

Montgomery County Community College
CJS 201
Introduction to Criminal Forensics (Criminalistics)
4-3-1

COURSE DESCRIPTION:

This course will familiarize students with the basic principles and uses of forensic science in the context of the American criminal justice systems. Forensic science, which is the study and application of science to legal processes, will be related to the collection, examination, evaluation and interpretation of evidence. The field of forensics encompasses many areas in both the physical and social sciences. This course will focus on the application of modern science to physical evidence collection, preservation, and analysis, which, if properly utilized, can be crucial in the resolution of social and legal disputes. This course will review and illustrate through actual laboratory demonstration, basic applications and methodologies in the biological, physical, and behavioral sciences to questions of evidence and law.

REQUISITES:*Previous Course Requirements*

- CJS 100 Introduction to Criminal Justice
- Completion of a CHE or BIO lab course prior to CJS 201 is recommended, but not required

Concurrent Course Requirements

None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Summarize the interdisciplinary nature of forensic science and indicate the vital roles of chemistry, biology, physical sciences, social sciences and medicine in crime analysis.	Assigned Readings Lectures Discussions Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
2. Define what constitutes scientific physical evidence and indicate specific applications of chemical, nuclear, spectrographic and computer analyses to such evidence.	Assigned Readings Lectures Discussions Examination of Physical Evidence Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research; Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study
3. Describe and apply appropriate instrumentation and techniques of evidence analysis to gunshots, bullets, shot shells, gunshot residue, fires and explosions, drugs, poisons, alcohol and toxic chemicals.	Assigned Readings Lectures Discussions Examination of Physical Evidence Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study
4. Describe and apply methods of analyzing and identifying fluids, hairs and fibers as to human, animal and artificial origins and cite related cases of crime solution.	Assigned Readings Lectures Discussions Examination of Physical Evidence Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
5. Describe and define how the discovery of DNA codes has affected the biochemical analysis of evidence and the enhancement of criminal identification.	Assigned Readings Lectures Discussions Examination of Physical Evidence Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study
6. Describe and apply appropriate chemical and physical tests to the analysis of evidence data from metals, paint, glass and crystalline materials, paper and clothing.	Assigned Readings Lectures Discussions Examination of Physical Evidence Laboratory Exercises Lab Workbook & Journal AV/Multimedia Materials Field Trips Directed Research Quizzes and Exams Technology Utilization (Computer and Internet) Technology Utilization (Laboratory Apparatus & Equipment)	Multiple-Choice Exam Graded Essay Graded Essay Exam Graded Laboratory Workbook Graded Research Project Individual or Group Presentation Graded Class Discussion Graded Case Study

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

SEQUENCE OF TOPICS:

1. Administration of the Course/Historical and Legal Issues
Frye, Daubert, and Kumho Tire
2. The Crime Scene and the Collection of Evidence
Criminal investigation/search for physical clues
Preservation, marking, maintaining chain of evidence
Screening of evidence: social and resource concerns

- Basic types of physical evidence/identification vs. individualization
3. Methods of Forensic Science - I
Physical properties
Glass and soil
Organic analysis
Analytical techniques - separation and identification
 4. Methods of Forensic Science - II
Inorganic analysis
Emission spectroscopy, atomic absorption, neutron activation
Microscopy - five basic light microscopes
Scanning electron microscopy/x-ray analyzer
 5. Trace Evidence: Hairs, Fibers, Paint
The exchange principle/trace evidence
Hairs and fibers
Paint
Expressions of individuality
 6. Drug Identification
Major drug categories/substance of abuse
Statutory control of drugs
Analytical procedures for identification
 7. Toxicology and Pathology
Alcohol, breath testing, field sobriety tests
Identification of drugs/poisons in body fluids
Determination of cause and manner of death
Role of medical examiner/coroner
 8. Physical Anthropology and Odontology
Homicide investigations: race, age, gender, stature
Special problems posed by mass murders, disasters
Dental evidence: identification of human remains
Violent crimes and bitemarks
 9. Serology and DNA Typing
Nature of blood
Dried bloodstains, forensic characterizations
Other body fluids
DNA typing: legal challenges/issues of admissibility
 10. Fingerprints
Historical issues
Fundamental principles
Detection, preservation, development
Automated identification systems
 11. Arson, Explosions
Recovery of evidence/reconstruction of fire scene
Detection of accelerants
Explosives - detection, tagging
 12. Impressions, Firearms, and Toolmarks
Pattern, impression evidence

- Bullet and cartridge comparisons
- Toolmarks
- Gunpowder patterns, residues
- 13. Document, Voice Examination, Polygraph
- Handwriting, printing, typewriting
- Alterations, reconstruction, ink analysis
- Voice spectrograph
- Polygraph - questions of validity/legal admissibility
- 14. Psychiatry, Behavioral Sciences
- Role of the psychiatrist in the legal system
- Determination of sanity and fitness to stand trial
- Correctional psychiatry/prediction of dangerousness
- Social sciences and the civil law
- 15. Contemporary Issues and the Future of Forensic Science
- Professionalizing the field
- Certification of personnel
- Proficiency testing and quality assurance
- Ethical conflicts

Lab Demonstrations:

- Project #1: Fingerprints
- Project #2: Glass Analysis
- Project #3: Soil Analysis
- Project #4: Visible Light Microscopy
- Project #5: Hair & Fiber comparisons
- Project #6: Narcotics – Presumptive Field Reagent Tests
- Project #7: Bullets & Casings
- Project #8: Gun Shot Residue
- Project #9: Scanning Electron Microscope
- Project #10: Blood Spatters & pooling
- Project #11: Determination of Drugs in Serum
- Project #12: Spectroscopy
- Project #13: Use of Gas Chromatography in Arson Investigation
- Project #14: DNA Analysis

LEARNING MATERIALS:

Saferstein, Richard. (2016). *Criminalistics: An Introduction to Forensic Science* (11th ed.). Pearson/Prentice Hall.

Relevant instructor selected websites

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:

Prepared by: Benn Prybutok

Date: 11/2/2004

Revised by: Benn Prybutok

Date: 2/22/2013

VPAA/Provost or designee Compliance Verification:

Victoria L. Bastecki-Perez, Ed.D.

Date: 2/25/2013

Revised by: Jayden Sampson

Date: 12/16/2017

VPAA/Provost or designee Compliance Verification:

Date: 12/18/2017



This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.