



SCI 285/ CJS 285: HYBRID + ACCELERATED
Forensic Science with Laboratory: 4 credits (CRN: 1404)
Middlesex Community College
Course Syllabus



TIME: Spring 2019 HYBRID: Friday and Saturday Lab Course
CRN 3399 Friday: Lab 5:30 pm – 8:30 pm – Wheaton Hall 221
Saturday: Lab 8:30 am – 12:00 pm – Wheaton Hall 221

PLACE: Room 221 Wheaton Hall (Lab)

INSTRUCTOR: Professor Rebecca Rist-Brown
Email: ristbrown@mxcc.edu
Phone: 860-343-5849
Office Location: Snow 508
Office Hours: Tuesday and Thursday 9:30 AM – 11:00 AM and 12:30-2:00pm

E-Mail: Please contact me through Blackboard messaging.
If Blackboard is down email: ristbrown@mxcc.edu

COURSE PREREQUISITES: CJS*101 with a grade of “C-” or better, AND ENG*101-ALP, [ENG*101E](#),
or [ENG*101](#) with a grade of “C-” or better.

TEXT: Saferstein, R. (2019) *Forensic Science* 4th Edition. Pearson.
ISBN-13: 9780134806112

I. COURSE OBJECTIVES:

A study of how the disciplines of Biology, Chemistry, Earth Science, Physical Science, and Physics meld to form the field of Forensic Science. The course will focus on developing the scientific vocabulary necessary for investigators to communicate with scientists. This course is meant to assist students who are pursuing a career in criminal justice. Emphasis of the course is placed on scientific analysis of data rather than detective work. Students will learn to appreciate how the major fields of science are utilized in solving crimes. The laboratory component will provide hands-on opportunities to integrate scientific methodology as it relates to criminal justice and the limitations of scientific testing.

II. SPECIFIC LEARNING OUTCOMES:

Lecture:

- Develop a working scientific vocabulary for investigators to effectively communicate with scientists.
- Understand the integration of scientific methodology as it relates to criminal justice and the limitations of scientific testing
- Become familiar with equipment and techniques utilized in organic and inorganic analysis.
- Be knowledgeable of information that can be obtained through biological testing.
- Understand the principles of physics and how they are used in crime scene reconstruction.

Laboratory:

- Appreciate the importance of the scientific method and proper data collection.
- Understand what happens to physical evidence when it is sent to the laboratory and recognize the importance of proper collection techniques.
- Become familiar with basic laboratory practices and understand how to effectively communicate with forensic scientists and laboratory personnel.
- Recognize the factors that can contribute to unintentional destruction or contamination of evidence, which can impede further laboratory testing.
- Appreciate the limitation of scientific testing within the laboratory.

III. COURSE REQUIREMENTS- OVERVIEW:

1. Course materials will be delivered via Blackboard and will enable student to complete their academic work in a flexible manner, completely online. The course is broken down into five weeks: Week #1: Chapters #1-#4, Week #2: Chapters #5-#7, Week #3: Chapter #8-#10. Week #4: Chapters #11-#14, and Week #5: Chapters #15-17 and the Laboratory Practical.
2. The “lectures” for this course consists of PowerPoint presentations with an audio component. PowerPoint presentations will be posted on Blackboard for students to access in the corresponding weekly folder. It is **strongly recommended** that students read the PowerPoints and textbook as well as listen to the audio lectures. Students should print the chapter PowerPoints prior to listening to the audio lectures and take notes as they listen to each “lecture.”
3. You must contact the instructor **in advance** if you have a good reason to miss a lab, assignment, or exam. **Only students with a prearranged absence will be permitted to make up assignments or exams.** Labs cannot be made up.
4. Reading assignments must be completed prior to taking exams.
5. Assignments must be turned in on time. **Late work will not be accepted.** Instructor reserves the right to modify this rule only in exceptional cases. All labs are due at the end of the lab session
6. Your grade is the calculation of points earned and total possible points based on the results of:

| | | |
|---------------------------|---|-------------------|
| Five Exams | (100 points each) | 500 Total |
| Lab Reports – Points Vary | (points vary – in brackets on Lab Schedule) | 300 Total |
| Lab Practical | (150 points) | 150 Points |
| Syllabus Quiz | (25 points) | 025 Points |
| Introduction Post | (10 points) | 010 Points bonus |
| Professionalism | (25 points) | <u>025 Points</u> |

Total: 1000 Points

IV. IMPORTANT DATES: SUBJECT TO CHANGE

| | | |
|-------|-----------|--|
| 01/30 | Wednesday | Introduction Post and Syllabus Quiz Due |
| 02/03 | Sunday | Exam #1: Chapters #1 - #4 |
| 02/10 | Sunday | Exam #2: Chapters #5- #7 |
| 02/17 | Sunday | Exam #3: Chapters #8-#10 |
| 02/24 | Sunday | Exam #4: Chapters #11-#14 |
| 03/03 | Sunday | Exam #5: Chapters #15-#17 and Lab Practical Assignment |

V. COURSE REQUIREMENTS- LABORATORY:

1. Attendance is taken every lab period. Be on time and only leave lab after checking with me. Instructor reserves the right to deny admittance for a student who is late and misses lab instructions.
2. Students must come to class prepared to perform the laboratory exercises assigned for that day. Students **MUST** read the laboratory instructions prior to starting the lab. Laboratory instructions are posted on the Blackboard shell.
3. Labs will be reviewed prior to the start of lab.
4. All data will be collected during the lab period. While students will work in groups, it is expected that each student will participate in every aspect of the lab procedure and will complete their own lab assignment. All data will be collected and recorded into lab books during the laboratory periods. Students may not use data from other laboratory groups or students. **All labs are due at the end of class.**
5. It is expected that all students will follow all safety guidelines. Failure to follow these guidelines will result in the student being asked to leave lab for that period. If a student is asked to leave lab, the student will receive a zero for the lab.
6. **MISSED LABS CANNOT BE MADE-UP .**

7. Lab practical: The lab practical will be held during the 4th week of lab. You will be work in collaborative groups to process a mock crime scene and determine laboratory process.

VI: EXAMS:

Exams will be online with a 2.0 hour time limit.

They are a combination of multiple choice, true and false, fill in the blank, matching, and short answer. Exams are not generally cumulative, but may be semi-cumulative if necessary. Exam material comes from textbook reading, lecture material, chapter PowerPoints, or any other material posted in the Blackboard Shell.

- Exams must be completed before the deadline of 11:59 pm on the due dates. Late submissions will not be accepted.
- Please make certain to read all the chapters and complete all assignments prior to starting the exam.
- Please note that it is the student responsibility to make certain that they have a continuous internet connection for the duration of the exam. Exams will not be reset if they lose internet access during the exam. Once an exam is submitted or closed, it will not be reopened.
- **Cheating of any kind will not be tolerated and will result in a grade of “F” for the course and immediate referral to the Academic Dean for further disciplinary action.**

VII: SYLLABUS QUIZ AND STUDENT PROFESSIONALISM:

Syllabus Quiz: During the first week of class students will take a brief quiz on the syllabus and introductory material. Questions on the quiz will pertain to policies, procedures, and the general format of the course. The quiz is meant as a vehicle to test students’ understanding of the expectations for the course.

Student Professionalism: Students will be graded on their professionalism during this course. The professionalism grade is meant to reward students who are meeting or exceeding Middlesex Community College’s expectations for student behavior.

Do’s:

- Be on time and prepared for each class.
- Be courteous and respectful to your classmates.
- Help other students who may need assistance.
- Keep electronics use to a minimum (check only if emergency situation)
- Actively participate during class discussions.

Don’ts:

- Be disrespectful to the instructor, guests, or other students.
- Be involved in academic dishonesty
- Arrive late to class.
- Text and use electronic devices during class.
- Be untruthful
- Record class without permission.

VIII: CRIMINAL JUSTICE/SCIENCE GRADING SCALE:

| <u>Letter Grade:</u> | <u>Percentage:</u> | <u>Letter Grade:</u> | <u>Percentage:</u> |
|----------------------|--------------------|----------------------|--------------------|
| A | 93-100 | C | 73-76 |
| A- | 90-92 | C- | 70-72 |
| B+ | 87-89 | D+ | 67-69 |
| B | 83-86 | D | 63-66 |
| B- | 80-82 | D- | 60-62 |
| C+ | 77-79 | F | Below 60 |

IX: WITHDRAWAL:

Withdrawal: Student may withdraw from the class with a grade of “W” before the 75% completion date of the course. After that date, students will receive a “W” or an “F.” Students may withdraw from the course only after speaking with the instructor and filing all the proper paperwork. Note: The primary responsibility for initiating a withdrawal rests with the students. Withdrawal from the course is official only when initiated in writing through the Records office, all requested signatures are obtained, and the proper papers are filed with the Records Office by the indicated deadlines.

THE FINAL DAY THAT I WILL SIGN A WITHDRAWAL WILL BE FEBRUARY 22nd. No withdrawals will be signed after that point.

X: CLASS CANCELLATION AND OTHER MxCC POLICIES:

In the event of inclement weather either before the start of the day when classes are in session or during the school day, you may check for information on delayed openings, college closings, class cancellations, etc, but listing to the local radio stations and television stations. Additionally, a message will be posted on the MxCC website at www.mxcc.commnet.edu and an announcement is made on the college's main phone number (860) 343-5800. When calling the main phone number, be sure to choose option #1 from the menu for school closings. If classes are already in session, everyone on campus will be notified of any changes. Decisions to cancel classes or close the college early will be made as soon as practicable.

Additional Syllabus Information: For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather/emergency closings, and more, please go to the following website: www.mxcc.edu/catalog/syllabus-policies/

XI: ANTI-PLAGIARISM DETECTION SOFTWARE

SafeAssign, TurnItIn or other anti-plagiarism detection software products may be used in this course. Anti-plagiarism detection software products assist faculty and students in preventing and detecting plagiarism. Professors may utilize such software in order to check the originality of the academic work students submit in a course by comparing submitted papers to those contained in its database consisting of submitted papers and other sources. Anti-plagiarism detection software returns an “originality report” for each submission. The report is limited in scope to merely identifying passages that are not original to the author of the submitted work and which may include correctly cited quotations and information. Professors and students must carefully review such reports. No adverse action may be taken by a professor with respect to a student solely on the basis of an originality report which indicates the potential for plagiarism.

In this course you may be asked to submit your academic papers and other creative work containing personally identifiable information for originality reporting. By doing so, your work along with personally identifiable information will be retained in the product database and may be subsequently reported out containing your personally identifiable information not only to your professor, but also to professors of other universities and colleges within Connecticut State Colleges and Universities (CSCU) as part of subsequent originality reports.

You may decline to submit your work for originality reporting. If so, you must be provided an alternative method in which to submit your work. However, your professor, after removing your personally identifying information, may nonetheless submit limited portions of your academic work for originality reporting.

All Article Summaries will be submitted via a Safe Assign Assignment in the Blackboard Course Shell. Please note that assignments that are not submitted via Blackboard will not be accepted.

XII: IMPORTANT COLLEGE POLICIES!! PLEASE READ CAREFULLY!

For information about the college's policies and procedures regarding academic honesty, accessibility/disability services, attendance, audio-recording in the classroom, grade appeals, plagiarism, religious accommodations, weather and emergency closings, and more, please go to the following website: www.mxcc.edu/catalog/syllabus-policies/ or scan the QR code with your smart phone. Also, please become familiar with the policies regarding nondiscrimination, sexual misconduct, and general student conduct at the following website: www.mxcc.edu/nondiscrimination/.

NON-DISCRIMINATION STATEMENT

Middlesex Community College does not discriminate on the basis of race, color, religious creed, age, sex, national origin, marital status, ancestry, present or past history of mental disorder,



learning disability or physical disability, sexual orientation, gender identity and expression or genetic information in its programs and activities. In addition, the College does not discriminate in employment on the additional basis of veteran status or criminal record.

The following people have been designated to handle inquiries or complaints regarding non-discrimination policies and practices:

- Primary Title IX Coordinator
Dr. Adrienne Maslin
Dean of Students/Title IX and Section 504/ADA Coordinator
amaslin@mxcc.edu; 860-343-5759; Founders Hall Room 123
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- Primary Title IX Coordinator
Anastasia Pych
Director of Human Resources and Labor Relations
apych@mxcc.edu; 860-343-5751; Founders Hall Room 116

Disclaimer: The instructor reserves the right to amend any portion of this syllabus to meet the educational needs of the students in the course.

SCI 285: Forensic Science with Laboratory
HYBRID ACCELERATED
Spring 2019
Laboratory Schedule:

| <u>Week:</u> | <u>Dates</u> | <u>Times</u> | <u>Laboratory Topic:</u> |
|--------------|-------------------|--------------------|---|
| Week #1 | Friday 02/01 | 5:30 PM – 8:30 PM | <ul style="list-style-type: none"> ▪ Introduction to lab and safety Procedures ▪ Bertillion Measurement Lab (15) ▪ Crime Scene Sketch (20) |
| | Saturday 02/02 | 8:30 AM – 12:00 PM | <ul style="list-style-type: none"> ▪ Locard's Principle of Exchange (5) ▪ Microscopy 101 (20) ▪ Microscopy with Hairs, Fibers, and Paints. (20) |
| Week #2 | Friday 02/08 | 5:30 PM – 8:30 PM | <ul style="list-style-type: none"> ▪ 3 Little Pigs (35) |
| | Saturday 02/09 | 8:30 AM – 12:00 PM | <ul style="list-style-type: none"> ▪ Coroners Urine Blood Lab (15) ▪ BAC Testing Lab (15) |
| Week #3 | Friday 02/15 | 5:30 PM – 8:30 PM | <ul style="list-style-type: none"> ▪ ID Unknown Substance 1 Drug Lab (15) ▪ Analysis of Over the Counter Drugs (15) ▪ GSR and Explosive Testing (10) |
| | Saturday 02/16 | 8:30 AM – 12:00 PM | <ul style="list-style-type: none"> ▪ Bloodstain Pattern Analysis (20) ▪ Kastle Meyer Presumptive Test (10) ▪ Forensic Glow Demo ▪ Presumptive Blood Test Demo |
| Week #4 | Friday 02/22 | 5:30 PM – 8:30 PM | <ul style="list-style-type: none"> ▪ Glass Analysis Principles (15) ▪ Soil Analysis (15) |
| | Saturday 02/23 | 8:30 AM – 12:00 PM | <ul style="list-style-type: none"> ▪ Lab Practical (Mock Crime Scene) |
| Week #5 | Friday 03/01 | 5:30 PM – 8:30 PM | <ul style="list-style-type: none"> ▪ DNA Strawberry Lab (5) ▪ Dyeing for Forensics (10) ▪ ABO Typing Lab (10) |
| | Saturday 03/02 | 8:30 AM – 12:00 PM | <ul style="list-style-type: none"> ▪ Document Analysis Lab (30) |

IMPORTANT:

Labs are due at the end of lab with the exception of the lab practical assignment.
Numbers inside of the () represent the points for each laboratory assignment.

***Lecture and Laboratory Schedule may be subject to change due to extenuating circumstance or to meet the educational needs of the students in the course.**

SCI 285: Hybrid + Accelerated: Spring 2019

| | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---------|----------------------------|-------------------|-------------------|-----------------------|-------------------|------------------------|-----------------|
| | January | | | | | | |
| Week #1 | 27 | 28 | 29 | 30 | 31 | 1 | 2 |
| | Syllabus | | | Introduction Post Due | | Lab: | Lab: |
| | Intro PPT | Chapter #2 | Chapter #3 | | Chapter #4 | Lab Safety | Locard's Lab |
| | Chapter #1 | | | Syllabus Quiz Due | | Bertellion | Microscopy 101 |
| | | | | | | Crime Scene | Trace Evidence |
| | February | | | | | | |
| Week #2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | Exam #1 Due Chapters 1-4 | | | | | Lab: | Lab: |
| | | Chapter #5 | Chapter #6 | Chapter #7 | | 3 Little Pigs | Coroners Lab |
| | | | | | | | BAC Testing |
| | | | | | | | |
| Week #3 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | Exam #2 Due Chapters 5-7 | | | | | Lab: | Lab: |
| | | Chapter #8 | Chapter 9 | Chapter #10 | | GSR + Explosives | Bloostains |
| | | | | | | ID Unknown I | Kastle Myer Lab |
| | | | | | | Analysis Drugs | Luminol Demo |
| Week #4 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| | Exam #3 Due Chapters 8-10 | | | | | Lab: | Lab: |
| | | Chapter #11 | Chapter #12 | Chapter #13 | Chapter #14 | Glass Analysis | Lab Practical |
| | | | | | | Soil Analysis | |
| | | | | | | Last Day to Withdrawal | |
| Week #5 | 24 | 25 | 26 | 27 | 28 | March 1 | March 2 |
| | Exam #4 Due Chapters 11-14 | | | | | Lab: | Lab: |
| | | Practical Project | Practical Project | Practical Project | Practical Project | DNA Strawberry | Documents |
| | | Chapter #15 | Chapter #16 | Chapter #17 | | Dyeing Forensic | |
| | | | | | | ABO Tying | |
| Week #5 | March 3 | | | | | | |
| | Lab Practical Due | | | | | | |
| | Exam #5 Due Chapters 15-17 | | | | | | |
| | | | | | | | |
| | Last Day of Class | | | | | | |

Topics Covered in Forensic Science with Laboratory:

Below is a list of topics that will provide a guide for students during the semester. The students should become familiar with each of these topics. Each topic includes important concepts and vocabulary with which the students will develop competencies. Lectures will be used to present and elaborate on these topics. Readings from the text will provide the students with an introduction to these topics and a means for the student to continue their learning and as a review of the material presented in lecture.

| Chapter | Instructional Unit | Chapter Learning Objectives |
|--------------------------------|------------------------------------|--|
| Unit #1: Chapters 1 - 4 | | |
| 1 | Introduction | <ul style="list-style-type: none"> Distinguish between forensic science and criminalistics. Outline the main historical developments of forensic science. Describe the organization and services of a typical comprehensive crime laboratory in the criminal justice system. Understand what specialized forensic services, aside from the crime laboratory, are generally available to law enforcement personnel. Explain how physical evidence is analyzed and presented in the courtroom by forensic scientists, and how admissibility of evidence is determined in the courtroom. |
| 2 | Crime Scene | <ul style="list-style-type: none"> Understand procedures for and importance of properly securing the crime scene. Describe the role of the lead investigator in coordinating the crime-scene search. Describe the conditions at the crime scene that should be given particular notice. List and understand the various search patterns investigators can use to systematically search the crime scene for evidence. |
| 3 | Recording the Crime Scene | <ul style="list-style-type: none"> Describe the proper format and content of crime-scene notes. Understand the basic features of digital cameras in order to produce examination-quality photographs. Understand the basic guideline requirements for creating acceptable crime-scene photographs. Explain the importance of compositional requirements in capturing crime-scene images. Understand the use of video documentation and the benefits and concerns related to its use Describe the process and importance of creating a rough and a finished crime-scene sketch. |
| 4 | Collection of Crime-Scene Evidence | <ul style="list-style-type: none"> Define physical evidence and its common types encountered at crime scenes. Review the proper procedures for collection and packaging of physical evidence to avoid danger of contamination. Understand the steps that are typically required to maintain appropriate health and safety standards at the crime scene. Review the legal considerations at the crime scene and the implications of the Mincey and Tyler cases. |
| Unit #2: Chapters 5 - 7 | | |
| 5 | Physical Evidence | <ul style="list-style-type: none"> Review the common types of physical evidence encountered at crime scenes. Summarize the significance of physical evidence and the steps involved in its analysis. Explain the function of national databases available to forensic scientists. Describe forensic palynology and its uses. |
| 6 | Death Investigation | <ul style="list-style-type: none"> Describe the role of the forensic pathologist. Describe common causes of death. Describe the autopsy. List various categories associated with the manner of death. Describe chemical and physical changes helpful for estimating time of death. Discuss the role of the forensic anthropologist in death investigation. Describe the role of the forensic entomologist in death investigation. |
| 7 | Crime – Scene Reconstruction | <ul style="list-style-type: none"> Summarize the principles of crime-scene reconstruction and the personnel involved in reconstruction. Describe the requirements for crime scene reconstruction. Understand the processes of deductive reasoning, inductive reasoning, and falsifiability and how these processes are used to form theories. |
| Unit #3: Chapters 8-10 | | |
| 8 | Forensic Biometrics | <ul style="list-style-type: none"> List and define the various forms of biometrics and their categories. Summarize the three fundamental principles of fingerprints. Explain the primary classification system of fingerprints. Describe the concept of an automated fingerprint identification system (AFIS). Describe visible, plastic, and latent fingerprints and the techniques for developing latent fingerprints. Describe the proper procedures for preserving a developed latent fingerprint. Explain the scope of the FBI's Next Generation Identification System |

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|--------------------------------|---|---|
| 9 | Firearms, Tool Marks, and Other Impressions | <ul style="list-style-type: none"> Recognize the class and individual characteristics of firearms, bullets, and cartridge cases. Discuss the various search systems developed for the FBI and ATF. Explain the procedures and tests for determining how far a weapon was fired from a target and whether or not an individual has fired a weapon. Explain how serial numbers in firearms can be restored. Discuss the procedures adopted for the collection and preservation of firearm evidence. Explain the forensic significance of class and individual characteristics to the comparison of tool mark, footwear, and tire impressions. Discuss the preservation, lifting, casting, and comparison of impressions left at crime scene. |
| 10 | Bloodstain Pattern Analysis | <ul style="list-style-type: none"> Discuss the information that can be gained from bloodstain pattern analysis about the events involved in a violent crime, specifically regarding surface texture, directionality, and angle of impact. Describe the classifications of impact spatter patterns and the methods of determining their area of convergence and area of origin. Understand how various blood pattern types are created and which features of each pattern can be used to aid in reconstructing events at a crime scene. Describe the methods for documenting bloodstain patterns at a crime scene. |
| Unit #4: Chapters 11-14 | | |
| 11 | Drugs | <ul style="list-style-type: none"> Compare and contrast psychological and physical dependence. Name and classify the commonly abused drugs. Understand the proper collection and preservation of drug evidence. Describe the laboratory tests normally used in a routine drug identification analysis. Describe and explain the process of chromatography. Explain the difference between thin-layer chromatography and gas chromatography. Describe the utility of ultraviolet and infrared spectroscopy for the identification of organic compounds. Describe the technique of spectrophotometry and its application with respect to specific types of electromagnetic radiation, Describe the concept and utility of mass spectrometry for identification analysis. Understand the proper collection and preservation of drug evidence. |
| 12 | Forensic Toxicology | <ul style="list-style-type: none"> Explain the role of forensic toxicologists. Explain how alcohol is absorbed into the bloodstream, transported throughout the body, and eliminated by oxidation and excretion. Discuss the methods used to determine alcohol intoxication and analyze the blood for alcohol. Explain how the “implied consent” law recommended by the NHTSA addressed the constitutional issues raised against blood-alcohol laws. Describe techniques that forensic toxicologists use to isolate and identify drugs and poisons. Understand the drug recognition expert program and how to coordinate it with a forensic toxicology result. |
| 13 | Trace Evidence I: Hair and Fibers | <ul style="list-style-type: none"> Discuss the morphology of hair, including the three phases of hair growth. Summarize the steps and considerations involved in the forensic examination of hair. Explain the proper collection of forensic hair evidence. Identify the different types of fibers. List the properties of fibers that are most useful for forensic comparisons. Describe the proper collection and preservation of fiber evidence. |
| Unit #5: Chapters 15-17 | | |
| 14 | Trace Evidence II: Paint, Glass, and Soil | <ul style="list-style-type: none"> Explain how paint is examined, collected, and preserved in the laboratory. Describe the proper collection and preservation of forensic glass evidence. Describe the processes in forensic soil analysis and the proper collection of soil evidence |
| 15 | Biological Stain Analysis: DNA | <ul style="list-style-type: none"> Explain the concept of antigen-antibody interactions and how it is applied to species identification and drug identification. Describe forensic tests used to characterize a stain as blood. Summarize the laboratory tests necessary to characterize seminal stains. Describe the collection and analysis of physical evidence in a rape investigation. Explain how the amino acid sequence in a protein chain is determined by the structure of DNA. Explain the forensic significance of the PCR technique, STR analysis, and electrophoresis. |

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|----|--|---|
| 16 | Forensic Aspects of Fire and Explosion Investigation | <ul style="list-style-type: none"> ▪ Explain the chemical reactions that initiate and sustain fire. ▪ Recognize how to locate the fire's origin along with telltale signs of an accelerant-initiated fire. ▪ Describe how to collect physical evidence at the scene of a suspected arson. ▪ Describe laboratory procedures used to detect and identify hydrocarbon residues. ▪ Explain the chemical reactions that occur during an explosion. ▪ Describe how to collect physical evidence at the scene of an explosion and the procedures for analysis. |
| 17 | Document Examination | <ul style="list-style-type: none"> ▪ Define the term <i>questioned document</i>. ▪ Explain the factors considered when comparing variations in handwriting and the challenges associated with it. ▪ Recognize some of the class and individual characteristics of printers and photocopiers. ▪ List some of the techniques document examiners use to uncover alterations, erasures, and obliterations. ▪ Summarize some of the problems document examiners face regarding indented writings and ink and paper comparisons. |