

INSTRUCTORS MANUAL FOR
FORENSIC SCIENCE
An Introduction to Scientific
and Investigative Techniques
FOURTH EDITION

_____ by _____

Stuart James
Jon J. Nordby
Suzanne Bell



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An Important Message for Instructors

We at Taylor & Francis/CRC Press hope you are as excited about the ancillary package provided for *Forensic Science: An Introduction to Scientific and Investigative Techniques, 4th Edition*.

Most of what is contained in these folders is self-explanatory and easily explored. I do want to point out that we drew from some other books. For example, you will find six exercises on topics from crime scene mapping to use of a compound microscope. The books we used are listed below. If you would like to consider using the whole of any book as part of your course, please contact your sales representative.

Exercises 1 and 2: *Crime Scene Processing and Investigation Workbook* by Ramirez and Fisher, catalog number K12253

Exercises 3-6: *Forensic Science Laboratory Manual and Workbook* by Kubic and Petraco, catalog number 87193

Supplemental readings which may be assigned or used as a special lecture topic:

“A Flash in the Pan,” and “See No Evil,” from *Scientific Foundations of Crime Scene Reconstruction: Introducing Method to Mayhem* by Jon J. Nordby, catalog number 51687.

“Taphonomic Processes: Animal Scavenging,” by Pokines and Tersigni-Tarrant from *Forensic Anthropology: An Introduction*, edited by Tersigni-Tarrant and Shirley, catalog number K10846.

“Cases of Neglect Involving Entomological Evidence,” by Benecke, from *Forensic Entomology, 2nd edition*, catalog number 9215.

You will also find supplemental chapters from the prior 3rd edition of the textbook. These are provided to supplement content which may have been omitted (such as Forensic Nursing) or scaled back at the suggestion of our reviewers (Digital Photography). Similarly, we have included any photo images

from the 3rd edition that were eliminated for the sake of providing a more concise text.

Becky Masterman

Senior Acquisitions Editor

Taylor & Francis

Becky.masterman@taylorandfrancis.com

Section 1 Setting the Stage
Chapter 1 Justice and Science
(Total Questions: 25)

Multiple Choice (20-30)

1. What were the scientists responsible for the early discoveries in forensic science considered due to the fact that they worked in many forensic disciplines?
 - a. Specialists
 - b. Generalists*
 - c. Chemists
 - d. Examiners
2. Who is the author of the first comprehensive book on hair analysis, *The Hair of Man and Animals*, published in 1910?
 - a. Alphonse Bertillon and Victor Balthazard
 - b. Calvin Goddard and Edmund Locard
 - c. Hans Gross and Alphonse Bertillon
 - d. Victor Balthazard and Marcelle Lambert*
3. Who is responsible for developing probability models, showing that fingerprints were unique?
 - a. Alphonse Bertillon
 - b. Calvin Goddard
 - c. Victor Balthazard*
 - d. Edmund Locard
4. Who is credited with developing the first classification system for fingerprints?
 - a. Charles Darwin
 - b. Sir Francis Galton*
 - c. Edmund Locard
 - d. Mathieu Orfila
5. Who is credited with establishing scientific examination of firearms in the United States?
 - a. Calvin Goddard*
 - b. Edmund Locard
 - c. Mathieu Orfila
 - d. Victor Balthazard
6. Who coined the term Criminalistics?
 - a. Hans Gross*
 - b. Sir Francis Galton
 - c. Edmund Locard
 - d. Mathieu Orfila
7. What is the English translation of the first forensic science textbook, published in 1893?
 - a. Forensic Science the Beginning

- b. Criminal Investigation*
 - c. Kriminologie
 - d. Forensic Science
8. What was Edmund Locard's main interest in forensic science?
- a. Chemistry
 - b. Biology
 - c. Trace Evidence*
 - d. Toxicology
9. Who is considered the father of forensic toxicology?
- a. Hans Gross
 - b. Sir Francis Galton
 - c. Edmund Locard
 - d. Mathieu Orfila*
10. What term describes when a laboratory has agreed to operate according to a professional or industry standard and has proven that it can and does operate this way?
- a. Accreditation*
 - b. Certification
 - c. Attestation
 - d. Quality Assurance
11. How is an experts qualification to testify established?
- a. Direct Examination
 - b. Cross Examination
 - c. Voir Dire*
 - d. Re-cross Examination

True False (10-)

1. Forensic science has moved more towards a generalists model in which forensic scientists work in various disciplines.
 - a. True
 - b. False* (Forensic science has moved towards a specialist model in which a forensic scientist specializes)
2. Anthropometry remained widely used into the early 1900's when fingerprints began to replace it.
 - a. True*
 - b. False
3. A space for fingerprints was not included on the data cards used in the early systematic method for identification of suspects and criminals?
 - a. True
 - b. False*
4. Sherlock Holmes stories were not influential or inspirational to pioneers of forensic science due to their lack of realism to the actual field of forensic science.
 - a. True

- b. False*
- 5. Locard's Exchange Principle, "every contact leaves a trace", is not an exact phrase used by Locard; it has been evolved from his writings and studies.
 - a. True*
 - b. False
- 6. Forensic scientists can only testify in criminal action suits and for the prosecution.
 - a. True
 - b. False* (Forensic scientists can testify in either type of legal action)
- 7. The difference of opinion between two experts indicates that one of the experts is unethical.
 - a. True
 - b. False*

Multiple Response (5-10)

1. What is the systematic method for identification of suspects and criminals; not based on fingerprints?
 - a. Anthropometry*
 - b. Angiopometry
 - c. Bertillonage*
 - d. Berttonage
2. Who is considered the trier-of-fact?
 - a. Judge*
 - b. Jury*
 - c. Lawyer
 - d. Forensic Scientist
3. What are the types of examination involved in a court hearing?
 - a. Direct*
 - b. Indirect
 - c. Cross*
 - d. Re-cross*

Matching (3-5)

1. a. Sir Francis Galton = *Finger Prints*, 1892
 b. Victor Balthazard = *The Hair of Man and Animals*, 1910
 c. Hans Gross = Criminal Investigation/Kriminologie
 d. Sir Arthur Doyle = Sherlock Holmes
2. a. Laboratories funded by governments such as states, counties, and cities = Public Laboratories
 b. Businesses that are designed to make a profit = Private Laboratories
3. a. A laboratory has agreed to operate according to a professional or

industry standard and has proven that it can and does operate this way = Accreditation

- b. A forensic scientist has completed a written test covering his or her discipline and that the analyst participates in yearly proficiency testing to insure that their laboratory methods and techniques are sound = Certification
- 4.
- a. Between individuals or parties = Civil Law
 - b. Violation of criminal laws and involve the government as the charging individual = Criminal
 - c. The party that files the criminal charges = Prosecution
 - d. The party that files the civil action charges = Plaintiff
 - e. The party that is under the accusations = Defendant

Section 1 Setting the Stage
Chapter 2 Evidence: Origins, Types, and Admissibility
(Total Questions:26)

Multiple Choice (20-30)

1. What is considered court approved information that is used to determine a defendant's guilt or innocence?
 - a. Expert Testimony
 - b. Eye-Witness Testimony
 - c. Evidence*
 - d. Rules of Evidence
2. Admissibility or inadmissibility of trial information is determined by the application of what?
 - a. Expert Testimony
 - b. Eye-Witness Testimony
 - c. Evidence
 - d. Rules of Evidence*
3. What is the goal of generating forensic evidence from the gathered information?
 - a. Establishing material facts before or at trial*
 - b. Admissibility of evidence
 - c. Demonstrate technological advances within the field
 - d. Incarcerate defendants
4. What must admissible evidence be?
 - a. Reliable and relevant*
 - b. Testimonial evidence
 - c. Expert approved
 - d. Jury approved
5. What jurisdiction do the FRE apply to?
 - A. All
 - b. Federal*
 - c. State
 - d. Local
6. What name did the Daubert decision refer to the judge as?
 - a. Gatekeeper*
 - b. Trier of the fact
 - c. Plaintiff
 - d. King/Queen
7. What kind of evidence is forensic evidence considered?
 - a. Direct
 - b. Circumstantial*
 - c. Both
 - d. None of the above

8. What type of evidence comes into court and does not reference a particular suspect?
 - a. Class characteristic*
 - b. Individual characteristic
 - c. Inculpatory
 - d. Exculpatory
9. What is considered a common examination for questioned documents?
 - a. Handwriting comparisons
 - b. Alterations
 - c. Obliterations
 - d. All of the above*
10. What does the method in which a latent print it developed depend on?
 - a. The latent print
 - b. The surface
 - c. Visibility of the print
 - d. Both a and b*

True False (10-)

1. The federal rules of evidence serve as a screening function for all pieces of evidence.
 - a. True*
 - b. False
2. Testimony does not serve as a type of evidence.
 - a. True
 - b. False*
3. The federal rules of evidence are inclusionary in nature, meaning they serve to include all information presented by either side.
 - a. True
 - b. False*
4. The forensic part of forensic evidence refers to the scientific process through which facts are generated and the evidence part refers to a distinct set of procedures that are unique to the litigation process.
 - a. True*
 - b. False
5. A foundation consists of sufficiently supportive information presented to a judge to convince him/her that the proposed information has the potential to be true, and hence a jury could determine if it is or is not in fact true.
 - a. True*
 - b. False
6. Admissibility hearings do not allow new scientific test methods to be introduced as viable tools in forensic science.
 - a. True

- b. False*
- 7. The Daubert decision was one of two in the late 1990's that significantly impacted the way in which many jurisdictions addressed the admissibility of evidence.
 - a. True
 - b. False*
- 8. The criminalist is responsible to report conclusions in a timely and consistent manner and determine guilt.
 - a. True
 - b. False*

Multiple Responses (5-10)

1. Forensic science is the combination of the application of what?
 - a. Scientific Theory*
 - b. Laboratory Techniques*
 - c. Federal Rules of Evidence
 - d. Admissibility of Evidence
2. What science(s) are included in the field of forensic science?
 - a. DNA Analysis*
 - b. Anthropology*
 - c. Entomology*
 - d. Geology*
3. What disciplines associated with forensics are nontraditional in nature?
 - a. Footwear impression techniques*
 - b. DNA analysis
 - c. Fingerprint analysis*
 - d. Chemical testing
4. What must the court be assured about the methods in scientific analysis?
 - a. Scientifically acceptable*
 - b. Reliable*
 - c. Most recent methodologies
 - d. Implement the latest technological advances
5. What do the federal rule of evidence not address?
 - a. How to qualify*
 - b. Weight of qualifications*
 - c. Validity of the science or technology*
 - d. Who is considered a witness
6. What are possible conclusions based on class characteristic evidence?
 - a. Questioned sample is indistinguishable from the known standard*
 - b. Questioned sample came from the same source as the known

- standard and thus excludes all other possible sources
- c. Questioned sample does not match the known standard*
 - d. Comparison is inconclusive*

Matching (3-5)

1. Match the court decisions with their criteria.
 - a. Frye v. United States = General Acceptance
 - b. Daubert v. Merrell Dow Pharmaceuticals = Judge is the gatekeeper
 - c. G.E. v. Joiner = Relevance
 - d. Kumho Tire v. Carmichael = All experts
2. Match the scientific group with the type of evidence.
 - a. Biological evidence = human tissues or fluids
 - b. Chemical evidence = drugs, explosives, toxicological samples
 - c. Trace evidence = microscopic physical evidence
 - d. Impression evidence = footwear or tire impressions
 - e. Firearm evidence = fired bullets, cartridge casings, and shot shells
 - d. Tool mark evidence = striation-type markings