

**ITT Technical Institute**

**CJ1470**

**Criminalistics**

**Onsite Course**

# **SYLLABUS**

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**Credit hours:** 4.5

**Contact/Instructional hours:** 56 (34 Theory Hours, 22 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisite: CJ1320 Investigations or equivalent

**Course Description:**

This course introduces modern methods used to examine and investigate evidence.

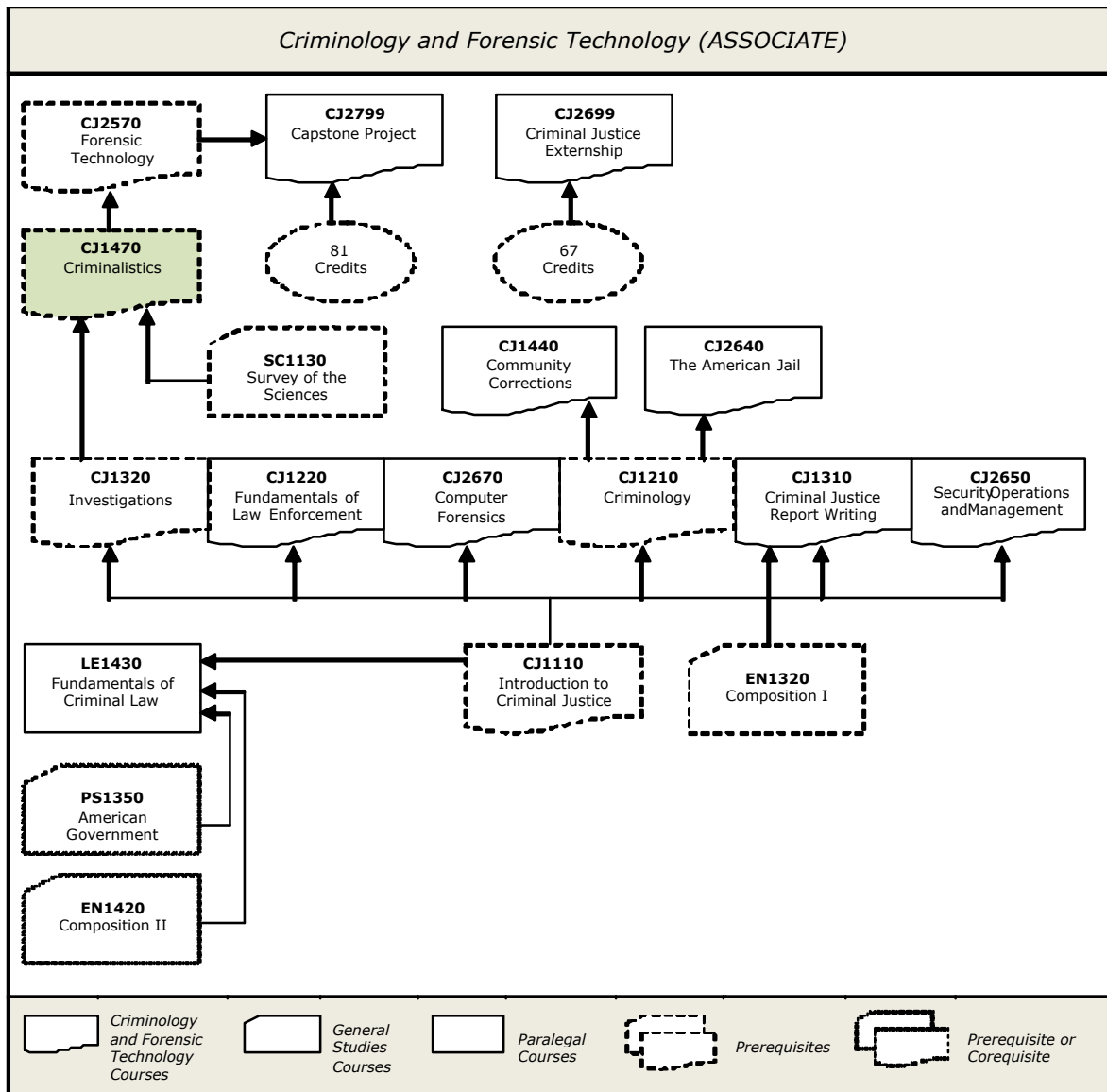
This course includes problem sets and a laboratory component.

## Where Does This Course Belong?

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This course is offered in the Criminology and Forensic Technology associate degree program in the School of Criminal Justice. The Criminology Forensic Technology degree from ITT Technical Institute helps to prepare students for meaningful careers as a private investigator, detention officer, corrections officer, crime scene technician, crime scene investigator, loss prevention specialist, and other areas of the criminal justice system primarily in five main areas: (1) Law Enforcement, (2) Adjudication, (3) Corrections, (4) Forensics, and (5) Security. Depending on each agency and organization's special requirements and selection process, careers in Criminal Justice may be pursued at four levels: local, state, federal, and private.

The following diagram demonstrates how this course fits in the program.



## Course Summary

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### Course Description

This course introduces modern methods used to examine and investigate evidence. This course includes problem sets and a laboratory component.

### Major Instructional Areas

1. Locating, collecting, and preserving evidence
2. Documenting the evidence recovery, location, and disposition of results
3. Types of fingerprints, classification versus identification of fingerprints, and the proper techniques for lifting fingerprints
4. Proper documentation of a crime scene including sketching the scene of a crime
5. The roles of a forensic scientist

### Course Objectives

1. Define and distinguish forensic science and criminalities.
2. Define physical evidence, and review the common types of physical evidence encountered at crime scenes.
3. Discuss the responsibilities of the first officer/responder who arrives at a crime scene.
4. Understand the differences between qualitative and quantitative analysis.
5. Describe the usefulness of trace elements for forensic comparison of various types of physical evidence.
6. Make a cast of a shoe, tire, and/or a tool.
7. Name and classify the commonly abused drugs.
8. List and describe the forensic tests used to characterize a bloodstain pattern analysis.
9. Apply the steps for locating and recovering latent fingerprints and compare fingerprints using an AFIS station scenario.
10. Identify and classify your own fingerprints and roll inked impressions.
11. Use SmartDraw to complete a sketch of a crime scene.
12. Explain how alcohol is absorbed into the bloodstream, transported throughout the body, and eliminated by oxidation and excretion.
13. Explain the proper collection of hair, fiber, and trace evidence.
14. Describe how to collect physical evidence at the scene of a suspected arson.
15. Identify the laboratory tests for determining whether an individual has fired a weapon.
16. Describe how e-mails, chat, and instant messages on the Internet can be traced and recovered.
17. Use the ITT Tech Virtual Library resources to research topics related to criminalistics.

## Learning Materials and References

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### Required Resources

Textbook Package	New to This Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Saferstein, R. (2011). <i>Criminalistics: An introduction to</i>	■		

<i>forensic science</i> (10 <sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.			
Meloan, Saferstein, & Brettell. (2011). <i>Lab manual for criminalistics: An introduction to forensic science</i> (10 <sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.	■		
Onsite Lab Kit		■	
Saferstein's Virtual Forensic Science Lab	■		
<b>Other Items</b>	<b>New to This Course</b>	<b>Carried over from Previous Course(s)</b>	<b>Required for Subsequent Course(s)</b>
Identikit (Web-based software application)		■	
Autodesk Crisis Command (Web-based software application)	■		
Automated Fingerprint Identification System (AFIS)		■	
Microscope	■		
Digital camera		■	
Cyanoacrylate fuming chamber	■		
Alternate light source	■		
DNA Kit	■		
Student Kit		■	
Drug Kit	■		

## Recommended Resources

### Books, Professional Journals

- Fisher, B.A.J. (2003). *Techniques of crime scene investigation*. (7<sup>th</sup> ed.). Boca Raton, FL: CRC Press.
- Lyman, M.D. (2003). *Criminal investigation: The art and the science*. (3<sup>rd</sup> ed.). Upper Saddle River, NJ: Prentice Hall.
- Platt, R. (2003). *Crime scene: The ultimate guide to forensic science*. New York, NY: DK Publishing.
- Police: The Law Enforcement Magazine—<http://www.policemag.com/mstore/index.com>
- Law and Order Magazine—[www.lawandordermag.com](http://www.lawandordermag.com)
- Forensic Focus—[www.forensicfocusmag.com](http://www.forensicfocusmag.com)

### ITT Tech Virtual Library (accessed via Student Portal)

- ITT Tech Virtual Library:  
<http://myportal.itt-tech.edu/library/Pages/HomePage.aspx>

### Other References

- Crime Scene: Examine the Evidence and Solve the Case  
[www.crimescene.com](http://www.crimescene.com)  
Practice investigative techniques and use your knowledge of criminalistics and forensics to solve a fictitious case. (Accessed 8/26/11)
- FBI Handbook of Forensic Services  
<http://www.fbi.gov/about-us/lab/handbook-of-forensic-services-pdf>

FBI resource guide for submitting and examining evidence, crimes scene safety and crime scene searches. (Accessed 8/26/11)

- Forensic Science Resources  
<http://www.tncrimlaw.com/forensic>  
Bibliography and reference guide to the forensic sciences books. (Accessed 8/26/11)
- Crimes and Clues: The Art and Science of Criminal Investigation  
[www.crimeandclues.com](http://www.crimeandclues.com)  
Explore techniques for conducting criminal investigations. (Accessed 8/26/11)
- Forensic Entomology  
[www.forensic-entomology.com](http://www.forensic-entomology.com)  
Explore the use of insects in criminal investigations. (Accessed 8/26/11)
- National Institute of Justice: Law Enforcement Investigations  
<http://www.nij.gov/topics/law-enforcement/investigations/welcome.htm>  
Comprehensive resource site for law enforcement investigations including crime scene guides, eyewitness identification, unanalyzed evidence and crime mapping. (Accessed 8/26/11)

## Information Search

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

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- Expert witness
- Locard's exchange principle
- Scientific method
- Buccal swab
- Chain of custody
- Finished sketch
- Physical evidence

- Rough sketch
- Standard/Reference sample
- Substrate control
- Algor mortis
- Autopsy
- Class characteristics
- Comparison
- Identification
- Individual characteristics
- Livor mortis
- Product rule
- Rigor mortis
- Chemical property
- Line spectrum
- Gamma ray
- Binocular
- Depth of focus
- Anabolic steroids
- analgesic
- Confirmation
- Depressant
- Hallucinogen
- Stimulant
- pH scale
- Antigen
- Antibody
- Acid phosphatase
- Mitochondria
- Angle of impact
- Area of Convergence
- Area of Origin
- Back spatter
- Forward spatter
- Smokeless powder
- Secondary explosive
- Superglue fuming
- Greiss test
- Infrared luminescence
- Forensics
- Investigations
- Cyber crime
- Terrorism
- Crime scene
- Document examination
- Fingerprints
- Drugs
- Serology
- Toxicology
- Evidence collection
- Chromatography
- DNA evidence

NOTE: All links are subject to change without prior notice.

## Course Plan

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### Suggested Learning Approach

In this course, you study individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

DO	DON'T
<ul style="list-style-type: none"><li>▪ Do take a proactive learning approach.</li><li>▪ Do share your thoughts on critical issues and potential problem solutions.</li><li>▪ Do plan your course work in advance.</li><li>▪ Do explore a variety of learning resources in addition to the textbook.</li><li>▪ Do offer relevant examples from your experience.</li><li>▪ Do make an effort to understand different points of view.</li><li>▪ Do connect concepts explored in this course to real-life professional situations and your own experiences.</li></ul>	<ul style="list-style-type: none"><li>▪ Don't assume there is only one correct answer to a question.</li><li>▪ Don't be afraid to share your perspective on the issues analyzed in the course.</li><li>▪ Don't be negative about the points of view that are different from yours.</li><li>▪ Don't underestimate the impact of collaboration on your learning.</li><li>▪ Don't limit your course experience to reading the textbook.</li><li>▪ Don't postpone your work on the course deliverables; work on small assignment components every day.</li></ul>



## Course Outline

<p><b>Unit 1: INTRODUCTION TO CRIMINALISTICS AND THE CRIME SCENE</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Discern between forensic science and criminalistics based on their characteristics.</li> <li>• List the specialized forensic services, aside from the crime laboratory, which are generally available to law enforcement personnel.</li> <li>• Review evidence from a crime scene and analyze it. Emphasize the importance of thorough observation and note taking at the crime scene to identify a suspect.</li> <li>• Describe proper techniques for packaging common types of physical evidence.</li> <li>• List the steps for securing and controlling a crime scene.</li> </ul>			<p><b>Out-of-class work:</b> 8-10 hours</p>
<p><b>READING ASSIGNMENT</b></p>	<p><b>GRADED ACTIVITIES / DELIVERABLES</b></p>		
	<p><b>Grading Category</b></p>	<p><b>Activity/Deliverable Title</b></p>	<p><b>Grade Allocation</b> (% of All Graded Work)</p>
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 1, pp. 3–15</li> </ul>	<p>Assignment</p>	<p>Unit 1 Assignment 1: Forensic Science Versus Criminalistics</p>	<p>5%</p>
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 2, pp. 27–50</li> </ul>	<p>Lab</p>	<p>Unit 1 Lab 1: Reviewing Crime Scene Evidence</p>	<p>3%</p>
<p><b>Unit 2: PHYSICAL EVIDENCE AND PHYSICAL PROPERTIES</b></p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>• Review the common types of physical evidence encountered at crime scenes.</li> <li>• Define crime-scene reconstruction.</li> <li>• Draw conclusions from physical evidence presented in a case study.</li> <li>• Use evidence to estimate time of death.</li> <li>• Analyze glass particles as evidence in a robbery scenario.</li> </ul>			<p><b>Out-of-Class Work:</b> 8–10 hours</p>
<p><b>READING ASSIGNMENT</b></p>	<p><b>GRADED ACTIVITIES / DELIVERABLES</b></p>		
	<p><b>Grading Category</b></p>	<p><b>Activity/Deliverable Title</b></p>	<p><b>Grade Allocation</b> (% of All Graded Work)</p>
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 3, pp. 59–72</li> </ul>	<p>Assignment</p>	<p>Unit 2 Assignment 1: Investigation and Collection</p>	<p>2%</p>
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 4, pp. 93–112</li> </ul>	<p>Lab</p>	<p>Unit 2 Lab 1: Glass Analysis Virtual Lab</p>	<p>4%</p>

<b>Unit 3: ORGANIC AND INORGANIC ANALYSIS</b>			
<p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Discern between qualitative and quantitative analysis based on their characteristics.</li> <li>Describe and explain the process of chromatography.</li> <li>Determine whether a bullet came from the same gun based on evidence found at the crime scene.</li> </ul>			<p><b>Out-of-Class Work:</b> 8–10 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 5, pp. 119–138</li> <li>Saferstein, Chapter 6, pp. 145–155</li> </ul> <p><u>Recommended Readings (not required)</u></p> <ul style="list-style-type: none"> <li>Chromatography (Simple description of chromatographic processes with diagrams) <a href="http://antoine.frostburg.edu/chem/senese/101/matter/chromatography.shtml">http://antoine.frostburg.edu/chem/senese/101/matter/chromatography.shtml</a></li> </ul>	Assignment	Unit 3 Assignment 1: Trace Elements and Forensic Composition	2%
	Lab	Unit 3 Lab 1: Chromatographic Lab	2%

<b>Unit 4: THE MICROSCOPE AND DRUGS</b>			
<p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Use a microscope to identify a real image based on characteristics.</li> <li>Compare and contrast psychological and physical dependence.</li> <li>Describe employed field sobriety tests to assess alcohol impairment.</li> </ul>			<p><b>Out-of-Class Work:</b> 8–10 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 7, pp. 165–175</li> <li>Saferstein, Chapter 8, pp. 189–208</li> </ul> <p><u>Recommended Readings (not required)</u></p> <ul style="list-style-type: none"> <li>Microscopes and Microscopy (Links to microscopy and related sciences sites) <a href="http://www.ou.edu/research/electron/mirror/">http://www.ou.edu/research/electron/mirror/</a></li> <li>Drug Testing Information (Information and links about drug testing, including how the tests work, what they test for, detection periods and test sensitivity, and legal implications) <a href="http://www.erowid.org/psychoactives/testing/testing.shtml">http://www.erowid.org/psychoactives/testing/testing.shtml</a></li> <li>Drugs.com (Extensive database of information about the use and effects of 24,000 different drugs)</li> </ul>	Assignment	Unit 4 Assignment 1: Drug Dependence	5%
	Lab	Unit 4 Lab 1: Viewing Specimens	3%

<http://www.drugs.com>

<b>Unit 5: FORENSIC TOXICOLOGY AND SEROLOGY</b>		<b>Out-of-Class Work:</b> 8–10 hours	
<p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Describe commonly employed field sobriety tests to assess alcohol impairment.</li> <li>Explain how alcohol is absorbed into the bloodstream, transported throughout the body, and eliminated by oxidation and excretion.</li> <li>List and describe forensic tests used to characterize a stain as blood.</li> <li>Describe the proper collection of physical evidence in a rape investigation.</li> <li>List the steps and regulations for operation of a breath-testing device.</li> <li>Describe the proper collection and preservation of seminal stained clothing.</li> </ul>			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 9, pp. 213–227</li> <li>Saferstein, Chapter 10, pp. 241–256</li> </ul> <p><u>Recommended Readings (not required)</u></p> <ul style="list-style-type: none"> <li>DWI Field Sobriety Testing: Fact and Fiction (Description of standards and procedures for field sobriety tests in New Jersey, as well as proposed reforms to current tests) <a href="http://www.new-jersey-dwi-defense.com/field-sobriety-testing-1.htm">http://www.new-jersey-dwi-defense.com/field-sobriety-testing-1.htm</a></li> <li>Forensic Toxicology Slide Show <a href="http://www.stfrancis.edu/ns/diab/Forensic1/Toxicology1_files/frame.htm">http://www.stfrancis.edu/ns/diab/Forensic1/Toxicology1_files/frame.htm</a></li> <li>How Breathalyzers Work (Layperson's guide to understanding how Breathalyzers detect alcohol levels) <a href="http://www.howstuffworks.com/breathalyzer.htm">http://www.howstuffworks.com/breathalyzer.htm</a></li> </ul>	Assignment	Unit 5 Assignment 1: Rape Investigation	2%
	Lab	Unit 5 Lab 1: Blood Alcohol Concentration	3%
	Quiz	Unit 5 Quiz 1	5%

<b>Unit 6: DNA AND CRIME SCENE RECONSTRUCTION/BLOODSTAIN PATTERN ANALYSIS</b>		<b>Out-of-Class Work:</b> 8-10 hours	
<p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> <li>Identify the uses for DNA computerized databases in criminal investigation.</li> <li>Describe the methods for documenting bloodstain patterns at a crime scene.</li> <li>Use a blood stain to determine the origin of a blood stain based on its characteristics.</li> <li>Describe the process of DNA replication.</li> <li>Determine the origin of blood drops in a scenario.</li> </ul>			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 11, pp. 265–281</li> <li>Saferstein, Chapter 12, pp. 297–313</li> </ul> <p><u>Recommended Readings (not required)</u></p> <ul style="list-style-type: none"> <li>DNA Evidence: What Law Enforcement</li> </ul>	Assignment	Unit 6 Assignment 1: Investigation and Collection	5%
	Lab	Unit 6 Lab 1: The Origin	3%

Officers Should Know <a href="https://www.ncjrs.gov/pdffiles1/jr000249c.pdf">https://www.ncjrs.gov/pdffiles1/jr000249c.pdf</a>		of Blood Stains	
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**Unit 7: HAIRS, FIBERS, PAINT, AND THE FORENSIC ASPECTS OF FIRE INVESTIGATION****Out-of-Class Work:**  
8-10 Hours

Upon completion of this unit, students are expected to:

- Determine the difference between animal and human hairs.
- Describe the proper collection and preservation of forensic paint evidence.
- Recognize the telltale signs of an accelerant-initiated fire.
- Identify the origin of fiber based on characteristics.
- Determine the reasons that traces of certain accelerants can be found even after intense fires.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 13, pages 321–324</li> <li>• Saferstein, Chapter 14, pages 353–365</li> </ul> <u>Recommended Readings (not required)</u> <ul style="list-style-type: none"> <li>• Forensic Science Resources: Criminalistics and Trace Evidence (Links to Web sites and print resources on trace evidence, including hair, fiber, and paint) <a href="http://www.tncrimlaw.com/forensic/f_criminalistics.html">http://www.tncrimlaw.com/forensic/f_criminalistics.html</a></li> <li>• Arson Dogs (Article about the use of K-9 units in arson investigation) <a href="http://www.workingdogs.com/doc0130.htm">http://www.workingdogs.com/doc0130.htm</a></li> </ul>	Assignment	Unit 7 Assignment 1: Collecting Physical Evidence:	2%
	Lab	Unit 7 Lab 1: Investigating Arson	3%

**Unit 8: EXPLOSIONS AND FINGERPRINTS****Out-of-Class Work:**  
8–10 hours

Upon completion of this unit, students are expected to:

- Use fingerprint powder, super glue, and other lifting materials to obtain latent fingerprints.
- Identify and classify your own fingerprints, roll inked impressions, and compare fingerprints using an AFIS station scenario.
- Classify explosives into low base versus high base.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>• Saferstein, Chapter 15, pp. 373–380</li> <li>• Saferstein, Chapter 16, pp. 389–410</li> </ul> <u>Recommended Readings (not required)</u> <ul style="list-style-type: none"> <li>• Guide for Explosion and Bombing Scene Investigation (Publication from the U.S. Dept. of Justice outlining procedures for explosion investigations) <a href="https://www.ncjrs.gov/pdffiles1/nij/181869.pdf">https://www.ncjrs.gov/pdffiles1/nij/181869.pdf</a></li> </ul>	Assignment	Unit 8 Assignment 1: Fingerprint Classification	2%
	Lab	Unit 8 Lab 1: Fingerprinting	3%
	Quiz	Unit 8 Quiz 2	5%

**Unit 9: FIREARMS, TOOL MARKS, OTHER IMPRESSIONS AND DOCUMENT****Out-of-Class**

<b>EXAMINATION</b>			<b>Work:</b> 8–10 Hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> <li>List some common field reagents used to enhance bloody footprints.</li> <li>Define the term “questioned documents.”</li> <li>Use a cast footprint to identify a footprint and compare it to others.</li> <li>Identify tool marks based on their characteristics.</li> <li>List three class characteristics of a gun barrel.</li> </ul>			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 17</li> <li>Saferstein, Chapter 18, pp. 451-462</li> </ul>	Assignment	Unit 9 Assignment 1: Forensic Document Examination	5%
	Lab	Unit 9 Lab 1: Footprint Cast	3%

<b>Unit 10: COMPUTER FORENSICS AND THE FUTURE</b>			<b>Out-of-class work:</b> 8–10 Hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> <li>List the areas of the computer that will be examined to retrieve forensic data.</li> <li>List and describe three locations where investigators may pinpoint the origin of a hacker.</li> <li>Using the ITT Tech Virtual Library, describe the possible future of criminalistics and crime laboratories.</li> </ul>			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
<ul style="list-style-type: none"> <li>Saferstein, Chapter 19, pp. 471–487</li> <li>Saferstein, Chapter 20, pp. 501–505</li> </ul> <u>Recommended Readings (not required)</u> <ul style="list-style-type: none"> <li>Computer Forensics, Cybercrime and Steganography Resources (Links to books, articles, web sites, and other resources dealing with computer forensics) <a href="http://www.forensics.nl">http://www.forensics.nl</a></li> </ul>	Lab	Unit 10 Lab 1: Email	3%
	Presentation	Unit 10 Presentation 1: The Future of Criminalistics (PORTFOLIO)	10%

<b>Unit 11: COURSE REVIEW AND FINAL EXAM</b>			<b>Out-of-class work:</b> 8–10 Hours
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of All Graded Work)
None	Exam	Final Exam	20%

## Evaluation and Grading

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### Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories.

Category	Weight
Assignment	30%
Lab	30%
Presentation	10%
Quiz	10%
Exam	20%
<b>TOTAL</b>	<b>100%</b>

### Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

## Academic Integrity

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All students must comply with the policies that regulate all forms of academic dishonesty, or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For

more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

*(End of Syllabus)*