# Forensic Science

## Course Syllabus 2025-26

Welcome to forensic science!
 **"Science gave us forensics. Law gave us crime."**— Mokokoma Mokhonoana
**"Forensic science offers great potential, as it draws on almost every discipline and, in doing so, creates widespread opportunity for innovation."** -Mark Walport

| Class Section | Instructor: Sharon Tuinukuafe |
|---|---|
| Google class codes:<br>4th period: 2v73u3ja<br>5th period: nevi4wij<br>6th period: pdu7w7y6 | stuinukuafe@bisd303.org<br>206-855-0474 |

## Course Information

**I. Rationale:**

Forensic science is the application of science to the law, and the need for professionals to process and solve crimes is constant.  According to the FBI, only 45% of violent crimes lead to arrest and prosecution. Only 17% of burglaries, thefts, arsons, and car thefts are "cleared". Forensics is a multifaceted discipline, drawing on biology, chemistry, physics, earth science, law, history, math, technology, language, and reasoning skills.  Career pathways branch into both law, public safety, and security, and health science careers.

At Bainbridge High School we will be covering a broad range of topics found in the forensic science realm and will be learning through many hands–on experiences.  During distance learning, many hands-on experiences will be virtual, or the skills will be acquired through a focus on case studies.

Forensic science is an equivalence credit course, allowing students to earn either CTE or science credits.

## II. Course Aims and Outcomes:

## Aims

Students will learn skills and techniques useful in collecting and processing, understanding laws and procedures about using evidence in court and practicing analyzing and solving cases, both real and fictional. Students will be eligible to take the Washington State Precision Exam in May for Medical Forensics, earning a certificate if they pass. Students will also be able to participate in our HOSA future medical professionals club with competitions in forensic science solving a case study in Spokane, WA each March.

### Course Site

Assignments will be posted and submitted via Google Classroom. Students must enroll in our Google Classroom; if parents/guardians would like to receive Guardian Summaries, they can contact any one of their child's teachers to sign up. Students will also maintain a binder in class for activities, labs, and reflections.

### Learning Objectives

Through the course of this year, Forensic science students will:
- Explore many different types of evidence in terms of validity and usefulness in cases.
- Understand and evaluate the methods used to analyze data collected at crime scenes.
- Apply human influences in forensics, in terms of bias, observation skills, and psychology
- Develop analytical and logical skills when solving crimes and analyzing evidence
- Use current scientific tools to analyze evidence such as microscopy, PCR machines and electrophoresis, chemical analysis, and more
- Actively share their insights into cases and respond to the insights of others.
- Become aware of laws and practices as they relate to forensic science and crime scene investigation

## Learning Resources

Books will be available at school in the classroom, and to take home upon request. All activities and assignments will be posted on Google Classroom, although handouts may also be provided in class in person. Two textbooks will be used in forensic science this year:

**Brown and Davenport, <u>Forensic Science Advanced Investigations</u>,  Cengage Learning, 2015.**

**Bertino and Bertino, <u>Forensic Science Fundamentals and Investigations</u>,  Cengage Learning, 2015.**

**Course Overview**

| First Semester Units | Second Semester Units |
|---|---|
| Unit 1 Observation Skills, CSI, Evidence, Interrogations, & Judicial Process | Unit 7 Forensic Psychology & Serial killers |
| Unit 2 Trace Evidence (Hair, Fiber, Pollen, and Soil) | Unit 8 Death, Manner, Mechanisms, Cause, & Autopsy |
| Unit 3 Forensic Entomology | Unit 9 DNA Evidence and Biotechnology |
| Unit 4 Fingerprints, Casts, Impressions, and Tool Marks | Unit 10 Forensic Toxicology, Physiology of Alcohol & Poisons |
| Unit 5 Forensic Anthropology and Forensic Odontology | Unit 11 Blood and Blood Spatter |
| Unit 6 Body Systems, Body Trauma, and Forensic Entomology | Unit 12 Questioned Documents & Cyberforensics |
| | Unit 13 Arson, Explosions, Firearms and Ballistics |

## Student Expectations

**Attendance and Engagement**

Unless they are ill, all students are expected to participate in all learning activities, whether these are held on campus or online. If a student is unable to participate in these activities, they must make alternative arrangements with the teacher.  Because success in this class is determined in large part by participation, we expect students to prioritize regular attendance. Frequently missing classes is likely to affect your grade. Students missing class with an excused absence must arrange to make up missed work such as tests and labs when they return.

Students should expect to prepare thoughtfully for each class and to participate enthusiastically. Class participation is determined by
1. consistent and prompt attendance,
2. energetic engagement in discussions and class activities, and
3. support of fellow students through active listening and authentic feedback.

### Academic Honesty

Honesty is a compelling principle by which we operate all aspects of student and school life. Academic honesty is highly valued at BHS. Students should not cheat or plagiarize, nor should they tolerate such among fellow students. Students do not receive credit for work that is not their own. Cheating is defined as an attempt to earn credit or receive a grade for coursework in a manner other than defined as acceptable by the teacher. Plagiarism is the taking of language, ideas, or thoughts from another person or resource without acknowledging the source. Students who use plagiarized papers or projects or are involved in any other form of cheating will be subject to a reduction in grades and/or disciplinary action for a first offense. Because of the serious nature of academic honesty, violations of this code may result in loss of credit for the assignment with a recorded failing grade. It may also entail loss of credit for the course with a recorded failing grade, removal from the course with a failing grade, and/ or additional appropriate disciplinary action. ([BHS Student Handbook](#))

Collaboration with ChatGPT or other AI composition software may never be used as a substitute for your own work and thought processes. It may only be used when sanctioned by your teacher, and then only with appropriate documentation of how it was used and for what purpose.

### Communications and Self-Advocacy

Especially in a distance learning environment, students need to be comfortable advocating for themselves. If you have questions or concerns, please email me and/or counselor. I cannot help you unless I know what you need. I am best reached via email or direct message on Google Classroom, or my stopping by my classroom before or after school.

## Policies & Procedures

### Attendance

Attendance is expected and will be taken during class via participation in activities. Students absent from synchronous learning time will be expected to make up the work they missed and contact the school to excuse their absence.

### Grading

There will be two categories that will determine a student's grade in this course:

- Mastery of forensics skills through labs (virtual or hands-on), assessments, projects, and activities: 90%
- Practice of forensics skills: 10%

Students not attaining their desired grade on Mastery of skills assignments will have up to 2 weeks after receiving their score to attempt a higher score. If a student would like to reattempt a skill assessment, they need to let me know.  Practice assignments are suggested before reassessment of skills for mastery.

Bainbridge High School reports grades at the end of each semester; progress reports are available for at the end of Term 1 and 3. Letter grades are calculated using the following grading scale:

| Grade Mark | Description | High | Low |
|---|---|---|---|
| A | A | 100.00% | 93.00% |
| A- | A- | 92.99% | 90.00% |
| B+ | B+ | 89.99% | 87.00% |
| B | B | 86.99% | 83.00% |
| B- | B- | 82.99% | 80.00% |
| C+ | C+ | 79.99% | 77.00% |
| C | C | 76.99% | 73.00% |
| C- | C- | 72.99% | 70.00% |
| D+ | D+ | 69.99% | 67.00% |
| D | D | 66.99% | 60.00% |
| F | F | 59.99% | 0.00% |

## Converting Standards-Referenced Grades to Percentages

| 4-point scale | Correlating letter grade | Description |
|---|---|---|
| 4 | A | Exemplary work. Mastery. Exceeds grade-level standard. |
| 3 | B | Proficient work. Accomplished. Meets grade-level standard. |
| 2 | C | Emerging work. Developing. Approaching standard. |
| 1 | D | Insufficient work. Basic. Below standard. |
| 0 | F | No evidence of work. Missing. Well below standard. |

**How standards-referenced grades are entered in Skyward using the percentage-based grading scale:**

| Rubric score (What student sees) | Percentage correlation (Recommended Skyward grade) | Letter grade correlation |
|---|---|---|
| 4 | 100 | A |
| 3.75 | 95 | A |
| 3.5 | 91 | A |
| 3.25 | 88 | B |
| 3 | 85 | B |
| 2.75 | 83 | B |
| 2.5 | 81 | B |

| | | |
|---|---|---|
| 2.25 | 78 | |
| 2 | 75 | C |
| 1.75 | 73 | |
| 1.5 | 71 | |
| 1.25 | 68 | D |
| 1 | 65 | |
| 0* | 50 (tests, or attempted assignments, but 0 for missing assignments or no evidence) | F |

## Class format and procedures:

Forensic science includes short lectures, class discussions, case study analysis, and lab skill practice. Students are expected to attend and participate in class, which will prepare them for their unit tests which show mastery learning. Due to the mature content of the class, students are expected to respect each other's opinions and work safely and cooperatively in the class and lab.

## Submitting Assignments

- **Turning in work:** All work will be turned in via Google Classroom or in person. Many standard assessments may be assessed in person as a lab practical. Practice assignments will be checked off as well and will be necessary to complete to do well on the standard assessments.
- **Late Work:** Late work is accepted, but to be considerate of my time, I request that all standards be reassessed or completed within 2 weeks of the original due date. Thank you for this! I know exceptions may be needed for emergencies on an individual basis so please let me know if you are having trouble keeping up with our workload!
- **Resubmissions:** Practice of Standards work is checked off for completion. Any graded assignment in the Mastery of Standards category may be reassessed pending teacher approval.

## Technology

To fully participate in this course, you will need to have access to your BISD chromebook or a similar device. Please bring them charged to class, although we do have science laptops available for use as well.

## Inclusivity Statement

I understand that our members represent a rich variety of backgrounds and perspectives. Bainbridge High School is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values, and beliefs.
- be open to the views of others.
- honor the uniqueness of their classmates.
- appreciate the opportunity that we have to learn from each other in this community.
- value each other's opinions and communicate respectfully.
- keep confidential discussions that the community has of a personal (or professional) nature.

- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Bainbridge Island community.

## Tentative Course Schedule

(*May change to accommodate guest presenters & student needs*)

| Units | Readings/ Case studies to be discussed | Activities |
|---|---|---|
| **September**<br><br>Crime Scene investigation/ Interrogation/ Observations/ Judicial process | Chpt. 1,2 Blue books, Chpt. 1,2 Orange books<br><br>Cases: Susan Smith, Michael Morton, JonBenet Ramsey | Locard's principle lab, mapping crime scene, Innocence project research, Classifying evidence, FACES software/ witness statements, Observation activities |
| **October**<br><br>Trace evidence: hair, fiber, pollen, soil evidence | Chpt. 3 (Hair), Chpt.4 (Fiber), Chpt. 11 (Forensic entomology) orange books, Chpt. 12 (Forensic entomology) blue books<br><br>Cases: Kevin Neal, Gaetane Bouchard, Wayne Williams | BHS Body farm experiments<br><br>Hair analysis under microscopes: human and several animal samples<br><br>Fiber testing: chemical, burn tests, microscopic analysis, dye testing |
| **November**<br><br>Fingerprints, other prints, shoe impressions | Chpt. 6 (fingerprints), chpt. 16 (Casts and impressions) Orange books<br><br>Cases: Marshall Adams, OJ Simpson | 10- cards<br><br>Fingerprint analysis: 3 degrees<br><br>Latent print lifting techniques<br><br>Chemical fingerprint analysis<br><br>Shoe casting/ analysis<br><br>Other print creation: lip, palm, foot, iris, retina<br><br>Print practicum |

| | | |
|---|---|---|
| **December/ January** Forensic Anthropology, Forensic Odontology | Chpt. 14 (Forensic Anthropology) Orange books, Chpt. 11 (Forensic odontology) blue books<br><br>Cases: Ted Bundy, Helle Crafts, Mass graves in former Yugoslavia, Guatemala, Richard Nyhuis, King Richard | Bone ID lab, Analysis of bones for sex, ancestries, age, build, handedness<br><br>Facial reconstruction projects<br><br>Dental castings/ bite mark analysis<br><br>X-ray analysis |
| **First semester finals** | Semester 1 topics | Barbie crime scene creation, CSI, mock-trial presentation of evidence, Murder at Old Fields virtual crime scene |
| **January-Early March**<br><br>Forensic psychology, Death, Manner, and Mechanism, Body systems, Trauma | Chpt. 12 (Death, Manner, Mechanisms, Cause) orange books, Chpt. 6 (Body Systems), Chpt. 7 (Physical trauma), Chpt. 16 (Criminal profiling) Blue books<br><br>Cases: Various serial killers, Leann Fletcher, Rihanna and Chris Brown, James Brady | Serial killer research projects<br><br>Garbage profiling lab<br><br>Clay models of anatomical terms, organs<br><br>Posters of body systems<br><br>Fetal pig autopsy (virtual options for students not comfortable with dissection)<br><br>Ballistics gel trauma lab |
| **March**<br><br>DNA profiling | Chpt. 7 (DNA profiling) orange books, Chpt. 10 (Advanced Concepts in DNA) Blue books<br><br>Cases: Louis, Prince Royal of France, 9/11 attacks | DNA profiling labs in biotech lab: micropipettes skill practice, PCR techniques, electrophoresis.<br><br>Karyotyping<br><br>STR analysis from 9/11 |
| **April** Questioned documents, Cyberforensics | Chpt. 10 (Handwriting analysis, forgery, counterfeiting)<br><br>Cases: Frank Abagnale, Wall street fraud | Handwriting sample analysis<br><br>Forgery techniques<br><br>Chromatography lab<br><br>Jack the Ripper cyberforensics labs, using Western Washington University server |

| | | |
|---|---|---|
| **April**<br><br>Toxicology | Chpt. 9 (Toxicology) orange books, Chpt. 9 (Physiology of Alcohol and poisons) blue books<br><br>Cases: Cory Monteith, Michael Jackson | Over the counter drug lab testing<br><br>BAC level calculations<br><br>Judge McCullough class visit<br><br>Port Orchard Jail field trip<br><br>Drug/ poison research |
| **May**<br><br>Blood and blood spatter | Chpt. 8 (Blood and Blood spatter) orange books<br><br>Cases: Marge Williams, Wilson family in Bellevue, Washington | Blood typing<br><br>Blood analysis under microscope<br><br>Presumptive blood testing<br><br>Blood spatter experiments: height, angle, surface, slow-motion recreation of low, medium, or high velocity spatter |
| **May/ June**<br><br>Ballistics and Glass evidence | Chpt. 18 (Firearms and ballistics), chpt. 15 (Glass evidence), orange books<br><br>Cases: JFK assassination, Sandra Duyst | Spent bullet and cartridge analysis, possible firearms ID<br><br>Glass pattern analysis using picture frames previously shot by bullets |
| **June** | Final exam week | Barbie crime scenes, applying concepts from entire year, El Diablo virtual crime scene |
| **June after finals** | 11th graders only, seniors have graduated! | Student choice of video~<br><br>Just Mercy<br><br>Catch Me if you Can |

*I am looking forward to a great year together!*