that are approximately 45-60 minutes in length.

Ungraded quizzes and Excel labs accompany each section to check your understanding & supplement your learning.

Final exam will assess your understanding of the course content.

<https://forensicstats.org/statistics-for-forensic-practitioners/>

Course Material
Links



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GO TO CSAFE WEBSITE

STATISTICS FOR FORENSIC PRACTITIONERS

SYLLABUS

[Download Course Syllabus](#)

COURSE DESCRIPTION

PART 1: Introduction

PART 2: The Language of Probability

PART 3: Collecting Data

PART 4: Types of Data

PART 5: Probability Models and Uncertainty

PART 6: Inference

PART 7: Regression and Analysis of Variance

PART 8: Assessing Forensic Evidence

PART 9: Reporting and Testimony

CSAFE COURSE

Course Description

Statistics for Forensic Practitioners is a continuing education statistics course for forensic practitioners provided by the Center for Statistics and Applications in Forensic Evidence. This course will prepare you for a career in the forensic sciences by addressing the core concepts related to probability, statistics and their application to today's forensics issues. You will learn how statistical principles apply to all aspects of the evaluation of evidence, including the assessment of the probative value of the evidence, and the range of conclusions that can be derived from the forensic analyses.

The emphasis of the course is not on doing statistical analysis but rather on understanding why statistical ideas must guide the collection, visualization, exploration, analyses, and interpretation of evidence. Instructors will also discuss in some depth what can and cannot be concluded from various statistical analysis and how to present results that are supported by statistical findings.

Learning Objectives

1. Understand the differences between populations and samples and methods to make inferences from the sample to the population, and the consequent need for well-designed experiments and surveys.
2. Be able to critically assess the designs used in published scientific papers and their impact on the findings presented by investigators. Students will be asked to evaluate designs and their strengths and weaknesses.
3. Be able to read the course textbook and similar texts to update their knowledge as their need for additional statistical knowledge evolves. Students should be able to identify situations where additional professional statistical help is called for.
4. Be able to calculate minimum sample sizes for basic experimental designs and surveys, and other basic statistics.

Contact

HARLE JUD
CSAFE Training and Education
Coordinator



Software Information:

Any demonstrations are done using
Excel.




All course materials are accessible via the [course website](#).

The materials include:


- ▶ Lecture videos & accompanying slides
- ▶ Quizzes & solution keys
- ▶ Excel labs, accompanying .xlsx data files, & solution keys
- ▶ Enrichment materials (where applicable)

Bottom of each Section's page contains downloadable material:



The screenshot shows a video player titled "Forensic Practitioner Course - Part 2, Video 3/3" with the subtitle "Statistical Thinking for Forensic Practitioners Part 2: Probability (Video 3)" by Dr. Alicia C. ... The video player has a "Copy link" button. To the left of the video player is a sidebar with navigation links. Below the video player, there are two columns of links, each with an arrow pointing to a specific resource.

Lecture Slides →	Part 2: Slides	Part 2: Lab ←	Lab Instructions/Questions
Quiz Questions →	Part 2: Quiz	Part 2: Lab Solutions ←	Lab Conceptual Questions Solutions
Quiz Solutions →	Part 2: Quiz Solutions	Part 2: Lab - Excel ←	Excel Data File
		Part 2: Lab - Excel Solutions ←	Excel Exercise Solutions



Note that Parts 1 and 8 do not have an Excel lab.

Each section has an associated quiz and (barring Part 1) Excel lab. These are low-stakes assessments intended to check your understanding. They will not be graded, but solution keys are provided.

You may send questions via email to csafelearning@iastate.edu.

The final exam is the only graded assessment. It is cumulative over the entire course.

Apply lecture material to forensics-oriented and other problems.

Minimal computation required.

Focus is on:

- ▶ understanding how statistics can be used/misused.
- ▶ identifying patterns that can be mathematically or statistically described.
- ▶ realizing that not all statistical “solutions” are ideal:
“All models are wrong, but some are useful.”

Solutions are provided on the course website. Note that Part 9 does not have a quiz.

Apply more computationally-intensive concepts (formulas, graphing, etc.) using Excel.

Focus is on:

- ▶ developing proficiency with computational tools in Excel.
- ▶ creating and interpreting various data summaries (numerical, graphical, etc.)
- ▶ making lecture concepts concrete by using real data.

Solutions to conceptual questions & Excel exercises are provided on the course website (as two separate files).

Note that Parts 1 and 8 do not have an Excel lab.

Email: csafelearning@iastate.edu

Thank you for being a part of Statistical Thinking for Forensic Practitioners!