SYLLABUS FORENSIC BIOLOGY **(2025_FALL_12808_BIOL_5331 _W01_)** **Start Date**: 08/22/2025 **End Date:** 12/7/2025 **Type:** Online **Class hours:** Online	**Instructor:** Esra BALCIOGLU **E-mail:** esra.balcioglu@sulross.edu **Office hours:** By Appointment **Office Phone:** 432 8378614 **Campus Office:** MAB 112/A

Contacting Me: The best way to reach me is via email. Do not hesitate to contact me for any reason. I will respond to email inquiries as soon as possible.

COURSE MATERIALS

The following course materials are required:

1. **Textbook:**
   Forensic Biology, Second Edition. Richard Li. CRC Press, Taylor& Francis Group. ISBN: 9781439889725
   Criminalistics, 13th Edition. Richard Saferstein, Tiffany Roy. Pearson. ISBN: 9780135268407

2. Recommended-American Psychological Association (October 2019). Publication Manual of the American Psychological Association, Seventh Edition, https://apastyle.apa.org/products/publication-manual-7th-edition-spiral

Additional resources, including supplementary readings, videos, and other materials, will be made available on Blackboard throughout the semester.

SRSU Library Services and Support

The Bryan Wildenthal Memorial Library at Sul Ross State University is your go-to hub for academic resources, offering a wealth of materials and services to the entire SRSU community at no cost. You'll find a vast collection of books, articles, and online databases readily accessible at www.library.sulross.edu. If you're accessing resources off-campus, simply use your Lobo ID and password to log in. For checking out physical materials, remember to bring a photo ID.
Need assistance? Our librarians are here to help! You can reach them via email at srsulibrary@sulross.edu, by phone at 432-837-8123, or by visiting them in person.

Resources for RGC Students

For Rio Grande College (RGC) students, you have the added benefit of access to the Southwest Texas Junior College (SWTJC) Libraries located in Uvalde, Del Rio, and Eagle Pass. These libraries offer additional study spaces, resources, and online materials accessible through library.swtjc.edu. They also serve as convenient pickup locations for InterLibrary Loan (ILL) services from the Alpine campus.
To easily connect with online library resources, simply log into your Sul Ross Blackboard account. This will directly link you to the library webpage, where you can explore online databases and access articles on your reading list.

Important Syllabus Information

Please be aware that the syllabus is subject to updates. It's crucial to regularly check course announcements for any changes. The instructor reserves the right to modify the syllabus as necessary throughout the semester.

Course Description

This course provides an introduction to forensic biology, focusing on the scientific principles and techniques used in the analysis of biological evidence. While no laboratory work is conducted, students will learn the theoretical basis of forensic methods such as DNA profiling, serological testing, bloodstain pattern analysis, and microscopy. The course emphasizes the application of these techniques within the criminal justice system, supported by case studies and discussions that illustrate how biological evidence is interpreted and presented in forensic investigations.

Catalog Description

An overview of the principles and methods used in forensic biology. Topics include the scientific basis of DNA analysis, biological fluids testing, and other evidence evaluation techniques, with emphasis on their role in criminal investigations. The course is lecture- and discussion-based, with no laboratory component.

Course Learning Objectives

By the end of this course, students will be able to:

- Understand the interdisciplinary nature of forensic biology and the role of biological evidence in criminal investigations.
- Explain the scientific principles of key forensic biology techniques, including DNA extraction, quantification, PCR amplification, electrophoresis, and serological analysis.
- Recognize and describe different types of biological evidence (blood, semen, saliva, urine, etc.) and their significance in forensic casework.
- Evaluate DNA profiling methods such as STR, SNP, and mitochondrial DNA analysis, including their strengths and limitations.
- Understand the use of forensic DNA databases, statistical evaluation of evidence, and quality assurance standards in forensic practice.
- Appreciate ethical responsibilities and professional standards in the handling, interpretation, and reporting of biological evidence.

Student Learning Outcomes (SLOs) for Forensic Biology

- Upon successful completion of this course, students will be able to:
- Defining the scope of forensic biology and its multidisciplinary role in the justice system.
- Describe major forensic biology methods, including DNA- and serology-based approaches.
- Explain how biological evidence is identified, preserved, and interpreted in forensic investigations.
- Analyze DNA profiling techniques (STR, SNP, mtDNA) and assess their forensic applications and limitations.
- Evaluate the importance of forensic DNA databases, statistical interpretation, and quality assurance practices.
- Discuss ethical issues and professional responsibilities in forensic biological analysis.

Marketable Skills – Forensic Biology

- **Critical Thinking & Problem Solving**: Ability to evaluate biological evidence using scientific reasoning and apply forensic principles to case scenarios.
- **Scientific Communication**: Clear and effective communication of complex forensic concepts in written, oral, and digital formats, including professional report writing.
- **Analytical Skills**: Understanding of DNA analysis, serology, and statistical interpretation methods that are transferable to research, laboratory, and legal contexts.

- **Ethical & Professional Responsibility**: Awareness of ethical considerations, confidentiality, and integrity in handling sensitive biological evidence.
- **Interdisciplinary Knowledge**: Familiarity with the intersection of biology, chemistry, law, and criminal justice, preparing students for careers in science, forensics, and related fields.
- **Information Literacy**: Ability to locate, evaluate, and apply scientific literature and case studies relevant to forensic investigations.
- **Attention to Detail**: Skill in recognizing the significance of biological evidence and identifying limitations in forensic analyses.

Technology Requirements

This course requires frequent use of **Blackboard**. Students must check it regularly for announcements, assignments, grades, and course materials. Key Blackboard tools include email, course documents, discussion boards, grade center, SafeAssign, and external links.

Basic Computer Skills Needed:

- Sending/receiving email with attachments
- Browsing the internet and downloading files
- Using word processing software (e.g., MS Word) **Required Technology:**
- A reliable computer with stable internet access
- A current web browser capable of streaming content and downloading materials
- Access to Blackboard using your **Lobo ID and password**

For assistance, tutorials are available on the Blackboard support page.

Participation Policy

This is a fully online course with no class meetings scheduled. However, active participation is expected. To start, please complete the non-graded **"Introduction" post** to introduce yourself to your classmates and your professor.

Students are expected to:

- **Log into Blackboard regularly** to check announcements, assignments, and deadlines
- **Complete all assignments and exams online** by their posted due dates
- **Contact the instructor via email** with any questions about course materials, assignments, or exams.

Consistent engagement is key to success in this course.

Attendance Policy

Although this is a fully online course, student engagement and participation are still mandatory. The University's attendance policy applies to all distance learning courses. A student may be dropped with an **"F" grade** for excessive non-participation—defined as **more than 3 weeks of inactivity** in a long semester, **1 week in a summer session**, or **3 days in a midwinter session**.

Inactivity includes:

- Not logging into Blackboard
- Not submitting assignments
- Not participating in required activities
- Not communicating with the instructor
- Not following the participation guidelines in the syllabus

Students must respect academic integrity and copyright laws. All submitted work must be their own unless group work is specifically assigned. Additionally, students accessing the course from a remote site are expected to treat the host campus, its facilities, and staff with professionalism and care.

Students are required to check their **SRSU email accounts regularly**, as all official communications—including those sent via Blackboard—will be directed there.

Late Assignment Submission Policy

Academic Integrity

Students are expected to uphold the highest standards of academic honesty as outlined in the **Sul Ross Student Code of Conduct**. Any form of academic dishonesty—including **cheating, plagiarism, collusion, fabrication, or falsification of records**—will not be tolerated and will be addressed in accordance with university policies.

Definitions:

- **Cheating:** Using unauthorized materials or assistance during exams, altering academic records, or obtaining answers through dishonest means.
- **Plagiarism:** Submitting another's work, ideas, or words as your own without proper citation.
- **Collusion:** Assisting or being complicit in another student's academic dishonesty.

Using tools like **ChatGPT or other AI generators** is prohibited unless explicitly permitted for a specific assignment. Violations may result in penalties ranging from a failing grade on an assignment to failure of the course and may lead to further disciplinary action.

Maintaining academic integrity protects both the value of your education and the credibility of the university.

APA Style

This course will use the American Psychological Association (APA) Seventh Edition formatting and style guide for all written assignments. If you have any questions or concerns regarding the use of APA, a few resources have been provided below. Please note that all external sources must be appropriately cited. A failure to do so constitutes plagiarism and is a violation of the course academic honesty standards. Beside numerous online sources you can also visit the following link for help with APA https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html.

Student Support Services

Sul Ross State University offers various programs to help students succeed, including advising, counseling, mentoring, tutoring, supplemental instruction, and writing assistance. For a complete list of services, visit Student Support Services **at** https://www.sulross.edu/section/311/student-support-services. For more information, contact SSS at (432) 837-9118 or visit Ferguson Hall, Room 105.

Counseling Services: Sul Ross students have access to nine free counseling sessions through TimelyCare. For 24/7 support, visit TimelyCare/SRSU. In-person counseling is also available in Ferguson Hall, Room 112 (Alpine campus), and via telehealth for remote and RGC students.

Students with Special Needs - Americans with Disabilities Act as Amended (ADAAA)

Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Alpine students seeking accessibility/accommodations services must contact Mary Schwartze Grisham, M.Ed., LPC, SRSU's Accessibility Services Coordinator at 432-837-8203, or email mschwartze@sulross.edu The office is located on the first floor of Ferguson Hall # 112, and the mailing address is P.O. Box C-122, SRSU, Alpine. Texas, 79832.

Departmental Undergraduate Program Marketable Skills

(*Aligned with Texas Higher Education Coordinating Board – 60x30TX Plan*)

The 60x30TX initiative aims for 60% of Texans aged 25–34 to hold a degree or credential by 2030. One key component of this goal is that all graduates from public institutions in Texas will complete academic programs with clearly defined marketable skills—competencies valued by employers that support career readiness and lifelong employability.

Marketable skills include both technical and soft skills—often referred to as "employability" or "transferable" skills—developed through coursework, research, internships, and co-curricular activities. Graduates of the Homeland Security and Criminal Justice Undergraduate Programs at Sul Ross State University will demonstrate the following marketable skills:

1. Effective Verbal and Written Communication
2. Data Literacy and Quantitative Analysis Skills
3. Critical Thinking and Observational Abilities
4. Teamwork and Collaborative Work Practices
5. Cultural Competency and Multicultural Understanding
6. Analytical Skills in Crime Causation and Prevention
7. Knowledge of Legal Codes, Procedures, and Public Safety Protocols

These skills prepare students for diverse roles in law enforcement, homeland security, public service, and justice-related professions.

Other Course Expectations

- This is an upper-level college course, and students are expected to produce work that reflects that level of academic rigor. This includes the use of proper APA formatting, correct grammar, clear sentence structure, and organized presentation of ideas.
- Students are responsible for carefully reviewing the syllabus to stay informed about assignment requirements and due dates. Please contact the instructor promptly if clarification is needed.

Course Evaluation

Reaction Papers (150 Points Each)

You are required to submit a **Reaction Paper** each week based on the assigned readings. Each paper should meet the following format requirements:

- **Length:** 1 full page
- **Spacing:** 1.5-spaced
- **Font:** 12-point Times New Roman

Each Reaction Paper should focus on the **assigned readings for the week**. If there is more than one assigned reading, you are expected to **read all required materials** but may choose **one reading** on which to base your paper for that week.

Important: A Reaction Paper is **not a summary** of the reading. Instead, it should reflect:

- Your **perspective**
- Your **analysis and critique** of the ideas presented
- Any **connections** you see to course themes or real-world applications

Due Date: Reaction Papers are due **every Sunday by 11:00 PM** (CT) unless otherwise noted.

Weekly Quizzes (150 Points Each)

You will complete a **weekly quiz** to assess your understanding of the week's required readings.

Quiz Availability:

- Quizzes will be **posted every Friday at 1:00 PM (CT)** on Blackboard. **Due Date:**
- Quizzes must be submitted by **Sunday at 11:00 PM (CT)** each week.

Each quiz is worth **10 points** and will cover key concepts and material from the assigned readings for that week.

Midterm Exam (100 Points)

Annotated Bibliography Assignment

For your **Midterm Exam**, you will prepare an **Annotated Bibliography** of **10–12 scholarly sources** that will serve as part of the literature foundation for your **Final Paper**.
You must use **scholarly, scientific, peer-reviewed journal articles**.

- **Government or expert reports** are the only exception to this requirement.
- **Web articles, popular magazines, and newspapers** (e.g., NYT, Time, Newsweek) will **not** receive credit unless the article is a **reprint from a peer-reviewed journal**.
- Your selected articles should reflect **scientific research** and the use of appropriate **research methods**.

For Each Source, Your Annotation Should Address the Following:

1. **Author(s):** Who wrote the article?
2. **Purpose:** What was the author's purpose in writing this piece?
3. **Major Findings:** What are the key assertions or findings of the article?
4. **Evidence:** How does the author support these findings?
5. **Comparison:** How does this source compare or contrast with another source in your bibliography?
6. **Relevance:** How does this source contribute to your understanding of your chosen Final Paper topic?
7. **Research Methods:** What research methods were used in this study?

Introductory Paragraph:

Before listing your annotations, include a brief **introductory paragraph** explaining:

- The topic you are researching
- Why you believe this topic is **important** or significant

Formatting and Length Requirements:

- Use **APA citation format** for all entries.
- For APA guidance, see:
  APA Style Guide
  Purdue OWL APA Guide
- Each annotation should be approximately **300–400 words per article** (excluding the citation line).

Important Notes:

- This assignment will count as your **Midterm Exam grade (100 points)**.
- Selecting high-quality, relevant sources is critical for both this assignment and your success on the Final Paper.
- Be sure to plan-ahead — preparing a strong annotated bibliography now will help streamline your Final Paper writing process.

Final / Research Paper (100 Points)

Your **Final Paper** will focus on a topic related to **Forensic Toxicology**, in keeping with the overall focus of this course. You may select any element of **Forensic Toxicology** to explore in depth, including but not limited to:

- Crime Scene Investigation of Biological Evidence
- Sources of Biological Evidence
- Forensic Science Services Related to Forensic Biology: Pathology, Anthropology, Entomology, Odontology

- Bloodstain Pattern Analysis
- Forensic Serology
- Basic Techniques in Forensic Biology
- Identification of Biological Evidence
- Individualization of Biological Evidence
- Forensic DNA Databases

A **sample paper** will be posted on **Blackboard** to provide guidance on proper formatting and structure.

Requirements:

- Your paper must include **at least 10 scholarly citations**.
  - **Websites, Wikipedia, news media, or popular magazines** (e.g., NYT, Newsweek) are **not acceptable sources**.
  - Use **peer-reviewed journal articles**, **books**, or **government/expert reports**.
- Length: **10 to 15 pages** (not including **cover page** or **reference list**)
- Format:
  - **Double-spaced**
  - **12-point Times New Roman font**
  - **APA style** for formatting and citations
    - APA Style Guide
    - Purdue OWL APA Guide

🗓 **Submission Process – 3 Steps:**

Your Final Paper will be submitted in the following **three stages** to guide your progress and ensure proper feedback:

- **Topic Proposal / Introduction of Topic**
- **Annotated Bibliography** (Midterm Exam Assignment)
- **Final Paper Submission**

Important: Refer to the **course calendar** and **academic calendar** posted on Blackboard for all important **due dates** and **submission deadlines**.

This **Final Paper** will be worth **200 points** — it is the largest single component of your course grade. Please begin planning and researching your topic early in the term.

Grading

Grading Components

Assessment	Points
Reaction Papers (15 x 10 points)	150
Weekly Quizzes (15 x 10 points)	150
Midterm Exam	100
Final Paper	100
Total Possible Points	500

Course Grade Scale

Letter Grade	Points Range
A	500 – 460
B	459 – 420
C	419 – 380
D	379 – 340
F	339 & below

Course Schedule

This course schedule is subject to change as needed to meet the needs of the course. Students will be notified of adjustments when they are made. Also, any additional reading materials, resources and other information will be posted on Blackboard.
Students will be notified of how to access this information by the instructor. ***All times are in central time***

Week	Dates	Topics	Readings
1	August 25-31	- **Course Introduction & Requirements** **Introduction to Forensic Science** - **Definition and Scope of Forensic Science** - **History and Development of Forensic Science** - **Crime Laboratories** - **Organization of a Crime Laboratory**	Syllabus & Semester Project Guidelines **Saferstein and Roy. Criminalistics. Chapter 1: Introduction to Forensic Science**
2	September 1-7 Sep 1st, Labor Day No class	**Crime Scene Investigation of Biological Evidence** - **Protection of Crime Scene** - **Recognition of Biological Evidence, Searches** - **Documentation, chain of Custody** - **Collection of Biological Evidence, Marking Evidence, Packaging and Transportation** - **Crime Scene Reconstruction**	**Li. Forensic Biology. Chapter 1: Crime Scene Investigation of Biological Evidence**
3	September 8-14	**Sources of Biological Evidence** - **Bodily Fluids** - **Cells** - **Tissues (Skin, Hair, Bone, Teeth)** **Hairs**	**Li. Forensic Biology. Chapter 4: Sources of Biological Evidence** **Saferstein and Roy. Criminalistics. Chapter**

			11: Hairs
4	September 15-21	**Forensic Biology: A Subdiscipline of Forensic Science** - **Common Disciplines of Forensic Laboratory Services and Laboratory Analysis of Biological Evidence** - **Forensic Science Services Related to Forensic Biology: Pathology, Anthropology, Entomology, Odontology** - **Brief History of the Development of Forensic Biology**	**Li. Forensic Biology. Chapter 4: Forensic Biology: A Subdiscipline of Forensic Science**
5	September 22-28	**Forensic Palynology:** - **Forensic Palynology: Pollen, and Spores as Evidence** **Death Investigation:** - **Role of Forensic Pathologist, Anthropologist, Entomologist**	**Saferstein and Roy. Criminalistics. Chapter 8: Forensic Palynology, Chapter 5: Death Investigation**
6	Sep 29-Oct 5	**Crime-Scene Reconstruction:** - **Bloodstain Pattern Analysis**	**Saferstein and Roy. Criminalistics. Chapter 4: Crime-Scene Reconstruction** **Li. Forensic Biology. Chapter 2: Crime Scene Bloodstain Pattern Analysis**
7	October 6-12	**Forensic Serology:** - **The Nature of Blood** - **Blood Typing** - **Immunoassay Techniques** - **Forensic Characterization of Bloodstains** - **Forensic Characterization of Semen Collection** **Serology Concepts:**	**Saferstein and Roy. Criminalistics. Chapter 15: Forensic Serology**

		- Serological Reagent, Antigen-Antibody Binding, Reactions	Li. Forensic Biology. Chapter 10: Serology Concepts, Chapter 11: Serology Techniques
8	October 13-19 October 17, **Final Day for Midterm Exam**	**Serology Techniques: Past, Current, Future:** - Introduction to Forensic Serology - Primary-Secondary Binding Assays - DNA Methylation Assays, Proteomic Approaches Using Mass Spectrometry, Microbial DNA Analysis for Bodily Fluid Identification **Midterm Exam**	Li. Forensic Biology. Chapter 11: Serology Techniques
9	October 20-26	**DNA:** - What is DNA, DNA at work - Replication of DNA - DNA Typing with Short Tandem Repeats **Some Basic Techniques in Forensic Biology:** - DNA and RNA Extraction Methods **DNA Quantitation** - Quantitative PCR Assay - **Amplification by PCR** - Basic principles of Polymerase Chain Reaction	Saferstein and Roy. Criminalistics. Chapter 16: DNA Li. Forensic Biology. Chapter 5: Basic Techniques in Forensic Biology Chapter 6: DNA Quantitation Chapter 7: Amplification by PCR
10	October 27- Nov 2	**DNA Electrophoresis** - Basic Principles, Matrices - Apparatus and Forensic Applications - Estimation of DNA Size **Some Detection Methods**	Li. Forensic Biology. Chapter 8: DNA Electrophoresis Chapter 9: Detection Methods
11	November 3-9	**Identification of Biological Evidence:** - Identification of Blood, Species, Semen, Saliva, vaginal Secretions, Menstrual	Li. Forensic Biology. Section III:

		Blood, Urine, sweat, Fecal Matter, and Vomitus	**Identification of Biological Evidence Chapter 12, 13,14, 15,16, 17**
12	November 10-16	**Individualization of Biological Evidence:** - **Blood Group Typing and Protein Profiling** - **Variable Tandem Repeat Profiling** - **Autosomal Short Tandem Repeat Profiling**	**Li. Forensic Biology. Section IV: Individualization of Biological Evidence Chapter 18, 19, 20,**
13	November 17-23	**Individualization of Biological Evidence:** - **Sex Chromosome Haplotyping and Gender Identification** - **Single Nucleotide Polymorphism Profiling** - **Mitochondrial DNA Profiling**	**Li. Forensic Biology. Section IV: Individualization of Biological Evidence Chapter 21, 22, 23**
14	November 24-Nov 30 Thanksgiving Day Holiday (11 / 26-28)	**Forensic Issues:** **Forensic DNA Databases** **Evaluation of the Strength of Forensic DNA Profiling Results** ***November 25th, the last day before Thanksgiving.***	**Li. Forensic Biology. Chapter 24-25: Forensic Issues**
15	December 1-7 December 4	**Forensic Issues:** **Last Class Day before Finals**	**Li. Forensic Biology. Chapter 24-25: Forensic Issues**
15	December 5-7	Final Exams	Research Proposal due, Friday, 12/5/2025

END OF COURSE EVALUATIONS: Student evaluations of faculty are administered online at the end of each term/session for all courses with five or more students. Students will receive an email containing a link to a survey for each course in which they are enrolled. All responses are anonymous.