



Department of Justice Studies
FS 162 Forensic Science Applications
CRN 25030 & 25032, Spring 2018

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| Instructor | Dr. Shawna Bolton |
| Contact Information | Email: shawna.bolton@sjsu.edu Phone: 408-924-8974 |
| Office Location and Hours | MacQuarrie Hall 511 (Move to Health Building rm 210A TBA) Drop in: T & TH 11:30a-12:30p and 1:30p-2:30p OR by appointment |
| Canvas Course Website | https://sjsu.instructure.com Login using your Tower ID Card and Password → Courses → FS 162 |
| Lecture Days/Time | Tuesdays & Thursdays, 9:00am-11:30am, Health Building rm 207 |
| Practical Location | Practicals will take place in Rm 207 of the Health Building |
| Prerequisites | None |
| FS Library Liaison | Silke Higgins silke.higgins@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/ |

Course Description

Forensic Applications builds upon the foundations established in Survey of Forensic Sciences (FS 11). It provides a more detailed and comprehensive overview of the scientific method as it relates to various sub-disciplines within the field of forensic science. This course relies on the scientific evaluation and interpretation of physical evidence using a number of identification and comparison techniques. Practical sessions involve exercises that closely reflect real-life forensic situations that involve the collection, analysis and interpretation of physical evidence. Students will participate in lab exercises that explore human identification, questioned documents, bite marks, trace evidence, presumptive testing and glass analysis. Additional topics will include court testimony, quality assurance and ethics.

***Disclaimer:** This class is intended for mature students and may cover graphic content, such as criminal cases, discussions, and/or topics. Most of the material presented will NOT be censored. Under NO CIRCUMSTANCES are students permitted to take photos of the lecture slides and/or photos. Failure to comply with these guidelines may result in academic penalty.*

Outlines will be provided or made accessible via Canvas for each lecture pertaining to the topic that will be discussed.

Note: FS 162 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 subject.

Course Content Learning Outcomes (LOs)

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

- **LO1** Classify evidence and use appropriate analytical techniques in human identification, serology, trace evidence, questioned documents, pattern identification, glass reconstruction, and bite mark identification.
- **LO2** Explain the history and importance of DNA fingerprinting, articulate the principles of DNA profiling and inheritance, and apply this knowledge to a realistic field exercise.
- **LO3** Analyze and critically evaluate forensic error, and ethical issues in forensic science.
- **LO4** Explain and describe the Scientific Method; the Locard Exchange Principle; safe lab practices and proper evidence handling techniques; class and individual characteristics of evidence; identification, individualization and comparison techniques; and probative value and probability, and other important terms.

Assignments

1. **Exams (40%)** There will be three exams accompanied by a comprehensive final exam. Format will include multiple choice, fill-in, short essay and diagrams. (LO1, LO2, LO3, LO4)
2. **Laboratory Exercises (35%)** Lab practicals will involve subject areas dealing with Locard's Exchange Principle, Hair & Soil, Physical Fit, Questioned Documents, Stab Lab, Human ID, Presumptive Tests for Blood & Semen, Pattern Evidence, and Anthropometry (LO1). Lab reports will be written according to standard scientific reports and consist of individually written and group submitted documents (LO1, LO2, LO3, LO4).
3. **Assignments and Group Presentation (25%)** Assignments will include observation and discussion of various forensic methods used in real-life criminal investigation in the format of articles and videos and discussion of how various forensic (LO1, LO3, LO4). In small groups, students will present a case or project on forensic error (LO3).

Required Texts and Materials

- James, S., Nordby, J., & Bell, S. (2014). *Forensic Science: An Introduction to Scientific and Investigative Techniques, 4/E*. CRC Press/Taylor & Francis. ISBN-13: 978-1439853832
- Journal articles, tutorials, and links to other required readings will be posted on Canvas. It is the student's responsibility to check the website for new postings.

Grading Scale for All Assignments

| <u>Letter Grade</u> | <u>Percent</u> | <u>Letter Grade</u> | <u>Percent</u> | <u>Letter Grade</u> | <u>Percent</u> |
|---------------------|----------------|---------------------|----------------|---------------------|----------------|
| A+ (plus) | 97-100 | C+ (plus) | 77-79.9 | F | <60 |
| A | 94-96.9 | C | 74-76.9 | | |
| A- (minus) | 90-93.9 | C- (minus) | 70-73.9 | | |
| B+ (plus) | 87-89.9 | D+ (plus) | 67-69.9 | | |
| B | 84-86.9 | D | 64-66.9 | | |
| B- | 80-83.9 | D- (minus) | 60-63.9 | | |

All assignments are graded based on adherence to directions, thoroughness, thoughtfulness, clarity, and logic.

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

Extra Credit

Extra credit opportunities may be available throughout the semester and will be used to augment your final grade up to **3%**. You may submit up to three extra credit assignments of your choosing. Each extra credit opportunity is given a weighted value of **10 marks**.

1. Join a professional organization (CAC, AAFS, IAI, *etc.*) that is of specific interest to *you* and supply proof of membership before the end of the semester. A professional organization is one that holds conferences and/or produces a periodic journal. This is not the same thing as an internship, job, or student organization; it is a professional *membership*.
2. Portfolio: Students may turn in a neat and organized 3-ring binder (portfolio) at the end of the semester containing all work completed in the class. Copies of group assignments are acceptable. This should be professional quality (for example, you would bring it to an interview to display your work).
3. Tour a crime lab and write a 2-page, typed, double-spaced synopsis of the experience. Santa Clara has monthly tours, and San Mateo has an annual tour in October.
4. Read and critique a current journal article from the forensic science discipline. Discuss its relevance to forensic science and how it contributes to the advancement the field.

Class Protocol and Policies

- Late work may be submitted up to one week without penalty. Subsequently, a penalty of 5% per day for a maximum of 5 days, weekends included will apply. Assignments submitted thereafter will NOT be accepted and results in an automatic fail unless extraordinary, documented circumstances exist or a doctor's note is presented. Avoid missing lab practicals. Make-up sessions may not be available. Should you know in advance of any extenuating circumstances that conflict with such sessions, it is your responsibility to inform your lecturer. The possibility for submitting an alternative assignment may be granted at discretion, but be advised that such undertaking will be

quite demanding. If there is any doubt about the requirements for an assignment, or due dates/times, re-read the directions of the assignment and/or schedule. If your question(s) remains unanswered, contact your lecturer for clarification.

- Attendance and class participation is expected. It is essential that you come to class prepared. Therefore, it is your responsibility to stay on top of your readings, complete assignments on time, and participate in class discussions. Lack of adequate participation *will* result in pop quizzes, which *will* count toward your final grade.
- The use of cell phones is NOT PERMITTED during class. Students caught using their phone will be asked to surrender it for the remainder of the lecture or excused from the class. Laptops are permitted for note-taking only.

Student Resources

Forensic Science Student Group (FSS)

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 extra-curricular 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

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library. A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16 mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) located in Room 600 in the Student Services Center assists students in the development of their full academic potential and motivates them to become self-directed learners. The center provides support services, such as skill assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. <http://www.sjsu.edu/larc/>

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/>

CASA Student Success Center

The Student Success Center in the College of Applied Sciences and Arts (CASA) provides advising for undergraduate students majoring or wanting to major in programs offered in CASA Departments and Schools. All CASA students and students who would like to be in CASA are invited to stop by the Center for general education advising, help with changing majors, academic policy related questions, meeting with peer advisors, and/or attending various regularly scheduled presentations and workshops. If you are looking for academic advice or even tips about how to navigate your way around SJSU, check out the CASA Student Success Center. Location: MacQuarrie Hall (MQH) 533. Contact information: [408.924.2910](tel:408.924.2910) Website: <http://www.sjsu.edu/casa/ssc/>. The CASA Student Success Center also provides study space and laptops for checkout.

University Policies

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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

Important Dates This Semester

<http://www.sjsu.edu/registrar/calendar/2182/index.html>

Jan 24-Feb12: Late Registration for Spring 2018. Registration via MySJSU starting after 7am

Feb 5: Last Day to Drop Without a "W" grade

Feb 12: Last Day to Add a Course, Last Day to Request CR/NC

Apr 25: Last Day to Submit Late Drop/Withdrawal Request <http://www.sjsu.edu/aars/forms/>

May 14: Last day of Instruction

May 16-18, 21-22: Final Exams (see [Exam Schedule](#))

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.

Instructor

Dr. Shawna Bolton first attended the University of Toronto where she obtained her BA in Anthropology (major) and double minored in French and English. She then went on to complete an MSc in Criminal Justice with an advanced forensic anthropology interdiscipline at Radford University before earning her PhD in Forensic Sciences at the University of Wolverhampton in the UK. There, Dr. Bolton conducted preliminary research investigating the post mortem molecular properties of cartilage and its potential use as a forensic tool. Upon the completion of her doctorate, she has worked in partnership with Global Forensics and the University of Wolverhampton to prepare and provide academic and laboratory training to Rwandan National Police officers enrolled in an intensive forensic DNA and toxicology module. To date, she is teaching FS and JS courses while continuing her research into cartilage degradation.

FS 162 Forensic Science Applications Spring 2018 Course Schedule **TENTATIVE!**

JNB = James, Nordby & Bell Ch = Chapter Canvas = check Canvas for readings
Schedule is subject to change at the lecturer's discretion.

| Week | Date | Topics and Activities | Reading |
|------|---------------------|--|--------------------------|
| 1 | 01/25 | Course overview, form groups, lab report rubric Brief history of forensic science, forensic laboratory structure, investigative personnel roles & responsibilities | JNB Ch 1-1.4.1 Canvas |
| 2 | 01/30 & 02/01 | The scientific method, characteristics of science/scientists, characteristics of evidence: class, individual, identification; types of evidence, types of analysis, databases, chain of custody, probative value of forensic evidence, probability | JNB Ch 2.3-3 Canvas |
| 3 | 02/06 & 02/08 | Microscopy & trace evidence, Locard's Exchange Principle, primary and secondary transfer, physical fit Lab: Locard Exchange Principle | JNB Ch 16 Canvas |
| 4 | 02/13 & 02/15 | Labs: Locard Lab (cont.) & Microscopy Exam 1 | JNB Canvas |
| 5 | 02/20 & 02/22 | Human ID: Early methods, Lab: Anthropometry Human ID: Bones, bite marks, Lab: Bite marks | JNB Ch 6 Canvas |
| 6 | 02/27 & 03/01 | Human ID: Serology Lab: Presumptive tests for blood & semen | JNB Ch 8, 4 Canvas |
| 7 | 03/06 & 03/08 | Human ID: DNA Lab: Mass Disaster | JNB Ch 9 Canvas |
| 8 | 03/13 & 03/15 | Due: Mass Disaster Paper, Exam 2 Questioned documents Lab: QD | JNB Ch 7 Canvas |

| Week | Date | Topics and Activities | Reading |
|------------|---------------------|--|-------------------------|
| 9 | 03/20 & 03/22 | Tool marks, wounds Stab Lab | JNB Ch 14 Canvas |
| 10 | 03/27 & 03/29 | Spring Recess - no classes Friday, March 30 - Cesar Chavez Day - campus closed | |
| 11 | 04/03 & 04/05 | Pattern evidence: Definition and criticism. Is it scientific? Lab: Pattern Evidence | JNB Ch 13, 15 Canvas |
| 12 | 04/10 & 04/12 | Lab: Physical Fit (Glass) Exam 3 | Canvas Ch 1.4 |
| 13 | 04/17 & 04/19 | Expert Testimony, Rules of Evidence, Frye, Daubert Quality control & quality assurance, ASCLD-LAB, accreditation, certification, standardization | Canvas Ch 2 – 2.2.1 |
| 14 | 04/24 & 04/26 | Problems in Forensic Science: NAS Report, CSI Effect, evidence backlog, types & sources of error, absence of a research culture in FS, SWGs, FEPAC, FSAT Innocence Project, case studies | Ch 21 Canvas |
| 15 | 05/01 & 05/03 | Professional and scientific ethics Group presentations: Error | Ch 1.4.2-1.5 Canvas |
| 16 | 05/08 & 05/10 | LAB: Job Posting Getting the Job: Resumes, Cover Letters, Interviews | Canvas |
| Final Exam | 05/16 | Final Exam! Refer to link below for exam dates and times. http://info.sjsu.edu/static/catalog/final-exam-schedule-spring.html | |