

FS-11 Sec 03 Survey of Forensic Science Fall 2022

Instructor:	Dr. Mark Barash
Office Location:	HB 216
Telephone:	408-924-5513
Email:	mark.barash@sjsu.edu or via Canvas (preferred method of contact)
Office Hours:	Tue and Thr 3pm-6pm; (no need to book, just drop-in)
Class Days/Time:	This course is delivered in a hybrid mode: both in-person and online. The in-person lecture is scheduled on Wednesday 3:00pm-4:15pm . The online activities will be offered asynchronously (no dedicated time during the week).
Canvas Course Website:	https://sjsu.instructure.com/courses/1486416 Login using your Tower ID Card and Password → Courses → FS 11
FS Library Liaison:	Nyle Monday: Nyle.Monday@sjsu.edu
FS Lib Guide:	http://libguides.sjsu.edu/content.php?pid=57768&sid=2450175
FS Program Website:	http://www.sjsu.edu/justicestudies/degrees/fs-program/

Note: FS 11 is required for the successful completion of the FS biology and chemistry majors, as well as the FS minor. It is recommended for JS majors. However, it is open to any student with a general interest in the subject.

If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](#) requires that students with disabilities requesting accommodations must register with [AEC](#) to establish a record of their disability.

Course Description

This is an introductory course to forensic science, which is the application of science to criminal and civil laws that is enforced by police agencies in a criminal justice system. The scope of this course includes the history of forensic science and its sub-disciplines; recognition, documentation, collection, preservation, and analysis of physical evidence; analytical techniques for organic and inorganic materials; biological, chemical and physical types of forensic evidence and its analysis; capabilities and limitations of forensic trace analysis and its representation in court.

Technology Intensive, Hybrid, and Online Courses

This course is delivered both in-person and on-line via Canvas. You will need a computer with reliable internet access. Students are responsible for ensuring that they have access to reliable Wi-Fi during class. If students are unable to have reliable Wi-Fi, they must inform the instructor, as soon as possible to determine an alternative. See [Learn Anywhere](#) website for current Wi-Fi options on campus. Success in the course requires active participation by logging in daily for updates, completing assignments, and receiving important and timely messages. If you having problems getting access to a reliable computer, you can easily borrow one from SJSU: <https://www.sjsu.edu/learnanywhere/equipment/index.php>

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

Course Goals and Student Learning Objectives (CLO)

Upon successful completion of this course, students will be able to:

- **CLO1** Define forensic science as it relates to criminal and civil contexts, as well as key concepts and principles such as the scientific method, chain of custody, class versus individual evidence, probative value, and Locard's exchange principle.
- **CLO2** Understand the roles of forensic and investigative personnel, their separate duties and how they work together.
- **CLO3** Display foundational knowledge in the history of forensic science, the structure and organization of crime labs, the analytical processes and procedures used, the sub-disciplines and contributing sciences of forensic science, and the types of evidence encountered.
- **CLO4** Critically analyze the powerful capabilities and limitations of the forensic science with regard to various types of physical evidence.

Required Text

- The recommended book for this course is: R. Saferstein and T. Roy (2020) *Criminalistics: An Introduction to Forensic Science* (13th Edition), Pearson ISBN-13: 978-0134477596. This textbook is available via the "First Day Revel" website, which offers an extended online version that includes a lot of interactive materials: <https://console.pearson.com/enrollment/xxpr3d> (highly recommended). Alternatively, the same textbook (just without the interactive material) is also available for purchase in e-copy or hard copy online: <https://www.pearson.com/store/p/criminalistics-an-introduction-to-forensic-science/P100001282980/9780137542512>
- **Links to many additional resources will be posted on Canvas. Check the site frequently!**

Course format and schedule

There are six content modules in the course, ranging in length from 1 to 3 weeks + an introductory module. Each Module will begin officially at the beginning of each week, while each week's content (within a Module) will become available on the weekend before the start of that week (for those interested in getting started sooner). Each of Modules 1– 5 will culminate in a quiz, which aims to assess your understanding of the material in the respective Module. The due date for each quiz will be within 7 days of finishing the respective Module. The quizzes are not cumulative. The dates are approximate and subject to change (with fair notice) according to students' progress and/or any unforeseen circumstances. Any change to the class schedule will be announced via Canvas Announcements at the earliest opportunity.

Disclaimer: This is an adult-level course that may cover graphic materials related to criminal cases. Most of the course material will not be censored. Students are prohibited from recording and distributing class activities (including class lectures, office hours, advising sessions, etc.). Materials created by the instructor for the course (syllabi, lectures and

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

Tentative course schedule:

- **Module 0: Aug 19-28 (1 week);** Welcome to FS 11. Log in and get familiar with Canvas, introduce yourself in the discussion forum, read the syllabus. Read Chapter 1: Introduction to forensic science: brief history, basic principles and applications. **Assignment: Discussion question;**
- **Module 1: Aug 29 - Sep 11 (2 weeks);** Introduction to forensic science (cont.), crime scene investigation, types of physical evidence and its analyses, rules of evidence; matter, light and intro to microscopy. (Ch 1, 2, 3, 8, 10). **Assignments: Discussion questions; Case study; Quiz 1.**
- **Module 2: Sep 12 - Oct 2 (3 weeks);** Pattern evidence analysis: blood pattern analysis (Ch 4), fingerprints (Ch 6), firearms and ballistics, tool marks, shoe prints and other impressions (Ch 9). **Assignments: Discussion questions; Virtual Lab; Case study; Quiz 2.**
- **Module 3: Oct 3 - Oct 23 (3 weeks);** Fiber and hair analysis (Ch 11), Chemical trace analysis: drugs (12), toxicology (Ch 13), arson and explosives investigation (Ch 17). **Assignments: Discussion questions; Virtual Lab/Review questions; Quiz 3.**
- **Module 4: Oct 24 - Nov 13 (3 weeks);** Forensic anthropology and death investigation (Ch 5); Biological trace analysis: serology (Ch 15) and DNA (Ch 16). **Assignments: Discussion questions; Virtual Labs; Case study; Quiz 4.**
- **Module 5: Nov 14 - Nov 27 (1 week + 1 week off due to Fall recess);** Documents examination (Ch 18), Digital evidence (Ch 19, 20). **Assignments: Discussion questions; Virtual Lab/Review questions; Quiz 5.**
- **Module 6: Nov 28 - Dec 4 (1 week);** Expert testimony, professional ethics, bias, error estimation, miscarriages of justice. Course summary. Check Canvas for reading materials. **Discussion questions.**

Final assignment (December 8, 12:15-2:30 pm): presentation of the digital media project.

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

Course Requirements and Assignments

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including preparing for class, participating in course activities, completing assignments, and so on. Other course structures will have equivalent workload expectations as described in the syllabus. More details about student workload can be found in University Policy S12-3 at <http://www.sjsu.edu/senate/docs/S12-3.pdf>

Students' progress in the course will be assessed using 4 assessment tasks:

1. Five quizzes, 10% each (50% total): individual task. Addressing CLOs 1-4.

Each quiz will consist of responses to approximately ten – twenty multiple choice, matching, true/false or short answer questions. The questions will cover the content learned in the lectures, required readings and online materials. The marking criteria for the quizzes will be based on the number of correct answers, reflecting an understanding of key concepts, question interpretation and problem-solving.

2. Virtual Labs, Reading and Review Questions (15%): individual task. Addressing CLOs 1-4.

Chapter reading and review questions will be assigned in every module to help mastering and reflecting on the content learned in each section. Alternatively, the students will be assigned with a 'virtual lab' activity for some of the relevant topics (e.g. fingerprint pattern analysis) to facilitate the learning process. Overall, this assignment will assess understanding of the key concepts, problem solving and ability to integrate information from a range of topics discussed during the course.

The weight of each assignment will vary, jointly contributing 15% of the total grade for this course. The students will be graded on the number of correct answers, reflecting an understanding of key concepts, question interpretation and problem-solving.

3. Discussion Questions and Case Studies (15%): individual task. Addressing CLOs 1-4.

There will be discussion questions posted regularly in the discussion board. Answering these questions will provide an opportunity to demonstrate your understanding of the material, articulate your thoughts in writing, and interact with your classmates. It is wise to read through threads and to take note of instructor comments (particularly the end-of-discussion summary), as these may reinforce particular ideas or trains of thought. Students must respond substantively to every discussion question, and to at least one classmate's post, per question. A substantive post is one that moves the discussion forward, adds a new idea, poses a thoughtful question, etc. Simply liking or agreeing with a classmate is not substantive and will not receive discussion credit. No late discussion posts are permitted, since the purpose of the discussion is not simply to post, but to discuss questions and ideas with your classmates.

Upon completion of this assignment (which means you have contributed to each of the discussion topics) you will receive full credit. Partial completion of the assignment would be graded accordingly. Please check the grading rubric for specific details.

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

- 4. Final digital media presentation (20%): group task. Addressing CLOs 1-4. Overall assessment of this project will be performed jointly by students (20% of the total mark) and course coordinator (80% of the total mark), accounting total to 25% of the final course grade.**
- 4.1. This task would require a coordinated work of 2 to 4 students working together. You will be required to choose a relevant topic (e.g. a criminal case that became a benchmark in forensic science or in which a major error/misjustice occurred) and create a digital media artefact (e.g. video, podcast, animation or blended media) about this topic. The length of the presentation should be between 3 to 5 minutes. This file should be uploaded into one of the free online platforms, such as Youtube or Vimeo and a link to the file must be submitted via Canvas prior to its presentation in the class.
 - 4.2. Digital media training will be provided to you with a lecture on digital media principles covering layout design, colour theory, fonts, use of images and basic video techniques. Additional online modules will be available to provide assistance with digital media.
 - 4.3. The digital media project will benefit you in various ways such as learning the subject content and learning digital media principles to communicate effectively, as well as encouraging creativity. The digital media project is an authentic task that resembles real life scenarios, such as communicating the scientific findings to the jury or a police investigator.
 - 4.4. This project is not about using expensive equipment or sophisticated technology. It is about learning to tell a story in a clear, succinct and visually appealing manner, using digital media principles to ensure the message will be conveyed efficiently. The digital “props” are not to be ignored of course, as they could be very helpful to deliver your ideas. Nonetheless, your media project will be primarily judged on its content and how well you communicate it to the audience, and less on how “fancy” or “sophisticated” your animations are.
 - 4.5. Remember, this is a group task that requires proactive engagement and effective teamwork. At the end of your project, each student will be asked to provide quick feedback on groupwork dynamics including assessment of each member contribution. Your peers’ feedback will be incorporated in the final grade (e.g. a team member who hasn’t contributed to the task may receive an appropriate mark for this assignment, such as 0).
 - 4.6. Students will be graded on their ability to synthesize course materials and provide a critical analysis of the chosen topic of research. Specifically, the papers will be graded on the level of competency in the subject (40%), relevance of the discussed material (30%), flow (10%), professional layout (10%) and correct referencing style (10%). The students are expected to proofread their presentations and avoid using any jargon.
 - 4.7. This task will be due in the last week of the course, with potential adjustments based on students’ progress. Further details will be announced on Canvas.

Grading criteria

You will be assessed on the scientific content of your presentation and application of the digital media principles. The presentations will be primarily graded based on the level of competency in the subject presented, ability to engage the audience and your critical review of the topic. Detailed feedback will be provided in the form of marks and comments. Assessment criteria include:

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

- Disciplinary knowledge (35%)
 - Accuracy and completeness of information
 - Comprehensive research using available resources (textbooks, peer-reviewed papers)
- Professional skills (35%)
 - Understanding and explanation of underlying scientific principles of the topic
- Communication skills (15%)
 - Presentation of information (proper usage of professional language, lack of grammatical mistakes, well-structured and easy-to-comprehend presentation)
 - Use of digital media principles such as layout design, fonts, color, graphics and video principles to enhance communication of the topic
- Enquiry and innovation (15%)
 - Creativity (how presentation approach enhances topic)
 - Presentation uses efficient ways to engage the audience

Overall assessment of this task will be performed jointly by students (20% of the total mark) and course coordinator (80% of the total mark), accounting together for 25% of the final course grade.

A detailed grading rubric will be provided in Canvas for each of the assessment tasks.

All written assignments will be submitted via Canvas, and must be in Microsoft Word (*.doc or *.docx). If you do not currently own Microsoft Word, the software (both PC and Mac) is available for free to students: <http://www.sjsu.edu/it/services/collaboration/software/instructions.php>

Extra Credit Opportunities

Extra credit opportunities may be available throughout the semester and may be used to augment your final grade up to 5%. These opportunities will also be announced on the Canvas course site and required documentation will need to be uploaded and/or submitted online.

Examples include the following:

1. Complete a short professional development course in forensic science (in any forensic discipline) offered by the National Institute of Justice marked “extra credit” in the Forensic Science module and submit your certificate of completion by the deadline (check Canvas). Successful completion of this assessment task will add 1% to the final grade.
2. Students can write a research paper about their future career that is of interest to the student or about a forensic science controversy. The paper should be either in CSE or APA format and contain an introduction, a body of research, and a conclusion. The length of a paper should be between 2 and 3 standard pages in 1.5 font and contain in-text citations from at least three sources (preferably peer-reviewed papers). Successful completion of this assessment task will add 1% to the final grade.

**FS-11 Sec 03
Survey of Forensic Science
Fall 2022**

- During the course, there will be multiple opportunities to improve your grade by answering bonus questions or performing additional assignments related to material discussed in class. The questions will be provided as either an option in the compulsory quizzes or as a separate bonus quiz.

Late Work and Make Ups

Real life has deadlines and so do college classes. With this in mind, manage your time responsibly with the knowledge that late work will generally not be accepted. If you know ahead of time that you will be offline when an assignment is due, complete it early. Make-ups will generally not be given unless extraordinary, documented circumstances exist.

Please note, late assignments will lose 10% for every calendar day that they are late, including weekend days and holidays, unless the instructor is provided with documented extenuating circumstances.

If you have a genuine problem, please contact me at your earliest convenience and I will gladly do my best to help you. If you are in any doubt about the requirements of an assignment, or due dates/times, please re-read the assignment and/or schedule. If your question is still unanswered, contact the instructor for clarification.

Grading scale for all assignments

Letter Grade	Percent
A plus	97 to 100
A	94 to 96.9
A minus	90 to 93.9
B plus	87 to 89.9
B	84 to 86.9
B minus	80 to 83.9
C plus	77 to 79.9
C	74 to 76.9
C minus	70 to 73.9
D plus	67 to 69.9
D	64 to 66.9
D minus	60 to 63.9
F	<60

Note: A grade of C or better is required for all Justice Studies and Forensic Science major and minor coursework, and desirable for students enrolled in the Forensic Science majors and/or minor.

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

University Policies

Students are encouraged to familiarize themselves with SJSU's policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <https://www.sjsu.edu/curriculum/courses/syllabus-info.php/>

Department of Justice Studies Reading and Writing Philosophy

The Department of Justice Studies is committed to scholarly excellence. Therefore, the Department promotes academic, critical, and creative engagement with language (i.e., reading and writing) throughout its curriculum. A sustained and intensive exploration of language prepares students to think critically and to act meaningfully in interrelated areas of their lives—personal, professional, economic, social, political, ethical, and cultural. Graduates of the Department of Justice Studies leave San José State University prepared to enter a range of careers and for advanced study in a variety of fields; they are prepared to more effectively identify and ameliorate injustice in their personal, professional and civic lives. Indeed, the impact of literacy is evident not only within the span of a specific course, semester, or academic program but also over the span of a lifetime.

Academic Integrity

The University Academic Integrity Policy S07-2 at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic course work. Instances of academic dishonesty will not be tolerated. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. As such, cheating and plagiarism will result in a failing grade and sanctions by the University. Additional information is available at the Student Conduct and Ethical Development website at <http://www.sjsu.edu/studentconduct/>.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

Student Resources

Forensic Science Student Group (FSS)

[SJSU Forensic Science Students](#) is a campus group open to all students interested in forensic science. The group meets biweekly during the semester and offers friendship, forensic science-related activities, networking opportunities, and mentorship. Members of the FSS participate and assist at conferences, CSI camps, guest speaking events, and other

FS-11 Sec 03
Survey of Forensic Science
Fall 2022

extracurricular activities. FSS Peer Mentors assist forensic science students in navigating the major, understanding requirements and prerequisites, and making wise choices in their college careers. Mentors may also offer limited tutoring, and facilitate educational and professional opportunities. Contact sjsu.fss@gmail.com for more information, or to get an application for membership.

Student Technology Resources

A wide variety of audio-visual equipment is available for student loaning from Media Services located in IRC 112. Please check [online](#) for additional information.

ACCESS Success Center

The Academic Counseling Center for Excellence in the Social Sciences (ACCESS) provides General Education advising for undergraduate students majoring or intending to major in any of the departments in the College of Social Sciences (CoSS). ACCESS Academic Advisors are committed to helping you develop a clear path to graduation and supporting your academic success. You can schedule an appointment and find more information at sjsu.edu/access.

SJSU Writing Center

The SJSU Writing Center located in Room 126 in Clark Hall offers a variety of resources to help students become better writers, including one-on-one tutoring sessions and numerous writing workshops. All services are free for SJSU students. <http://www.sjsu.edu/writingcenter/>

SJSU Counseling Services

The SJSU Counseling Services is located on the corner of 7th Street and San Fernando Street, in Room 201, Administration Building. Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit Counseling Services website at <http://www.sjsu.edu/counseling>.

**FS-11 Sec 03
Survey of Forensic Science
Fall 2022**

Tentative Course Schedule

Notes about course schedule: The order of the discussed topics and their focus may change according to students' progress and/or any unforeseen circumstances. I reserve the right to change the schedule including the due dates, but only in a manner that benefits students (e.g., due dates can only be pushed back, never moved forward).

Week	Date	Topics	Assignments & Deadlines
1	Week of 08/22 Lecture on Aug 24	Module 0: course introduction. overview of the course structure, assignments and expectations. Introduction to forensic science	Please read the syllabus and explore the Canvas site. Read Chapter 1.
2	Week of 08/29 Lecture on Aug 31	Introduction to forensic science (cont.), crime scene investigation, types of physical evidence and its analyses, rules of evidence; matter, light and intro to microscopy.	Read Ch 1, 2, 3, 8, 10 Complete the assignments in Canvas. Quiz 1
3	Week of 09/5 Lecture on Sep 7	Crime Scene Investigation	
4	Week of 09/12 Lecture on Sep 14	Blood pattern analysis Lecture on Digital Media Principles	Read Ch 4
5	Week of 09/19 Lecture on Sep 21	Fingerprints	Read Ch 6
6	Week of 09/26 Lecture on Sep 28	Firearms and ballistics, tool marks, shoe prints and other impressions	Read Ch 9 Quiz 2
7	Week of 10/3 Lecture on Oct 5	Fiber and hair analysis	Read Ch 11
8	Week of 10/10 Lecture on Oct 12	Chemical trace analysis: drugs, toxicology	Read Ch 12, 13
9	Week of 10/17 Lecture on Oct 19	Arson and explosives investigation	Read Ch 17 Quiz 3
10	Week of 10/24 Lecture on Oct 26	Forensic anthropology and death investigation	Read Ch 5
11	Week of 10/31 Lecture on Nov 2	Forensic serology	Read Ch 15

**FS-11 Sec 03
Survey of Forensic Science
Fall 2022**

12	Week of 11/7 Lecture on Nov 9	Forensic DNA analysis	Read Ch 16 Quiz 4
13	Week of 11/14 Lecture on Nov 16	Documents examination, Digital evidence analysis Guest speakers	Read Ch 18, 19, 20 Finalize your digital media project. Quiz 5
14	Week of 11/21	(*Thanksgiving/RECESS* - no class)	-
15	Week of 11/28 Lecture on Nov 30	Expert testimony, professional ethics, bias, error estimation, miscarriages of justice.	Submit the final draft of your DMP for a feedback.
16	Week of 12/5 No Lecture	Course summary	Due date for your digital media project. Extra credit assignments due date.
Main exam/alternative activity	December 8, 12:15-2:30 PM	Digital media presentations and discussion.	