Omaha North High Magnet School  
Forensic Science  
Course Syllabus

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Plan Periods: B6

Content Standards and Indicators

**FS1 Investigate, describe and perform fundamental concepts, techniques and procedures involved in the field of forensic science.**  
FS1.a Investigate and describe the history and evolution of forensics as science  
FS1.b Identify and describe the role of forensic professionals involved in crime investigations  
FS1.c Understand, practice and perform observations as they relate to crime investigations  
FS1.d Summarize Locard’s Exchange Principle and differentiate between trace, circumstantial, direct, class and individual evidence.  
FS1.e Identify and perform seven fundamental steps of crime scene investigation

**FS2 Investigate, describe and identify characteristics of different manners, meanings and causes of death and estimate time of death using appropriate forensic technique and protocols.**  
FS2.a Define the meaning of death and distinguish between five manners of death: natural, accidental, suicidal, homicidal and undetermined  
FS2.b Distinguish between cause, manner and mechanism of death  
FS2.c Understand and apply evidence of rigor, algor and livor mortis, body decomposition processes and stomach content to calculate approximate time of death  
FS2.d Investigate and apply insect evidence to accurately estimate time of death, given various environmental factors

**FS3 Investigate and properly collect and analyze types trace evidence: hair, fibers, and fingerprints.**  
FS3.a Identify and distinguish between major structures, functions and classification of hair  
FS3.b Distinguish between animal and human hair using appropriate techniques  
FS3.c Properly collect and analyze hair samples from a crime scene using appropriate forensic technique  
FS3.d Identify and describe common weave patterns of various textiles  
FS3.e Describe principle characteristics of common fibers used in their identification  
FS3.f Properly collect and analyze fibers using appropriate forensic technique  
FS3.g Know the basic structures of the skin and how fingerprints are formed  
FS3.h Describe and distinguish between the visual characteristics of fingerprints  
FS3.i Properly collect and analyze fingerprint evidence

**FS4 Investigate and properly collect and analyze biological evidence: DNA, blood and bone.**  
FS4.a Understand the basic structure and function of DNA  
FS4.b Describe how DNA evidence is properly collected and analyzed using appropriate forensic apparatus and technique  
FS4.c Investigate and describe the Innocence Project and its connections to forensics  
FS4.d Understand the common blood groups, the process of blood typing and be able to calculate the probability of common blood types within a population  
FS4.e Explain how blood spatter analysis may be used to recreate a crime scene
FS4.g Properly examine, evaluate, collect and analyze blood evidence from a crime scene using appropriate forensic technique
FS4.h Determine gender, age, height, relative health, diet, lifestyle and race using skeletal characteristics and appropriate forensic technique

**FS5 Investigate and properly collect and analyze physical evidence: handwriting, toxicology and ballistics.**
FS5.a Describe and demonstrate examples of 12 exemplars of handwriting traits
FS5.b Properly analyze handwriting for use in crime investigation
FS5.c Identify five types of controlled substances and their effects
FS5.d Properly screen and detect for the presence of drugs using appropriate forensic practices and techniques
FS5.e Distinguish between various types of firearms and ammunition
FS5.f Describe the appropriate processes and procedures of collecting and analyzing ballistics recovered at a crime scene

**Inquiry, Nature of Science, and Technology Standards and Indicators (ongoing throughout the year)**

**SC12.1.1 Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models.**
SC12.1.1a Formulate a testable hypothesis supported by prior knowledge to guide an investigation
SC12.1.1b Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations
SC12.1.1c Identify and manage variables and constraints
SC12.1.1d Select and use lab equipment and technology appropriately and accurately
SC12.1.1e Use tools and technology to make detailed qualitative and quantitative observations
SC12.1.1f Represent and review collected data in a systematic, accurate and objective manner
**SC12.1.1g Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations**
SC12.1.1h Use results to verify or refute a hypothesis
SC12.1.1i Propose and/or evaluate possible revisions and alternate explanations
SC12.1.1j Share information, procedures, results and conclusions, and defend findings to a scientific community (peers, science fair audiences, policy makers)
SC12.1.1k Evaluate scientific investigations and offer revisions and new ideas as appropriate
SC12.1.1l Use appropriate mathematics in all aspects of scientific inquiry

**SC12.1.2 Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations.**
SC12.1.2.a Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge
SC12.1.2.b Describe how society influences the work of scientists and how science, technology and current scientific discoveries influence and change society
SC12.1.2.c Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of our world
SC12.1.2.d Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted

**SC12.1.3 Students will solve a complex design problem.**
SC12.1.3a Propose designs and choose between alternative solutions of a problem
SC12.1.3b Assess the limits of a technical design
SC12.1.3c Implement the selected solution
SC12.1.3d Evaluate the selected solution
SC12.1.3e Communicate the problem, process and solution
SC12.1.3f Compare and contrast the reasons for the pursuit of science and the pursuit of technology
SC12.1.3g Explain how science advances with the introduction of the new technology
SC12.1.3h Recognize that creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering
Literacy Standards
OPS science teachers use common core standards for reading and writing for science coursework and speaking and listening standards applicable for all content. For details on these standards, please see the unit planners available on the OPS website.

See the Unit Planner for Critical Content and Critical Skill Statements

Students will be able to:
- Interpret images, graphs, charts and diagrams.
- Apply vocabulary to all conceptual units within the first unit of study.
- Use data to create diagrams to communicate information.
- Demonstrate how to use the scientific method.
- Design and conduction investigations that lead to the use of logic and evidence in the formulations of scientific explanation and models.
- Apply the nature of scientific knowledge to their own investigations and in the evaluations of scientific explanation.
- Solve a complex design problem.

Texts to Be Used
- Forensic Science Fundamentals and Investigators

Assessment
- Course grades will be determined by planned assessments such as tests, quizzes, and projects scored with rubrics.
- Major tests and/or writing projects are to be expected at the end of each major unit outlined above.
- State Testing: To address state requirements, all 11th grade students will complete the ACT.
- District Testing: The NWEA/MAP test will be administered as a predictive test. The NWEA/MAP test will be administered in high school only to 9th and 10th grade students.

District Grading Policy
OPS Secondary Grading Practices*
All coursework and assessments are judged based on the level of student learning from “below basic” to “advanced.” This course will provide multiple opportunities to achieve at the “proficient” to “advanced” levels. Students are evaluated based on a proficiency scale or project rubric. Proficiency scales for this course are available upon request (teacher will identify location such as portal, teacher website, attached, etc.)

Weighting Assignments (Using A Multiplier):
When entering grades in the grade book, teachers may assign greater weight to some assignments than others. For example, the final exam may impact a student’s summative grade more than a unit test. Teachers will have the option to use the multiplier to weigh both formative and summative assessments to a maximum of 4. If a weight of 2 or more is applied to an assessment, this information will be communicated to students at the time the assessment is announced.

There are three types of coursework*
- Practice – assignments are brief and done at the beginning of learning to gain initial content (e.g., student responses on white boards, a valid sampling of math problems, keyboarding exercises, and diagramming sentences, checking and recording resting heart rate). Practice assignments are not generally graded for accuracy (descriptive feedback will be provided in class) and are not a part of the grade. Teachers may keep track of practice work to check for completion and students could also track their practice work. Practice work is at the student’s instructional level and may only include Basic (2) level questions.
**Formative (35% of the final grade)** – assessments/assignments occur during learning to inform and improve instruction. They are minor assignments (e.g., a three paragraph essay, written responses to guiding questions over an assigned reading, completion of a comparison contrast matrix). Formative assignments are graded for accuracy and descriptive feedback is provided. Formative work may be at the student’s instructional level or at the level of the content standard. Formative assessments/assignments will have all levels of learning – Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment, students will be able to earn an Advanced (4). Teachers will require students to redo work that is not of high quality to ensure rigor and high expectations. The students’ score on a formative assessment that was redone will be their final score. Formative - It is recommended to have three to five formative assessments for every one summative assessment.

- **Summative (65% of the final grade)** – assessments/assignments are major end of learning unit tests or projects used to determine mastery of content or skill (e.g., a research paper, an oral report with a power point, major unit test, and science fair project). Summative assignments are graded for accuracy. Summative assignments assess the student’s progress on grade level standards and may not be written at the student’s instructional level. Summative assessments/assignments will have all levels of learning – Basic (2), Proficient (3), and Advanced (4), which means that for every formative assessment/assignment students, will be able to earn an advanced (4).

To maintain alignment of coursework to content standards, which is a key best practice for standards-based grading, teachers will utilize a standardized naming convention for each of the standards within a course. The content standard will be marked on each assignment entered into Infinite Campus (District Grading Program) using all capital letters followed by a colon. After the colon will be the title of the coursework.

At the end of the grading period, scores are converted to a letter grade using this grading scale.

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A = 3.26 – 4.00
B = 2.51 – 3.25
C = 1.76 – 2.50
D = 1.01 - 1.75
F = 0.00 – 1.00
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**Proficiency Scales:**
Proficiency scales for this course are available upon request and may be found on the district website.

**Redoing/Revising Student Coursework**
1. Students are responsible for completing all coursework and assessments as assigned.
2. Students may be allowed redos and revisions of coursework for full credit during that unit of study based upon the teacher’s professional judgment and evidence collected throughout the unit. Scores for student work after retaking, revising or redoing will not be averaged with the first attempt at coursework or assessment but will replace the original student score.
3. Students are expected to complete assessments when given to the class, or if a student was justifiably absent, at a time designated by the teacher.
4. Redoing, retaking or revising will be done at teacher discretion in consultation with the student and parent(s). Teachers may schedule students before, during, or after school to address needed areas of improvement if not convenient during class. The time and location for redoing, retaking or revising will be done at the teacher’s discretion in consultation with the student and parent(s).

**Late Coursework**
Students are expected to complete coursework on time. Late coursework may be accepted for full credit until the end of the unit based on the teacher’s professional judgment and evidence collected throughout the unit. Accepted late work will not result in a reduction in grade and the M (Missing) will be replaced with the score earned by the student. The teacher or school may make exceptions depending upon student circumstances (such as prolonged absences due to illness).
Missing Coursework
Work not turned in at all will be recorded in Infinite Campus (district grade book) as an M for missing, which calculates to a score of zero.

Independent Practice
The role of independent practice is to develop knowledge and skills effectively and efficiently during the unit of study. Independent practice helps guide the learning process by providing accurate, timely and helpful feedback to students without penalty.