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Forensic Science Curriculum for High School Students

A GRADUATE PROJECT

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MASTER OF SCIENCE IN FORENSIC SCIENCE

By

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Forensic Science Curriculum for High School Students

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A GRADUATE PROJECT

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To God be the ultimate glory in all things.

Abstract

Over the last several decades, forensic science—the application of science to civil and criminal legal matters—has become of increasing popularity with the public. The range of disciplines within the field is immense, offering individuals the potential for a unique career, regardless of their specific interests or expertise. In response to this growth, many organizations, both public and private, have recognized the need to create forensic science programs that strive to maintain and enhance the quality of forensic science education. Unfortunately, most of the emphasis placed on developing these materials relates to post-secondary education, and creates a significant lack of forensic science educational materials available in the U.S., especially in Oklahoma. The purpose of this project was to create a high school curriculum that provides the foundation for building a broad, yet comprehensive, overview of the field of forensic science and its associated disciplines. The overall goal was to create and provide course materials to high school teachers in order to increase their knowledge of forensic science such that they are able to teach its disciplines effectively and with accuracy. The *Forensic Science Curriculum for High School Students* includes sample lesson plans, PowerPoint presentations, and lab activities with step-by-step instructions.

Keywords: forensic science; secondary education; curriculum

Forensic Science Curriculum for High School Students

Introduction

Forensic science is the application of science to law, both in civil and criminal matters. The range of disciplines within the field is immense, covering a span of subject matter from biological and physical sciences to impressions and toolmarks, computer science, and the methodology behind crime scene processing and criminal investigations. Jobs within the field require critical thinking skills, an affinity for challenges and puzzles, and a desire to help and serve the public. The field of forensic science offers the potential for individuals to create a unique career, regardless of their specific interests or expertise.

Over the last several decades, forensic science has become of increasing interest to the public. This fascination, fostered in part by fictional and reality crime television shows, has inspired many to pursue a future in the field. According to an article in *The Telegraph*, the number of undergraduate students studying forensic science and crime scene science in the United Kingdom alone more than doubled over a five-year period, with more than 60 universities offering programs in forensic science or related fields (Patton, 2009). In comparison, the American Academy of Forensic Sciences (AAFS) (2013) identifies forensic science programs or programs with concentrations in forensic science at more than 120 colleges and universities in the United States.

Unfortunately, the sensationalized portrayal of the forensic science disciplines in the media and in other pop culture often creates a false perception of the realities of field. These misperceptions have the potential to adversely influence how the public views the actual application of forensic science to investigations and casework in both the public and private sectors. This is sometimes referred to as the “*CSI Effect*”, a phenomenon where in a criminal

trial, for example, jurors may either overestimate the ability of a particular discipline to reach a certain conclusion or unfairly discredit testimony based on the lack of evidence. While *CSI*, *Bones*, *Dexter*, and the like may have introduced the public to the disciplines of crime scene investigation, forensic anthropology, and bloodstain pattern analysis, they were created for entertainment purposes. Any allusion to the reality of working in the field of forensic science is minimal at best. In order to overcome the biases presented in these shows, and to create competent and capable citizens, education is essential. Not just any education, but education that is grounded in fact and created by experts who know intimately the inner workings of their respective disciplines.

Unfortunately, public education in the U.S., particularly in Oklahoma, is often far from satisfactory, both when comparing states and when comparing the U.S. with other countries. In addition, frequently there are disparities in performance when evaluating test scores based on gender and/or racial/ethnic groups. For example, in 2013, eighth grade students in Oklahoma ranked below the national average on the National Assessment of Educational Progress (NAEP) in the areas of mathematics and science, as well as in the average score overall (National Center for Education Statistics [NCES], n.d.). The average score in both mathematics and science for students identified as racial/ethnic minorities ranged between 16 and 30 points lower than those categorized as white/caucasian (NCES, 2011; NCES 2013). There was, however, no significant difference between the average scores of males and females (NCES 2011; NCES 2013). When reviewing the U.S. as a whole, according to the 2012 Program for International Student Assessment (PISA), out of 65 countries and education systems, the measured performance for 15-year-old students in the U.S. ranked 30th in mathematics literacy, 23rd in science literacy, and

20th in reading literacy (NCES, 2014). Among the top ranking countries were China, Singapore, South Korea, and Japan, as well as several countries in northern and central Europe.

One current attempt to address the need for quality education in the U.S. focuses on fostering students' interest in the areas of science, technology, engineering, and math (STEM). The beginning of the STEM initiative is often attributed to the American Competitiveness Initiative, a program that began in 2006 with the goal of providing federal funding to “increase investments in research and development, strengthen education, and encourage entrepreneurship” for the purpose of using innovation to increase economic productivity (Domestic Policy Council, 2006, p. 3). There has also been a push to encourage those who are currently underrepresented in the fields—women and minorities—to pursue STEM education and other opportunities.

An additional shift in the way schools in the U.S. approach education is the emphasis educators have placed on the concept of transformative learning. Initially developed by Jack Mezirow in the mid-1970's, the theory of transformative learning involves “a deep, structural shift in the basic premises of thought, feelings, and actions” (Kitchenham, 2008, p. 104). The University of Central Oklahoma (2015b) identifies transformative learning as a process that “develops beyond-disciplinary skills and expands students' perspectives of their relationships with self, others, community, and environment...[by] providing experiences [such] that they may become productive, creative, ethical, and engaged citizens and leaders contributing to the intellectual, cultural, economic, and social advancement of the communities they serve” (para. 1-2). Transformative learning is a holistic process, engaging students in the six core areas of discipline knowledge, leadership, research, creative and scholarly activities, service learning and civic engagement, global and cultural competencies, and health and wellness (University of Central Oklahoma [UCO], 2015b, para 3.). The concept of transformative learning advances the

fundamental goals of the STEM initiative, and translates into an effective means by which to introduce interdisciplinary forensic science curricula into secondary education.

Statement of Problem

There is a significant lack of forensic science high school educational materials available in the United States, particularly in Oklahoma. Personal experiences recount high school forensic science classes that spent their time watching episodes of *CSI: Miami*. Many individuals who teach forensic science have no practical experience within the field, making it difficult for them to sort through the plethora of forensic science resources to determine the most accurate and useful sources. In addition to the lack of forensic science curricula, the focus of many forensic science programs relies heavily on the biology and chemistry-based disciplines. Approaching forensic science from this perspective limits severely the types of individuals who can pursue a career in the field, namely those for whom natural sciences are not their strength. As previously mentioned, the disciplines within the field of forensic science cover a wide range of expertise, and are not limited only to those with laboratory skills.

Literature Review

Both the government and private organizations have recognized the need to create forensic science programs that strive to maintain and enhance the quality of a forensic science education. Unfortunately, most of the emphasis placed on developing these materials relates to post-secondary education. For example, the Technical Working Group for Education and Training in Forensic Science (TWGED) was created in 2002 as a result of the National Institute of Justice's (NIJ) publication, *Forensic Sciences: Review and Status of Needs* (as cited in National Institute of Justice [NIJ], 2004). In 2004, TWGED—a multidisciplinary group formed by individuals who work in academia, forensic science laboratories, forensic science

organizations, and the legal system—produced a guide, which makes recommendations for the following: qualifications for a career in forensic science; undergraduate and graduate curriculum in forensic science; and training and continuing education in forensic science (National Institute of Justice [NIJ], p. v). The guidelines produced in the report “[focus] primarily on education and training in those disciplines traditionally and generally associated with the work of forensic science laboratories, commonly referred to as ‘criminalistics’” (p. 1).

In response to the TWGED’s proposals, AAFS (2015a)—a multidisciplinary professional organization that provides leadership to advance science and its application to the legal system—developed the Forensic Science Education Programs Accreditation Commission (FEPAC). FEPAC (2014) serves as the governing body for the accreditation of college-level forensic science academic programs that result in baccalaureate or graduate degrees. Of the more than 120 forensic science programs in the U.S., 35 currently possess FEPAC accreditation for one or more programs (Forensic Science Education Programs Accreditation Commission [FEPAC], 2015). To date, only forensic science programs that focus on biology, chemistry, toxicology, or digital evidence (just recently added) are able to obtain accreditation (American Academy of Forensic Science [AAFS], 2014, p. 8).

Another organization that focuses on formal educational programs is the Council of Forensic Science Education. This Council, which was formed by professors who teach in forensic science programs at colleges and universities, approaches forensic science education with the goal of achieving high academic standards for their respective programs, and developing excellence in programming to educate students seeking careers in the forensic science disciplines (para. 1). Their objectives include encouraging the exchange of ideas and information by working collectively to upgrade academic forensic science programs while promoting

constructive integration of formal academic training with postgraduate preparation for professional practice (para. 4). The Council understands the significance of not only offering quality educational programs, but also building relationships between academics, practicing professionals, and laboratory management. Similarly, the Center for Forensic Science Research & Education (2015) offers graduate-level forensic science education and training through partnerships with three universities while still offering specialized continuing education courses and seminars that focus on specific issues or concerns within the disciplines of forensic science.

While most formal forensic science curricula focus on post-secondary educational institutions, many colleges, universities, and professional organizations do host summer programs for high school students. These programs offer a combination of lectures, hands-on activities, interaction with professionals, and field trips to crime laboratories and police stations. They provide unique exposure to the forensic science disciplines. Unfortunately, these programs tend to be expensive, have a limited number of spots available, and tend to focus on a limited number of basic topics in forensic science. For example, AAFS (2015) collaborates with universities to host CSI Summer Camps for both middle and high school students. The locations of the programs vary from year to year, as do the topics covered and the cost of attendance (between \$200 and \$600, although some partial scholarships may be available). Similarly, Georgetown University in Washington, D.C. offers an eight-day course with a tuition cost of approximately \$2,700, not including transportation to and from the school. The National Student Leadership Conference, in conjunction with several different universities across the country, conducts four summer sessions that are 10 days long and cost approximately \$3,000.

There are some opportunities for students in Oklahoma to experience the field of forensic science outside of the traditional classroom. The Oklahoma State Regents for Higher Education

annually fund the CSI Summer Academy at the University of Central Oklahoma (UCO) (2015a), located in Edmond. While the academy offers a five-day resident program at no cost to its participants, it is limited to 35 high school students, and despite the presence of the world-class Forensic Science Institute on the campus of UCO, the summer program is hosted by the UCO College of Business, who received the funding as a result of a grant application and proposal. Also in Edmond, Oklahoma Christian University (2015) offers the “In Cold Blood” Forensic Science course to high school juniors through their Honors Summer Academy. The cost of the one-week college experience is \$500, and focuses on the use of forensic chemistry in reconstruction of events.

Purpose

The purpose of this project was to create a high school curriculum that provides a foundation for building a broad, yet comprehensive, overview of the field of forensic science and its associated disciplines. The overall goal is to create and provide course materials to high school teachers in order to increase their knowledge of forensic science such that they are able to teach its disciplines effectively and with accuracy. The *Forensic Science Curriculum for High School Students* includes sample lesson plans, PowerPoint presentations, and lab activities with step-by-step instructions.

This curriculum is unique in that it is designed not only to teach the disciplines within the field of forensic science, but also to serve as a template and platform for integrating current events and other significant issues into classroom conversation. As previously discussed, the application of forensic science in criminal and civil matters lends itself to a wide variety of topics. Teachers can help students to identify the skills necessary to apply forensic science concepts to real world scenarios and global issues, whether social, political, economic, or environmental.

Creation of Curriculum

The resources used to create this curriculum included textbooks, PowerPoint presentations from courses designed and taught at the University of Central Oklahoma's Forensic Science Institute (FSI), educational videos, and the author's personal knowledge obtained while under the instruction and guidance of the faculty at the FSI. Refer to page 18 for a complete list of references. The materials are structured in such a way that future editions of the *Forensic Science Curriculum for High School Students* can include additional lessons and lab activities.

Limitations

This version of the *Forensic Science Curriculum for High School Students* does not include PowerPoint lectures or complete lesson plans for the following sections:

- 7.1 Introduction to Impression Evidence
- 9.1 Introduction to Firearm and Toolmark Analysis
- 10.1 Introduction to Serology and DNA Analysis
- 12.1 Introduction to Forensic Chemistry
- 13.1 Introduction to Death Investigation

This curriculum is not designed to be all-inclusive, but rather as a tool to assist teachers in developing individualized course materials that meet the specific needs or goals of a particular class. Teachers should review the provided materials and create their own learning objectives based on the scope of the course, the grade level of their students, and other factors as dictated by the particular school or school district. While the curriculum is intended for use as a whole, the individual lessons are designed in such a way that teachers could use them as a stand-alone component to incorporate into a non-forensic science class, or may pick-and-choose particular sections to design a course based on their time and resource limitations.

Suggestions for the Future

In the future, this curriculum would benefit from the development of some form of course evaluation, whether written or oral, that would allow teachers and other educators to provide the FSI with feedback regarding what works, what does not work, and in what areas the curriculum can be developed and strengthened further. These suggestions will encourage the FSI to update and create revisions in furtherance of the goal of providing quality forensic science educational materials at the high school level.

Summary of Findings

As of Thursday, August 6, 2015 at 8:00 a.m., the *Forensic Science Curriculum for High School Students* has not yet been disseminated to teachers in Oklahoma for use in their classrooms. Faculty and staff members at the FSI are currently preparing a forensic science high school curriculum training that will allow high school and middle school teacher participants the opportunity to learn proper forensic science techniques from the FSI faculty who have high levels of experience in each of the forensic disciplines. This training will assist them with understanding the concepts and the set-up for lab activities, as well as emphasizing UCO's transformative learning initiative. It will also provide an opportunity to distribute the curriculum, and aid in developing positive relationships with local schools and communities.

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FORENSIC SCIENCE CURRICULUM FOR HIGH SCHOOL STUDENTS

PROVIDED BY THE FORENSIC SCIENCE INSTITUTE AT THE
UNIVERSITY OF CENTRAL OKLAHOMA

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1.0 INTRODUCTION TO FORENSIC SCIENCE

LESSON 1.1

INTRODUCTION TO FORENSIC SCIENCE

This lesson introduces students to the field of forensic science by defining *forensic science*, explaining why forensic science is important, discussing many of the disciplines within the forensic science community, and briefly addressing how to enter into and pursue a career in the field of forensic science. The video *Modern Marvels: FBI Crime Lab* and its accompanying worksheet explore the history of forensic science within the Federal Bureau of Investigation, and provide students with a look inside the workings of the largest crime laboratory in the United States.

INSTRUCTIONAL MATERIALS

PowerPoint – 1.1 Introduction to Forensic Science

Optional: One printed copy for each student

Lab Activity Worksheet – 1.1 Modern Marvels: FBI Crime Lab

One for each student

DVD – *Modern Marvels: FBI Crime Lab*

Documentary about the new FBI Crime Laboratory in Quantico, VA (45 minutes)

SAMPLE LESSON PLAN

CLASS #1

Begin class and take attendance by having students introduce themselves and share with the class why they are interested in forensic science. Write these reasons down on the board, and discuss them. What are the similarities and differences? Save these notes for later.

Present the *1.1 Introduction to Forensic Science* PowerPoint lecture. Have the students take notes.

After the PowerPoint lecture, have students find a partner and spend approximately five minutes discussing the area(s) of forensic science they are most interested in studying. Ask several of the students to share their answers, and then compare these answers with the previous reasons for their interest in forensic science. Do their interests in forensic science align with the areas they are most interested in studying?

This presentation and discussion may require an additional class period.

CLASS #2 AND #3

Show students the *Modern Marvels: FBI Crime Lab* video, and have them complete the accompanying worksheet.

Students will turn in their worksheets for a grade at the end of the class period.

2.0 CRIME SCENE PROCESSING METHODOLOGY

LESSON 2.1

CRIME SCENE PROCESSING METHODOLOGY

This lesson introduces and explains the fundamentals of crime scene investigation by defining *crime scene processing*, discussing the five critical parts of good crime scene processing, explaining threats to crime scene integrity, and explaining the methodology behind the FBI's 12 Steps of Crime Scene Processing. The associated lab activity will provide students with exposure to their first mock crime scene from the perspective of an initial responder.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.1 Crime Scene Processing Methodology

Optional: One printed copy for each student

Lab Activity Worksheet – 2.1 Crime Scene Observations

One for each student

Mock crime scene materials

See Appendix B

SAMPLE LESSON PLAN

CLASS #1

Begin class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

During the passing period before class begins, stand at the classroom door, and take attendance by requiring students to sign-in using the *Crime Scene Control Log* before allowing them to enter the classroom. Explain to the students that all crime scenes use these control logs to record and monitor each persons who enters/exits a scene, at what times, and for what purposes.

Begin class by assigning students to their Crime Scene Processing (CSP) teams. Each group should consist of four to five students, and these students will work together on group assignments for the remainder of the course.

Next, tell students they will be visiting their first crime scene. Explain that since they have not yet learned how to process a crime scene, their first lab activity is to act as a first responder and make and record observations about a crime scene while standing outside the scene's perimeter. Instruct them to make their observations and notes as detailed and specific as possible. Students should spend 10 to 15 minutes observing and documenting the crime scene.

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CLASS #1 (continued)

Spend the remainder of the class period discussing these observations. Write them on the board. Divide these observations into two categories: Facts and Assumptions.

Examples: Facts are any general observations, like the location of an item of evidence or the description of the victim's body.

Assumptions include any observations that the students infer based on a scene, such as what happened or the offender's motive.

Discuss the differences in the students' observations. Explain to the students that as a crime scene investigator (CSI), his/her job is to process a crime scene properly, not to solve the case. Therefore, CSIs should be concerned only with the observable facts.

At the end of the class period, students should turn in their crime scene observation notes for a participation grade.

CLASS #2

Begin class by spending approximately 10 minutes reviewing the *Crime Scene Observations* lab activity from the previous day. Ask students to review the differences between Facts and Assumptions, and ask them to provide examples of each.

Use the remainder of the class period to present the *2.1 Crime Scene Processing Methodology* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

LESSON 2.2

NARRATIVE DESCRIPTIONS OF A CRIME SCENE

This lesson provides students with a more in-depth explanation of how to write a narrative description of a crime scene. The associated lab activity provides students with the opportunity to visit a mock crime scene, and to work individually to write their own narrative description.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.2 Narrative Descriptions of a Crime Scene

Optional: One printed copy for each student

Lab Activity Worksheet – 2.2 Narrative Descriptions of a Crime Scene

One for each student

Mock crime scene materials

See Appendix B

SAMPLE LESSON PLAN

CLASS #1

Before class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

Begin class by presenting the *2.2 Narrative Descriptions of a Crime Scene* PowerPoint lecture. Have the students take notes.

Hand out the *2.2 Narrative Descriptions of a Crime Scene* lab activity worksheets, and review the instructions with the students before allowing them to visit the mock crime scene(s). Students should work individually rather than with their CSP teams. As with the Crime Scene Observations activity, students will observe the mock crime scene(s) from outside the perimeter. Because students will not physically enter the mock crime scene(s), they do not need to sign in/out on a *Crime Scene Control Log*.

Students should use the remainder of the class period to complete their worksheets. If necessary, they may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the end of the class period.

This activity may require an additional class period.

LESSON 2.3

CRIME SCENE SEARCH PATTERNS

This lesson provides students with a more in-depth explanation of crime scene search patterns. In the associated lab activity, students will work with their CSP teams to use different patterns to search mock crime scenes.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.3 Crime Scene Search Patterns

Optional: one printed copy for each student

Lab Activity Worksheet – 2.3 Crime Scene Search Patterns

One for each student

Mock crime scene materials

See Appendix B

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *2.3 Crime Scene Search Patterns* PowerPoint lecture. Have the students take notes.

Hand out the *2.3 Crime Scene Search Patterns* lab activity worksheet, and review the instructions with the students. If time allows, they should begin answering the Review Questions.

CLASS #2

Before class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

Begin class by dividing students into their CSP teams. Ask the students to review the instructions before allowing them to visit the mock crime scene(s). Because students will physically enter the mock crime scene(s), remind them that they need to sign in/out on the *Crime Scene Control Log*.

CSP teams should rotate between search areas. Each team should use at least two different search patterns to search at least two different scenes. If a team searches more than two areas, they should use a separate sheet of paper and follow the format of the lab activity worksheet to take notes of the additional search.

Students should use the remainder of the class period to work on the lab activity and the worksheet. They will continue this lab activity during Class #3.

CLASS #3

Before class, set up the appropriate mock crime scene(s). These are the same mock crime scene(s) used on Day #2. For specific instructions, refer to Appendix A.

Begin class by dividing students into their CSP teams. Remind them of the instructions for the lab activity, and to sign in/out of the mock crime scene(s) using the *Crime Scene Control Log*.

Students should continue the lab activity where they left off the previous day, and use the remainder of the class period to complete the lab activity worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

LESSON 2.4

CRIME SCENE PHOTOGRAPHY

This lesson provides students with a more in-depth explanation of crime scene photography. In the associated lab activity, students will work with a partner to photograph a mock crime scene using overall, midrange, and close-up photographs.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.4 Crime Scene Photography

Optional: one printed copy for each student

Lab Activity Worksheet – 2.4 Crime Scene Photography

One for each student

Mock crime scene materials

See Appendix B

Crime Scene Photography Kit

One for each pair of students

See Appendix A

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *2.4 Crime Scene Photography* PowerPoint lecture. Have the students take notes.

Hand out the *2.4 Crime Scene Photography* lab activity worksheet, and review the instructions with the students. If time allows, they should begin answering the Review Questions.

CLASS #2

Before class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

Begin class by having students partner with someone from their CSP team. Hand out the *Photo ID Cards* and *Photo Logs*. Ask the students to review the instructions before allowing them to visit the mock crime scene(s). Because students will physically enter the mock crime scene(s), remind them that they need to sign in/out on the *Crime Scene Control Log*.

Remind students that they will be sharing space in and around the mock crime scene(s), and they need to be conscious of the other students around them. Good crime scene photographs should not have extraneous people or objects in them.

Students should use the remainder of the class period to take their crime scene photographs and to work on their worksheets. They will continue this lab activity during Class #3.

(Continued on next page)

CLASS #2 (continued)

Before releasing students from class, make sure that each pair of students places their memory cards in a sealed envelope labeled with the appropriate information (including their names, the date and time, etc.). Treat these memory cards as items of evidence.

CLASS #3

Before class, set up the appropriate mock crime scene(s). These are the same mock crime scene(s) used on Day #2. For specific instructions, refer to Appendix A.

Begin class by having the students join with their partners from Class #1, and hand out the envelopes containing their memory cards. Remind them of the instructions for the lab activity, and to sign in/out of the mock crime scene(s) using the *Crime Scene Control Log*.

Students should continue the lab activity where they left off the previous day, and use the remainder of the class period to complete the lab activity worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

If time allows, have the students transfer their crime scene photographs from their memory cards to a blank CD or flash drive. Treat these items as evidence, and label them appropriately. If time is insufficient, have the students place the memory cards in a sealed envelope labeled with the appropriate information. Schedule a separate time for students to transfer their photographs from the memory cards to a blank CD or flash drive.

This activity may require an additional class period.

LESSON 2.5

SKETCHING AND DIAGRAMMING A CRIME SCENE

This lesson provides students with a more in-depth explanation of the process of sketching and diagramming a crime scene. In the associated lab activity, students will work with their CSP teams to create a rough and final sketch and diagram of a mock crime scene.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.5 Sketching and Diagramming a Crime Scene

Optional: one printed copy for each student

Lab Activity Worksheet – 2.5 Sketching and Diagramming a Crime Scene

One for each student

Mock crime scene materials

See Appendix B

Sketching and Diagramming Kit

One for each CSP team

See Appendix A

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *2.5 Sketching and Diagramming a Crime Scene* PowerPoint lecture. Have the students take notes.

Hand out the *2.5 Sketching and Diagramming a Crime Scene* lab activity worksheet, and review the instructions with the students. If time allows, they should begin answering the Review Questions.

CLASS #2

Before class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

Begin class by asking the students to review the instructions for the lab activity. Students should work individually to complete their rough sketches of the mock crime scene. Because students will physically enter the mock crime scene(s), remind them that they need to sign in/out on the *Crime Scene Control Log*.

Students should use the remainder of the class period to complete their rough crime scene sketch. They will continue with diagramming the mock crime scene during Class #3.

CLASS #3

Before class, set up the appropriate mock crime scene(s). These are the same mock crime scene(s) used on Day #2. For specific instructions, refer to Appendix A.

Begin class by dividing students into their CSP teams. Remind them of the instructions for the lab activity, and to sign in/out of the mock crime scene(s) using the *Crime Scene Control Log*. Team members should rotate taking physical measurements, recording those measurements, and mapping the items of evidence on the sketch of the scene.

Students should use the remainder of the class period to work with their CSP teams to complete their diagrams of the mock crime scene(s). If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

Provide students with a due date for their finalized sketch and diagram of the mock crime scene.

This activity may require an additional class period.

LESSON 2.6

COLLECTING AND PRESERVING FORENSIC EVIDENCE

This lesson provides students with a more in-depth explanation of the procedures for collecting and preserving forensic evidence. In the associated lab activity, students will work with their CSP teams to properly collect, package, and store evidence.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.6 Collecting and Preserving Forensic Evidence

Optional: one printed copy for each student

Lab Activity Worksheet – 2.6 Collecting and Preserving Forensic Evidence

One for each student

Mock crime scene materials

See Appendix B

Crime scene processing materials

See Appendix B

Evidence locker

At least one storage container for the class

Number of containers necessary depends on the size of the container and the size of the items of evidence

See Appendix B

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *2.6 Collecting and Preserving Forensic Evidence* PowerPoint lecture. Have the students take notes.

Hand out the *2.6 Collecting and Preserving Forensic Evidence* lab activity worksheet, and review the instructions with the students. If time allows, they should begin answering the Review Questions.

CLASS #2

Before class, set up the appropriate mock crime scene(s). For specific instructions, refer to Appendix A.

Begin class by dividing students into their CSP teams. Ask students to review the instructions before allowing them to visit the mock crime scene(s). Because students will physically enter the mock crime scene(s), remind them that they need to sign in/out on the *Crime Scene Control Log*.

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CLASS #2 (continued)

Remind the students that you will act as the Evidence Custodian, and will inspect each item of packaged evidence submitted to the Evidence Locker to ensure it meets all of the proper packaging and submission guidelines. Any packages that do not meet these standards must be repackaged and resubmitted. These steps are necessary to ensure the chain of custody, and to avoid contamination of the evidence.

Students should use the remainder of the class period to work with their CSP teams to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

LESSON 2.7

LEGAL ISSUES IN CRIME SCENE INVESTIGATION

This lesson introduces students to some of the key legal considerations encountered during crime scene processing and investigation, focusing specifically on the Fourth Amendment and its application within the fields of forensic science and criminal justice. Students will apply these principles in their evaluation of fictional crime TV show scenarios.

INSTRUCTIONAL MATERIALS

PowerPoint – 2.7 Legal Issues in Crime Scene Investigation

Optional: one printed copy for each student

Lab Activity Worksheet – 2.7 Legal Issues in Crime Scene Investigation

One for each student

Videos – Fictional crime TV show clips

At least five clips from a variety of fictional crime TV shows, with a length of 5 – 10 minutes each

Examples: *CSI* (Las Vegas, Miami, or New York), *NCIS*, *Bones*, etc.

SAMPLE LESSON PLAN

CLASS #1

Begin class by handing out the *2.7 Legal Issues in Crime Scene Investigation* lab activity worksheet. Proceed by having students watch several clips from fictional crime TV shows.

As the students watch each clip, they should take notes and write a detailed description of the events in each scene, paying specific attention to the actions of the individual characters. Students should rely on their knowledge of crime scene processing and investigation techniques when describing the events. The students will return to these descriptions later in this lesson.

CLASS #2

Begin class by presenting the *2.7 Legal Issues in Crime Scene Investigation* PowerPoint lecture. Have the students take notes.

Use the remainder of the class period to compare the students' written descriptions of the fictional crime TV show clips with what they learned from the *2.7 Legal Issues* lecture. Discuss the ways in which the TV show characters comply with and differ from real world legal procedures. Rewatching the clips may provide the students with additional insight.

(Continued on next page)

CLASS #2 (continued)

Students should use the remainder of the class period to complete the lab activity worksheets. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

3.0 INTRODUCTION TO FORENSIC EVIDENCE

LESSON 3.1

INTRODUCTION TO FORENSIC EVIDENCE

This lesson introduces the fundamentals of forensic evidence, focusing specifically on the different types of evidence and the potential value of each. Students will understand the basic concepts of exchange, cross contamination, and mechanical fit, and will learn to identify and differentiate between class and individual characteristics. The associated lab activity provides students with experiments that demonstrate how to evaluate physical evidence for class and individual characteristics.

INSTRUCTIONAL MATERIALS

PowerPoint – 3.1 Introduction to Forensic Evidence

Optional: One printed copy for each student

Lab Activity Worksheet – 3.1 Introduction to Forensic Evidence

One for each student

Evidence locker

At least one storage container for the class

Number of containers necessary depends on the size of the container and the size of the items of evidence

See Appendix B

Packaged evidence

Collected from mock crime scenes in Lesson 2.6 – Collecting and Preserving Forensic Evidence

Each CSP team needs at least five pieces of packaged evidence

Each piece of packaged evidence should have a *Chain of Custody Log* attached

Disposable gloves

At least one pair for each student

Various sizes

SAMPLE LESSON PLAN

CLASS #1

Begin class by asking students to pull a random item out of their backpacks. Have the students describe these items. Write the items and their descriptions on the board.

Example: If a student has a pencil, they could name the brand, describe the color, and say whether it has an eraser, bite marks, etc.

Tell the students that their descriptions fall into two categories: Class and Individual characteristics. Class characteristics are the same among similar items (e.g. pencils in the same package), while bite marks are individual characteristics, or characteristics that are specific to a particular item (e.g. one specific pencil).

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CLASS #1 (continued)

Review the list of written descriptions, and ask students to identify whether each is a class or an individual characteristic. Label each description with a “C” or an “I”.

Use the remainder of the class period to present *3.1 Introduction to Forensic Evidence* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Before class, set up the Evidence Locker. For specific instructions, refer to Appendix B.

Begin class by dividing students into their CSP teams, and handing out the lab activity worksheets. Review the instructions, and remind students to follow the proper procedures when checking out, handling, and resubmitting the evidence. These steps are necessary to ensure the chain of custody, and to avoid contamination of the evidence.

Students should use the remainder of the class period to work with their CSP teams to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

4.0 INTRODUCTION TO TRACE EVIDENCE

LESSON 4.1

INTRODUCTION TO TRACE EVIDENCE

This lesson provides students with an overview of trace (or material evidence). Students will define, list, and describe the different types of trace evidence, and how they are useful in the field of forensic science. Students will discuss the methods used to identify, collect, and analyze trace evidence. The associated lab activity provides students with experiments that help demonstrate how to collect and examine different types of trace evidence. The video *Catching Killers: Trace Evidence* and the accompanying worksheet explore historical and modern cases that demonstrate the value of trace evidence in helping to solve crimes.

INSTRUCTIONAL MATERIALS

PowerPoint – 4.1 Introduction to Trace Evidence

Optional: One printed copy for each student

Lab Activity Worksheet – 4.1(a) Collecting and Examining Trace Evidence

One for each student

Station – Collecting Hair and Fiber Evidence Using the Tape Lift Method

The number of stations is dependent on the number of students in the class and the availability of supplies
See Appendix A

Station – Calculating the Density of Glass Fragments

The number of stations is dependent on the number of students in the class and the availability of supplies
See Appendix A

Station – Examining Soil Evidence

The number of stations is dependent on the number of students in the class and the availability of supplies
See Appendix A

Lab Activity Worksheet – 4.1(b) Catching Killers: Trace Evidence

One for each student

Video – *Catching Killers: Trace Evidence*

Cases of Marie Latelle (1912) and Roger Kibbe, the I-5 Strangler (1970s-1980s) (46 minute video)

SAMPLE LESSON PLAN

CLASS #1

Begin class by asking students to recall some of their activities from earlier in the day. Write these activities on the board, and then review Locard's Exchange Principle. Ask the students to identify the type of materials that might have transferred between people, objects, and environments during these activities.

(Continued on next page)

CLASS #1 (continued)

Example: If a student played with his/her dog that morning before going to school, he/she might have dog hairs present on his/her clothing. If a student played soccer, he/she might have grass stains on his/her shoes.

Use the remainder of the class period to present the *4.1 Introduction to Trace Evidence* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Before class, prepare the materials for the lab activity by setting up three stations, one for each section of the lab activity. For specific instructions, refer to Appendix A.

Begin class by having students partner with someone from their CSP teams, and handing out the lab activity worksheets. Review the instructions, and assign the order in which each pair of students will complete the three activities.

Students should use the remainder of the class period to work on the lab activity. They will continue to work on the lab activity during Class #3.

CLASS #3

Before class, prepare the materials for the lab activity by setting up three stations, one for each section of the lab activity. These are the same stations used on Day #2. For specific instructions, refer to Appendix A.

Begin class by having the students join with their partners from Class #2. Remind the students of the instructions.

Students should continue the lab activity where they left off the previous day, and use the remainder of the class period to complete the lab activity worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

CLASS #4

Show the students the *Catching Killers: Trace Evidence* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

5.0 INTRODUCTION TO DIGITAL FORENSICS

LESSON 5.1

INTRODUCTION TO DIGITAL EVIDENCE

This lesson provides students with an overview of the discipline of digital forensics. Students will define digital forensics, and provide examples of digital evidence and the type of crimes with which the evidence can be associated. Students will understand how to recognize and collect digital evidence at a crime scene, and explain the steps in a digital forensics examination. The video *Catching Killers: Cyber Forensics* and the accompanying worksheet explore historical and modern cases that demonstrate the value of digital forensics in helping to solve crimes.

INSTRUCTIONAL MATERIALS

PowerPoint – 5.1 Introduction to Digital Evidence

Optional: One printed copy for each student

Lab Activity Worksheet – 5.1 Catching Killers: Cyber Forensics

One for each student

Video – *Catching Killers: Cyber Forensics*

Cases of the Craigslist Killer (2009) and a German computer hacker (1986) (46 minute video)

SAMPLE LESSON PLAN

CLASS #1

Begin class by asking students to list different types of electronic devices. Write these responses on the board, and spend 10 to 15 minutes discussing the purposes of each, as well as what type of information pass through and are stored on them.

Example: Smart phones have the ability not only to send and receive phone calls and text messages, but allow the user to access their email and the internet, and to play games, watch videos, etc.

Inform students that because these electronic devices keep a record of the user's activity, they can provide useful information, and serve as evidence as a part of criminal and civil investigations.

Use the remainder of the class period to present the *5.1 Introduction to Digital Forensics* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Show the students the *Catching Killers: Cyber Forensics* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

6.0 INTRODUCTION TO THE BEHAVIORAL ASPECTS OF CRIME SCENES

LESSON 6.1

INTRODUCTION TO THE BEHAVIORAL ASPECTS OF CRIME SCENES

This lesson provides students with a broad overview of the behavioral analysis of violent crimes, and explains how understanding human behavior can assist law enforcement in identifying suspects and solving crimes. The video *Mind of a Serial Killer* provides students with real life case examples of how the FBI's Investigative Support Unit uses behavioral analysis to provide leads that assist in solving crimes.

INSTRUCTIONAL MATERIALS

PowerPoint – 6.1 Introduction to the Behavioral Aspects of Crime Scenes

Optional: One printed copy for each student

Lab Activity Worksheet – 6.1 Mind of a Serial Killer

One for each student

Video – *Mind of a Serial Killer*

Documentary about the FBI's Investigative Support Unit (60 minute video)

SAMPLE LESSON PLAN

CLASS #1

Begin class by asking students to name famous criminals. Make a list on the board and spend 10 to 15 minutes discussing the types of offenses committed by these individuals, focusing on the types of evidence that crime scene technicians might recover at those specific crime scenes.

Example: John Dillinger was a gangster and serial bank robber, who was also responsible for killing several people, including a police officer. Evidence recovered from one of his bank robbery scenes could possibly include fired projectiles and cartridge cases, latent prints, toolmarks from forced entry, etc.

Other types of crime include one or more of the following: kidnapping, serial murder, serial arson, an act of terrorism, etc.

Use the remainder of the class period to present the *6.1 Introduction to the Behavioral Analysis of Crime Scenes* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Show students the *Mind of a Serial Killer* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

7.0 INTRODUCTION TO IMPRESSION EVIDENCE

LESSON 7.1

INTRODUCTION TO IMPRESSION EVIDENCE

Due to the author's lack of knowledge and expertise in this discipline, this version of the Forensic Science Curriculum for High School students *does not* include a PowerPoint lecture. However, it does include two lab activities and the associated Sample Lesson Plan.

INSTRUCTIONAL MATERIALS

- Lab Activity Worksheet – 7.1(a) Collecting Shoe Impressions
One for each student
- Station – Casting Shoe Impressions
The number of stations is dependent on the number of students in the class and the availability of supplies
See Appendix A
- Station – Inked Shoe Impressions
The number of stations is dependent on the number of students in the class and the availability of supplies
See Appendix A
- Lab Activity Worksheet – 7.1(a) Solved: Extreme Forensics, “Deadly Obsession”
One for each student
- *Solved: Extreme Forensics, “Deadly Obsession”*
Disappearance of Jodi Sanderholm (2007) (44 minute video)

SAMPLE LESSON PLAN

CLASS #1

Before class, prepare the materials for the lab activity by setting up two stations, one for each section of the lab activity. For specific instructions, refer to Appendix A.

Begin class by having students partner with someone from their CSP team, and handing out the lab activity worksheets. Review the instructions, and assign the order in which each pair of students will complete the two activities.

Students should use the remainder of the class period to work with their partners to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity will likely require an additional class period.

CLASS #2

Show students the *Solved: Extreme Forensics*, “*Deadly Obsession*” video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

8.0 INTRODUCTION TO FINGERPRINTS

LESSON 8.1

INTRODUCTION TO FINGERPRINTS

This lesson provides students with an introduction to the discipline of fingerprint analysis, focusing specifically on the general characteristics and pattern types of friction ridge skin, and the role of fingerprints in modern history. Students will learn about the uniqueness and permanence of fingerprints, and will explain why law enforcement agencies use fingerprints as a form of identification. The associated lab activity provides students with practical experience creating known fingerprint exemplars and identifying fingerprint patterns.

INSTRUCTIONAL MATERIALS

PowerPoint – 8.1 Introduction to Fingerprints

Optional: One printed copy for each student

Lab Activity Worksheet – 8.1(a) Bertillon Measurements

One for each student

Bertillon Measurements Kit

One for each pair or group of students

See Appendix A

Lab Activity Worksheet – 8.1(b) 10-Print Cards and Major Case Prints

One for each student

Template – Major Case Prints

At least one for each student (right and left hands)

See Appendix C

Station – Rolling Fingerprints on a 10-Print Card

The number of stations is dependent on the number of students in the class and the availability of supplies

See Appendix A

Station – Documenting Major Case Prints

The number of stations is dependent on the number of students in the class and the availability of supplies

See Appendix A

Lab Activity Worksheet – 8.1(c) Identifying Fingerprint Patterns

One for each student

Identifying Fingerprint Patterns Kit

One for each student

See Appendix A

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *8.1 Introduction to Fingerprints* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Before class, prepare the materials for the *8.1(a) Bertillon Measurements* lab activity. For specific instructions, refer to Appendix A.

Begin class by having students partner with someone from their CSP team, and handing out the lab activity worksheet. Review the instructions.

Students should use the remainder of the class period to work with their partners to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

CLASS #3

Before class, prepare the materials for the *8.1(b) 10-Print Cards and Major Case Prints* lab activity by setting up fingerprinting stations. For specific instructions, refer to Appendix A.

Begin class by having students partner with someone from their CSP team, and handing out the lab activity worksheet. Review the instructions.

Students should use the remainder of the class period to work with their partners to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

CLASS #4

Begin class by having students partner with someone from their CSP team, and handing out the lab activity worksheet. Review the instructions.

Students should use the remainder of the class period to work with their partners to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

LESSON 8.2

INTRODUCTION TO LATENT PRINTS

This lesson discusses the fingerprints found at crime scenes, along with the various methods used to process (or develop) and collect these prints. Students will learn about latent fingerprint myths and the theory of fingerprint identification. The associated lab activity provides students with practical experience identifying, processing, and collecting latent prints from a variety of surfaces.

INSTRUCTIONAL MATERIALS

PowerPoint – 8.2 Introduction to Latent Prints

Optional: One printed copy for each student

Lab Activity Worksheet – 8.2 Collecting Latent Fingerprints

One for each student

Evidence locker

At least one storage container for the class

Number of containers necessary depends on the size of the container and the size of the items of evidence

See Appendix B

Packaged evidence

Collected from mock crime scenes in Lesson 2.6 – Collecting and Preserving Forensic Evidence

Each CSP team needs at least five pieces of packaged evidence

Disposable gloves

At least one pair for each student

Various sizes

Collecting Latent Prints Kit

One for each pair or group of students

See Appendix A

Table/desk covering

Used to cover tables/desks for easier clean up

White butcher paper works best, but plastic tablecloths will serve the same purpose

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *8.2 Introduction to Latent Prints* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Before class, prepare the materials for the *8.1(b) 10-Print Cards and Major Case Prints* lab activity. For specific instructions, refer to Appendix A.

(Continued on next page)

CLASS #2 (continued)

Begin class by reviewing the different types of fingerprints found at crime scenes, and have the students provide examples.

Students should use the remainder of the class period to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

LESSON 8.3

EXAMINING FINGERPRINTS: ACE-V METHODOLOGY

This lesson provides students with the basics of how latent print examiners use ACE-V methodology to conduct fingerprint comparisons of known and unknown prints. Students will learn about fingerprint databases, and how law enforcement agencies use these databases to assist in criminal investigations. The associated lab activity provides students with practical experience using the four steps of ACE-V to conduct their own fingerprint examinations. The video *Catching Killers: Fingerprints* and the accompanying worksheet explore historical and modern cases that demonstrate the value of fingerprints in helping to solve crimes.

INSTRUCTIONAL MATERIALS

PowerPoint – 8.3 Examining Fingerprints: ACE-V Methodology

Optional: One printed copy for each student

Lab Activity Worksheet – 8.3(a) Known and Unknown Fingerprint Comparisons

One for each student

Fingerprint Comparisons Kit

One for each student

See Appendix A

Lab Activity Worksheet – 8.3(b) Catching Killers: Fingerprints

One for each student

Video – *Catching Killers: Fingerprints*

Cases of the Richard Ramirez, the L.A. Night Stalker (1985) and Francisca Rojas (1892) (46 minute video)

SAMPLE LESSON PLAN

CLASS #1

Begin class by reviewing the differences between known and unknown fingerprints. Have the students provide examples of each, including the different surfaces on which and the different mediums in which latent prints exist.

Use the remainder of the class period to present the *8.3 Examining Fingerprints: ACE-V Methodology* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Begin class by handing out the lab activity worksheets. Review the instructions.

Students should use the remainder of the class period to complete the lab activity and worksheet. If necessary, students may finish answering the Review Questions as homework. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

CLASS #3

Show students the *Catching Killers: Fingerprints* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

9.0 INTRODUCTION TO FIREARM AND TOOLMARK ANALYSIS

LESSON 9.1

INTRODUCTION TO FIREARM AND TOOLMARK ANALYSIS

Due to the author's lack of knowledge and expertise in this discipline, this version of the Forensic Science Curriculum for High School students *does not* include a PowerPoint lecture. However, it does include one video lab activity and the associated Sample Lesson Plan.

INSTRUCTIONAL MATERIALS

Lab Activity Worksheet – 9.1 Catching Killers: Smoking Guns
One for each student

Video – *Catching Killers: Smoking Guns*

Cases of Charles Phelps and Margaret Walcott (1915) and the DC Beltway Snipers (2002) (46 minute video)

SAMPLE LESSON PLAN

CLASS #1

Show students the *Catching Killers: Smoking Guns* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

10.0 INTRODUCTION TO BLOOD AND BODILY FLUIDS

LESSON 10.1

INTRODUCTION TO SEROLOGY AND DNA ANALYSIS

Due to the author's lack of knowledge and expertise in this discipline, this version of the Forensic Science Curriculum for High School students does not include a Sample Lesson Plan or a PowerPoint lecture. However, it does include two lab activities.

INSTRUCTIONAL MATERIALS

Lab Activity Worksheet – 10.1(b) Solved: Extreme Forensics, “Running for Her Life”
One for each student

Video – *Solved: Extreme Forensics, “Running for Her Life”*
Case of Jessica Keen (1991) (first half of episode, 23 minute video)

SAMPLE LESSON PLAN

Class #1

Show students the *Solved: Extreme Forensics, “Running for Her Life”* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

11.0 INTRODUCTION TO BLOODSTAIN PATTERN ANALYSIS

LESSON 11.1

INTRODUCTION TO

BLOODSTAIN PATTERN ANALYSIS

This lesson provides students with an introduction to the basics of bloodstain pattern analysis (BPA). Students will explain why BPA is a useful forensic tool by describing the physical characteristics of blood and explaining what type of information bloodstains can provide. Students will also discuss how to document and collect bloodstain evidence while understanding the limitations of pattern recognition and the limitations of BPA as a science. The associated lab activity provides students with experiments that help demonstrate how blood reacts under different circumstances. The video *Catching Killers: Blood Spatter* and the accompanying worksheet explore historical and modern cases that demonstrate the value of blood spatter in helping to solve cases.

INSTRUCTIONAL MATERIALS

PowerPoint – 11.1 Introduction to Bloodstain Pattern Analysis

Optional: One printed copy for each student

Lab Activity Worksheet – 11.1(b) Catching Killers: Blood Spatter

One for each student

Video – *Catching Killers: Blood Spatter*

Cases of the deaths of Ron Rudin (1995) and Marilyn Sheppard (1954) (46 minute video)

SAMPLE LESSON PLAN

CLASS #1

Begin class by presenting the *11.1 Introduction to Bloodstain Pattern Analysis* PowerPoint lecture. Have the students take notes.

This presentation may require an additional class period.

CLASS #2

Show students the *Catching Killers: Blood Spatter* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

12.0 INTRODUCTION TO FORENSIC CHEMISTRY

LESSON 12.1

INTRODUCTION TO FORENSIC CHEMISTRY

Due to the author's lack of knowledge and expertise in this discipline, this version of the Forensic Science Curriculum for High School students does not include a Sample Lesson Plan, a PowerPoint lecture, or a Lab Activity directly related to conducting a death investigation. However, it does include one video lab activity.

INSTRUCTIONAL MATERIALS

Lab Activity Worksheet – 12.1 Catching Killers: Proving Poison
One for each student

Video – *Catching Killers: Proving Poison*
Cases of Charles LaFarge (1840) and Michael Swango (circa 1993) (46 minutes)

SAMPLE LESSON PLAN

Class #1

Show students the *Catching Killers: Proving Poison* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

13.0 INTRODUCTION TO DEATH INVESTIGATION

LESSON 13.1

INTRODUCTION TO DEATH INVESTIGATION

Due to the author's lack of knowledge and expertise in this discipline, this version of the Forensic Science Curriculum for High School students does not include a Sample Lesson Plan, a PowerPoint lecture, or a Lab Activity directly related to conducting a death investigation. However, it does include two video lab activities.

INSTRUCTIONAL MATERIALS

Lab Activity Worksheet – 13.1(a) Catching Killers: Cause of Death
One for each student

Video – *Catching Killers: Cause of Death*
Cases of Donald Harvey (1987) and John Lloyd/George Smith (1914) (45 minute video)

Lab Activity Worksheet – 13.1(b) Catching Killers: Skeletal Secrets
One for each student

Video – *Catching Killers: Skeletal Secrets*
Cases of Louisa Leugert (1897) and John Wayne Gacy (1970s) (46 minute video)

SAMPLE LESSON PLAN

Class #1

Show students the *Catching Killers: Cause of Death* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

Class #2

Show students the *Catching Killers: Skeletal Secrets* video. Have them take notes and complete the accompanying worksheet. Students will turn in their worksheets for a grade at the beginning of the next class period.

This activity may require an additional class period.

APPENDIX A

INSTRUCTIONS AND NOTES FOR LAB ACTIVITIES

1.0 Introduction to Forensic Science

1.1 Introduction to Forensic Science

Lab Activity – 1.1 Modern Marvels: FBI Crime Lab

Students will work individually.

This lab requires the History Channel's *Modern Marvels: FBI Crime Lab* video.

2.0 Crime Scene Processing Methodology

General Instructions for Creating Mock Crime Scenes

As a general rule, there should be one mock crime scene for every two Crime Scene Processing (CSP) teams. For example, if there are four CSP teams (each consisting of four to five students), there should be at least two mock crime scenes. This will help to prevent overcrowding during lab activities, and will allow students the opportunity to participate fully in each activity.

Size of mock crime scenes. The size of the mock crime scenes and the number of CSP teams determine how many designated areas are necessary. Depending on the lab activity, it may be possible for two (or possibly more) CSP teams to process one area at the same time.

Location of mock crime scenes. Mock crime scenes can be located anywhere at the school, or off-campus if available/allowable. Ideally, mock crime scenes should be located in areas that others will not disturb, or that can be monitored by another instructor or teacher when not in use. Suggested locations include an empty classroom, a gym, the cafeteria, an outside field, a parking lot, the interior of a vehicle, a closet, etc.

Mock crime scene scenario. If possible, the primary mock crime scene used in Lab Activities 2.2 through 2.6 should be the same (or as similar as possible), and should be based around the same scenario. The scenario will be used for future lab activities throughout the remainder of the course. Ideally, this scene should be located in an area that can remain a designated mock crime scene until students have finished processing the scene in Lab Activity 2.6, such that the scene does not have to be set up for each lab activity.

The primary mock crime scene should include as many different types of forensic evidence as possible (See Appendix B). These items of evidence will be collected and packaged in Lab Activity 2.6, and used in subsequent lab activities. The scene should be detailed and should focus on a specific crime or crimes. The more creative the scenario, the greater the learning experience for the students.

(Continued on next page)

Secondary mock crime scenes. Each secondary mock crime scene serves to provide additional opportunities for students to practice the skills they learn related to the FBI's 12 Steps of Crime Scene Processing. Having these additional scenes available will keep students engaged in the course material while they are not processing the primary mock crime scene.

2.1 Crime Scene Processing Methodology

Lab Activity – 2.1 Crime Scene Observations

Students will work individually.

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B). Additional secondary mock crime scenes may be used if desired/preferred. If one mock crime scene is used, it should be large enough to accommodate all of the students in the class.

The primary mock crime scene does not need to be elaborate, but should include enough details such that the students can reasonably spend 10 to 15 minutes making and recording observations about the scene.

The primary mock crime scene used in this lesson should be different from the primary mock crime scene used in Lab Activities 2.2 through 2.6.

2.2 Narrative Descriptions of a Crime Scene

Lab Activity – 2.2 Narrative Descriptions of a Crime Scene

Students will work individually.

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B). This scene will serve as the foundation for the scenario that will be used for future lab activities throughout the remainder of the course. Ideally, this scene should be located in an area that can remain a designated mock crime scene until students have finished processing the scene in Lab Activity 2.6, such that the scene does not have to be set up and cleaned up for each lab activity.

This scene should include as many different types of forensic evidence as possible (See Appendix B). These items of evidence will be collected and packaged in Lab Activity 2.6, and used in subsequent lab activities. It should be detailed and focus on a specific crime or crimes. The more creative the scenario, the greater the learning experience for the students.

2.3 Crime Scene Search Patterns

Lab Activity – 2.3 Crime Scene Search Patterns

Students will work with their CSP teams.

(Continued on next page)

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B) and several additional secondary mock crime scenes. The primary mock crime scene should be the same (or as similar to) the primary mock crime scene in Lab Activity 2.2.

The secondary mock crime scenes should be different sized spaces that provide students the opportunity to utilize multiple search patterns while not searching the primary mock crime scene.

2.4 Crime Scene Photography

Lab Activity – 2.4 Crime Scene Photography

Students will work with a partner from their CSP teams.

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B) and several additional mock crime scenes. The primary mock crime scene should be the same as (or as similar to) the primary mock crime scene in Lab Activities 2.2 and 2.3.

The secondary mock crime scenes should be additional spaces under different conditions (e.g. limited lighting; adverse weather conditions, etc.) that provide students the opportunity to practice taking overall, midrange, and close-up photographs.

The **Crime Scene Photography Kit** includes the following:

- Camera, with batteries
One for each pair or group of students
- Camera memory card
One for each student
- Photo scales, straight and L-shaped
One set of scales for each pair or group of students
Alternative: ruler
- Envelope
One for each pair of students
Used to store memory cards between class periods
- Blank writeable CD or flash drive
One for each student
- Template – Photo ID Card
One for each student
See Appendix C
- Template – Photo Log
One for each student
See Appendix C

2.5 Sketching and Diagramming a Crime Scene

Lab Activity – 2.5 Sketching and Diagramming a Crime Scene

Students will work individually to create a sketch of the mock crime scene, and with their CSP teams to diagram the mock crime scene.

(Continued on next page)

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B) and several additional mock crime scenes. The primary mock crime scene should be the same as (or as similar to) the primary mock crime scene in Lab Activities 2.2 through 2.4.

The secondary mock crime scenes should be additional spaces that vary in shape and size, and that provide students the opportunity to practice using the Triangulation and Baseline methods of diagramming a crime scene.

The **Sketching and Diagramming Kit** includes the following items:

- **Tape measures**
At least two tape measures for each mock crime scene
Tape measures should be long enough to allow students to measure the dimensions of the scene
- **Graph paper**
Several sheets of paper for each student
Alternative: blank white paper (8.5” x 11”)
- **Ruler**
Optional: One for each student

2.6 Collecting and Preserving Forensic Evidence

Lab Activity – 2.6 Collecting and Preserving Forensic Evidence

Students will work with their CSP teams.

This lab activity requires one primary mock crime scene (Mock Crime Scene Materials – See Appendix B) and several additional mock crime scenes. The primary mock crime scene should be the same as (or as similar to) the primary mock crime scene in Lab Activities 2.2 through 2.5.

The secondary mock crime scenes should be additional spaces that provide students the opportunity to practice collecting and packaging forensic evidence.

Additional supplies include:

- **Crime scene processing materials**
See Appendix B
- **Evidence locker**
At least one storage container for the class
See Appendix B

2.7 Legal Issues in Crime Scene Investigation

Lab Activity – 2.7 Legal Issues in Crime Scene Investigation

Students will work individually, but will also participate in class discussion.

This lab activity requires at least five clips from a variety of fictional crime TV shows, each with a length between 5 and 10 minutes. Examples of TV shows include *CSI* (Las Vegas, Miami, or New York), *NCIS*, *Bones*, etc. Select clips that focus on crime scene processing and investigation techniques.

3.0 Introduction to Forensic Evidence

3.1 Introduction to Forensic Evidence

Lab Activity – 3.1 Identifying Class and Individual Characteristics

Students will work with their CSP teams.

This lab activity requires the following supplies:

- Evidence locker
See Appendix B
- Packaged items of evidence
Collected during Lab Activity 2.6
- Disposable gloves
At least one pair for each student
Various sizes

4.0 Introduction to Trace Evidence

4.1 Introduction to Trace Evidence

Lab Activity – 4.1(a) Collecting and Examining Trace Evidence

Students will work with a partner.

This lab activity requires three stations: (a) Collecting Hair and Fiber Evidence Using the Tape Lift Method; (b) Calculating the Density of Glass Fragments; and (c) Examining Soil Evidence.

Station A will consist of the following supplies:

- Evidence locker
See Appendix B
- Packaged items of evidence
Collected during Lab Activity 2.6
Ideally, these should be clothing and/or fabric items
- Fingerprint lift tape (w/ dispenser)
Alternative: clear packing tape
- Blank index cards (3" x 5")
At least five cards for each student
- Magnifying glass
At least two for Station A
- Disposable gloves
At least one pair for each student
Various sizes

(Continued on next page)

Station B will consist of the following supplies:

- **Five known glass samples**
Separated into different containers labeled #1, #2, #3, #4, and #5
- **Five unknown glass samples**
Separated into different containers labeled A, B, C, D, and E
- **Tweezers**
At least two pairs for Station B
- **Graduated cylinder**
At least 50mL or greater for Station B
- **Digital scale**
At least one for Station B
A triple-beam balance may be substituted if a digital scale is not available
- **Water (room temperature)**
At least 20mL for each graduated cylinder at Station B
- **Calculator**
Needs to have the capability to perform basic math functions
At least two for Station B
- **Disposable gloves**
At least one pair for each student
Various sizes

Each unknown glass sample should come from the same source as one of the known glass samples. For example, Known #1 came from the same source as Known A, etc. Avoid using similar types of glass that would have similar densities (e.g. do not use two types of glass soda pop bottles).

Station C will consist of the following supplies:

- **Six known soil samples**
Separated into different containers labeled #1, #2, #3, #4, and #5
- **Six unknown soil samples**
Separated into different containers labeled A, B, C, D, and E
- **Magnifying glass**
At least two for Station A
- **One tbsp. measuring spoon**
At least two for Station C
- **Digital scale**
At least one for Station C
A triple-beam balance may be substituted if a digital scale is not available
- **Disposable gloves**
At least one pair for each student
Various sizes

At least two pairs of students will work at the same station at the same time. If necessary, create several of the same lab station to avoid overcrowding (e.g. two Station A's; etc.).

Lab Activity – 4.1(b) Catching Killers: Trace Evidence

Students will work individually.

This lab activity requires the *Catching Killers: Trace Evidence* video.

The 46-minute video *Catching Killers: Trace Evidence* examines two historical cases: the 1912 death of Marie Latelle and the 1970s-1980s serial murders of Roger Kibbe, also known as the I-5 Strangler.

5.0 Introduction to Digital Evidence

5.1 Introduction to Digital Evidence

Lab Activity – 5.1 Catching Killers: Digital Evidence

Students will work individually.

This lab activity requires the *Catching Killers: Cyber Forensics* video.

The 46-minute video *Catching Killers: Trace Evidence* examines two cases: the 1986 case of a German computer hacker and the 2009 murders committed by Phillip Markoff, also known as the Craigslist Killer.

6.0 Introduction to the Behavioral Aspects of Crime Scenes

6.1 Introduction to the Behavioral Aspects of Crime Scenes

Lab Activity – 6.1 Mind of a Serial Killer

Students will work individually.

This lab activity requires the NOVA *Mind of a Serial Killer* video.

The 60-minute *Mind of a Serial Killer* video examines how the FBI Investigative Support Unit is able to make inferences about offenders based on the behavioral evidence left at crime scenes. The video looks in-depth at the crimes committed by Wayne Williams, the Atlanta Child Murderer, and Arthur Shawcross, the Genesee River Killer.

7.0 Introduction to Impression Evidence

Lab Activity – 7.1(b) Solved: Extreme Forensics, “Deadly Obsession”

Students will work individually.

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This lab activity requires the *Solved: Extreme Forensics*, “*Deadly Obsession*” video.

The 60-minute video *Solved: Extreme Forensics*, “*Deadly Obsession*” video examines the 2007 disappearance of Jodi Sanderholm, where investigators used impression evidence to help recovery Jodi’s remains and to identify her killer.

8.0 Introduction to Fingerprints

8.1 Introduction to Fingerprints

Lab Activity – 8.1(a) Bertillon Measurements

Students will work with a partner from their CSP teams.

The **Bertillon Measurement Kit** includes the following:

- **Tape measures**
Sewing (e.g. Singer brand) – one for each pair of students
Home improvement (e.g. Stanley band) – one for each pair of students
Ensure the tape measures are long enough to accommodate taller students
- **Wall space**
The wall should have enough space for students to stand up straight with their backs against the wall so that their partners can measure their height
- **Table and chair**
Each pair of students needs one chair and enough table space to take measurements

Lab Activity – 8.1(b) 10-Print Cards and Major Case Prints

Students will work with a partner from their CSP teams.

This lab activity requires setting up fingerprinting stations. The number of stations depends on the number of students.

Each station consists of the following:

- **10-print card**
At least one for each student
- **Template – Major Case Prints**
At least one for each student (right and left hands)
See Appendix C
- **Fingerprinting stand**
One for the each station
- **Fingerprint ink**
One tube of ink
- **Fingerprint ink roller**
One for each station
- **Cardboard tube (at least 8” long)**
At least one for each fingerprinting station
It must be thick enough that it will not crush/collapse under the pressure exerted by a hand rolled across it

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Each station should be supplied with paper towels. Students also need access to a sink with soap for washing their hands.

At least two pairs of students will work at the same station at the same time. One pair will roll 10-print cards and the other pair will document major case prints.

Lab Activity – 8.1(c) Identifying Fingerprint Patterns

Students will work individually.

The **Identifying Fingerprint Patterns Kit** includes the following:

- Colored pencil or pen
One for each student
Colors like red and blue show up more easily on the latent prints
- Fingerprint magnifier
Optional: One for each student
- Ridge counter
Optional: One for each student

8.2 Introduction to Latent Prints

Lab Activity – 8.2 Collecting Latent Fingerprints

Students will work with a partner from their CSP teams.

This lab activity requires the following supplies:

- Evidence Locker
See Appendix B
- Items of packaged evidence
Each pair of students needs at least five
Collected during Lab Activity 2.6
Items of evidence should have several types of surfaces (e.g. plastic; metal; tile; etc.) from which to process and collect latent prints
Each piece of packaged evidence should have a *Chain of Custody Log* attached
- Disposable gloves
At least one pair for each student
Various sizes
- Table/desk covering
Used to cover tables/desks for easier clean up
White butcher paper works best, but plastic tablecloths will serve the same purpose

The **Collecting Latent Fingerprints Kit** contains the following:

- Fingerprint powder
One container for every pair or group of students
Black powder is ideal and used most frequently in case work
Additional/Optional: dual use (gray/black or silver) and magnetic powders
- Fingerprint powder brush
At least one for every two students
Each type of powder needs a different brush to avoid contamination and mixing of powders
A magnetic wand is necessary for magnetic powder

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- Fingerprint lifting tape (with dispenser)
At least one for every pair or group of students
Alternative: clear packing tape (thinner, and does not work as well)
- Blank white index cards (3" x 5")
At least 10 cards for each student
Each latent print requires a separate card

NOTE: Fingerprint powder is extremely messy. Fingerprint brushes are fragile.

8.3 Examining Fingerprints: ACE-V Methodology

Lab Activity – 8.3(a) Known and Unknown Fingerprint Comparisons

Students will work individually.

The **Fingerprint Comparisons Kit** includes the following:

- Fingerprint magnifier
One for each student
- Ridge counter
One for each student
- Colored pencils or pens
One for each student
Used to mark on prints during examination
Colors like red and blue show up more easily on the prints

NOTE: Due to the nature of the lab activity, students may become frustrated. You may consider counting it for a completion grade only, or you may grade the worksheets based on the students' responses to the Review Questions.

Lab Activity – 8.3(b) Catching Killers: Fingerprints

Students will work individually.

This lab activity requires the Smithsonian Channel's *Catching Killers: Fingerprints* video.

The 46-minute video *Catching Killers: Fingerprints* examines two cases: the 1892 death of Francisca Rojas and the mid-1980s serial offender Richard Ramirez, also known as the L.A. Night Stalker.

9.0 Introduction to Firearm and Toolmark Analysis

9.1 Introduction to Firearm & Toolmark Analysis

Lab Activity – 9.1 Catching Killers: Smoking Guns

Students will work individually.

This lab activity requires the Smithsonian Channel's *Catching Killers: Smoking Guns* video.

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The 46-minute video *Catching Killers: Smoking Guns* examines two cases: the murders of Charles Phelps and Margaret Walcott (1915) and the Washington D.C. Beltway Snipers, John Allen Mohammad and Lee Boyd Malvo (2002).

10.0 Introduction to Serology and DNA Analysis

10.1 Introduction to Serology and DNA Analysis

Lab Activity – 10.1(b) Solved: Extreme Forensics, “Running for Her Life”

Students will work individually.

This lab activity requires the *Solved: Extreme Forensics, “Running for Her Life”* video.

The first 23 minutes of the video *Solved: Extreme Forensics, “Running for Her Life”* examines the 1991 death of 15-year-old Jessica Keen, which was a cold case for almost two decades before advances in DNA technology allowed investigators to identify her killer.

11.0 Introduction to Bloodstain Pattern Analysis

11.1 Introduction to Bloodstain Pattern Analysis

Lab Activity – 11.1(b) Catching Killers: Blood Spatter

Students will work individually.

This lab activity requires the Smithsonian Channel’s *Catching Killers: Blood Spatter* video.

The 46-minute video *Catching Killers: Blood Spatter* examines two historical cases: the 1954 murder of Marilyn Sheppard and the 1995 death of Ron Rudin.

12.0 Introduction to Forensic Chemistry

12.1 Introduction to Forensic Chemistry

Lab Activity – 12.1 Catching Killers: Proving Poison

Students will work individually.

This lab activity requires the Smithsonian Channel’s *Catching Killers: Proving Poison* video.

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The 46-minute video *Catching Killers: Proving Poison* examines two historical cases: the 1840 death of Charles LaFarge and the serial murders committed by Michael Swango (circa 1993).

13.0 Introduction to Death Investigation

13.1 Introduction to Death Investigation

Lab Activity – 13.1(a) Catching Killers: Cause of Death

Students will work individually.

This lab activity requires the Smithsonian Channel's *Catching Killers: Cause of Death* video.

The 46-minute video *Catching Killers: Cause of Death* examines two historical cases: the case of the serial murders committed by John Lloyd/George Smith and Donald Harvey (circa 1987).

Lab Activity – 13.1(b) Catching Killers: Skeletal Secrets

Students will work individually.

This lab activity requires the Smithsonian Channel's *Catching Killers: Skeletal Secrets* video.

The 46-minute video *Catching Killers: Cause of Death* examines two historical cases: the death of Louisa Leugert (1897) and the serial murders committed by John Wayne Gacy (1970s).

APPENDIX B

MOCK CRIME SCENE AND CRIME SCENE PROCESSING MATERIALS

CRIME SCENE EVIDENCE

Below is a list of suggested items for use as evidence in a mock crime scene. The list is not exclusive. Feel free to be creative, and remember that anything has the potential to be evidence.

When selecting items to use as evidence, be sure to consider the category/categories to which each item belongs. One item can fall into multiple categories (e.g. a soda can could provide DNA and fingerprint evidence) or can count as multiple pieces of evidence (e.g. the DNA and the fingerprints found on the soda can are separate evidence).

There should be at least one piece of evidence per student, although a larger quantity of items of evidence is more beneficial. Damaging the items of evidence (e.g. making cuts in a t-shirt, carefully breaking a dish, leaving toolmarks on a surface; etc.) will add an additional element to the scene.

TYPE OF EVIDENCE	INSTRUCTIONS	CATEGORIES
Clothing and fabric items	Use the items “as is” or contaminate an item with paint, ink, etc. <i>Examples:</i> Shirts; pants; jeans; underwear; hats; ties; gloves; scarves; wallets; purses; blankets; etc.	Chemical; DNA; Serology; Trace
Correspondence	<i>Examples:</i> Cards; letters; postcards; etc.	DNA; Fingerprints; Questioned documents (QDs)
Currency	Only use play/toy money, realistic or fake (like Monopoly money). <i>Examples:</i> coins; bills; checks; etc.	Chemical; Fingerprints; QDs
Dishes	<i>Examples:</i> Cups; mugs; plates; glasses; etc.	DNA; Fingerprints; Trace (fracture matching)
Duct tape (w/ torn edges)	Keep the piece of tape torn from the roll, which can be used as a separate piece of evidence, either on its own or attached to something else.	Chemical; Trace
Electronic equipment	Use old, nonfunctioning items or purchase display models. <i>Examples:</i> Cell phones; telephones; gaming systems; etc.	Digital; DNA; Fingerprints

TYPE OF EVIDENCE	INSTRUCTIONS	CATEGORIES
Jewelry	<p>Only use costume jewelry.</p> <p><i>Examples:</i> rings; necklaces; bracelets; earrings; etc.</p>	DNA; Fingerprints
Shoes and shoeprints	<p>Create shoe impressions at a crime scene by spilling soil, baby powder, etc. on the floor and stepping in it to leave a positive and/or negative impression.</p> <p>Alternatively, fill a shoebox with soil and step in it to create a 3D impression.</p>	Impressions; Toolmark (on sole of shoe); Trace
Soil samples	<p><i>Examples:</i> potting soil; red clay dirt; gravel; etc.</p>	Trace; Chemical; Biological
Tools	<p><i>Examples:</i> Hammer; screwdriver; wrench; pliers; etc.</p>	Toolmark; Impressions; Fingerprint; DNA
Unknown substances	<p>Fill a small sealable bag with a substance. Make sure to label the bags with something like “Forensic Science Class” to avoid having someone mistake the substance for an illegal drug, etc.</p> <p><i>Examples:</i> tea leaves; sugar; baking soda; etc.</p>	Chemical; Fingerprints; Trace
Writing tools:	<p><i>Examples:</i> Pens; pencils; markers; etc.</p>	Chemical; DNA; Odontology (bitemarks); QDs

CRIME SCENE PROCESSING MATERIALS

ITEMS	LESSON	INSTRUCTIONS
Mock crime scene materials	Items used in all Crime Scene Processing lab activities 2.1 Crime Scene Observations 2.2 Narrative Descriptions of a Crime Scene 2.3 Crime Scene Search Patterns 2.4 Crime Scene Photography 2.5 Sketching and Diagramming a Crime Scene	<ul style="list-style-type: none"> • Items of evidence See “Crime Scene Evidence” table on pages 76 - 77 • Crime scene barrier tape Used to identify and mark off the perimeters of the scene • Disposable gloves At least one pair for each student Various sizes • Clipboard Optional: One for each student or pair of students • Coveralls or lab coats Optional: One for each student • Shoe covers Optional: One pair for each student • Template – Crime Scene Control Log One for each crime scene location with enough pages to accommodate all students signing in and out <p>No additional mock crime scene materials.</p> <p>No additional mock crime scene materials.</p> <ul style="list-style-type: none"> • Evidence markers and flags Purchased or hand-made <ul style="list-style-type: none"> • Evidence markers and flags Purchased or hand-made <ul style="list-style-type: none"> • No additional mock crime scene materials.

ITEMS	LESSON	INSTRUCTIONS
	2.6 Collecting and Preserving Forensic Evidence	<ul style="list-style-type: none"> Evidence markers and flags Purchased or hand-made Evidence locker See instructions on page 90
Evidence packaging materials	2.6 Collecting and Preserving Forensic Evidence	<ul style="list-style-type: none"> Brown paper sacks/bags Various sizes Coin envelopes Used to collect trace Evidence tape Used to seal packaging Black Sharpies Used to label evidence packaging Template – Chain of Custody Log One for each packaged item of evidence See Appendix C

EVIDENCE LOCKER

The Evidence Locker is a secure container used to store packaged items of evidence. This container could be anything from a foot locker storage trunk to a filing cabinet as long as it has the capability to be locked. Having a lock is essential to preserving the chain of custody for the items of evidence. The number of containers necessary depends on the size of the container and the size and quantity of packaged items of evidence to be stored in it.

APPENDIX C

TEMPLATES

Crime Scene Control Log

Photo ID Card

Photo Log

Chain of Custody Log

Major Case Prints

PAGE ____ OF ____

CRIME SCENE CONTROL LOG

DATE:	CASE TITLE/NUMBER:
LAB EXERCISE:	
LOCATION:	
OFFICER MAINTAINING LOG:	

DATE	NAME (PRINT) & AGENCY	SIGNATURE	PURPOSE	TIME IN	TIME OUT

PHOTO I.D. CARD	
CASE #/LAB ACTIVITY:	
PHOTOGRAPHER:	DATE/TIME:
LOCATION:	
CAMERA INFORMATION:	DIGITAL CARD ID:
ADDITIONAL NOTES:	

ATTACH FORM TO EVIDENCE PACKAGING

PAGE 1 OF ____

CHAIN OF CUSTODY LOG

EVIDENCE ITEM #:		
DESCRIPTION OF EVIDENCE:		
DATE:	TIME:	LOCATION:
COLLECTED BY:		
DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)
DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)
DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

ATTACH FORM TO EVIDENCE PACKAGING

PAGE 2 OF ____

DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

DATE:	TIME:	REASON:
RELEASED BY: (PRINT AND SIGN NAME)		RECEIVED BY: (PRINT AND SIGN NAME)

MAJOR CASE PRINTS – RIGHT HAND	
Name of Arrestee (print and sign):	
Recording Officer (print and sign):	
Arresting Agency:	Date and Time:
Additional Notes:	

MAJOR CASE PRINTS – LEFT HAND	
Name of Arrestee (print and sign):	
Recording Officer (print and sign):	
Arresting Agency:	Date and Time:
Additional Notes:	