FRNSC 497
Forensic Examination of Firearms

3 Credits

Syllabus - Fall 2018
It is the responsibility of each student to carefully review this document. Its content is subject to revision without notice.

Course Info

INSTRUCTOR
Peter Diaczuk

Office: 329 Whitmore Lab
E-mail: PUD65@psu.edu
Phone: 814-865-3275
Office Hours: by appointment

LECTURE
Room TBA
Mondays 1800-2100 Hrs

Course Management
CANVAS
psu.instructure.com

CANVAS will be used for posting course material

Course Description
In this course, you will learn many of the cardinal principles and techniques of firearm examination. The necessity of a rigorous scientific approach will be stressed. Students will be introduced to:

- Firearm safety
- Historical development of firearms
- Historical development of ammunition
- Firearm design and function
- Ammunition design and function
- Manufacturing processes used in the firearm industry
- Comparison microscopy
- Ethics and bias in firearm examination

The primary aim of this course is to introduce students to scientific philosophy, integrity, firearm examination procedures, criminalistics, and the role of the criminalist in firearm evidence analysis.
Recommened Textbook

Supplemental Textbooks

Additional Reading
Additional reading assignments are required. Refer to the bibliography for these assignments and other recommended readings. At the discretion of the instructor, readings not listed in the bibliography may also be assigned.

Supplemental Textbooks


Warlow, T., (2005), *Firearms, the Law, and Forensic Ballistics*, CRC Press. ISBN 07484 04325

Course Calendar

<table>
<thead>
<tr>
<th>Wk</th>
<th>Date</th>
<th>Lecture Topic</th>
<th>Assigned Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>20Aug</td>
<td>Safety, ethics, Historical development</td>
<td>Maiorino (ch. 3, 4)</td>
</tr>
<tr>
<td>02</td>
<td>27Aug</td>
<td>Historical development II</td>
<td>Maiorino (ch. 5, 6)</td>
</tr>
<tr>
<td>03</td>
<td>03Sep</td>
<td>Labour Day-no lecture (you will receive an email assignment)</td>
<td>Hatcher (ch. 3)</td>
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<tr>
<td>04</td>
<td>10Sep</td>
<td>Actions - design and function I</td>
<td>Warlow (ch. 4)</td>
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<td>05</td>
<td>17Sep</td>
<td>Actions – design and function II</td>
<td>Hatcher (ch. 4)</td>
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<tr>
<td>06</td>
<td>24Sep</td>
<td>Ammunition-history, development</td>
<td>Warlow (ch. 4)</td>
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<tr>
<td>07</td>
<td>01Oct</td>
<td>Ammunition-internal, external ballistics</td>
<td>Hatcher (ch. 6) Warlow (ch 6)</td>
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<tr>
<td>08</td>
<td>08Oct</td>
<td>Guest lecture on IBIS / MIDTERM Exam</td>
<td>Hatcher (ch.5)</td>
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<tr>
<td>09</td>
<td>15Oct</td>
<td>Manufacturing processes</td>
<td>Hatcher (ch. 3, 12)</td>
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<tr>
<td>10</td>
<td>22Oct</td>
<td>Shotguns</td>
<td>Petraco (ch 3, 4)</td>
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<td>11</td>
<td>29Oct</td>
<td>Metrology</td>
<td>Hatcher (ch. 5, 6)</td>
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<td>12</td>
<td>05Nov</td>
<td>EAS No class</td>
<td>Petraco (ch. 7) Haag (ch 1)</td>
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<tr>
<td>13</td>
<td>12Nov</td>
<td>Shooting reconstruction, QA/QC</td>
<td>Haag (ch.15), Warlow (ch.10)</td>
</tr>
</tbody>
</table>

Exam week (if scheduled- otherwise in class) FINAL EXAMINATION
Assigned Reading

American Academy of Forensic Sciences (AAFS), *Code of ethics and conduct*

American Board of Criminalistics (ABC), *Rules of professional conduct*

American Society of Crime Lab Directors (ASCLD), *Code of ethics*

California Association of Criminalists (CAC), *Code of ethics*

Committee on Identifying the needs of the Forensic Science Community/National Research Council (NRC), *Strengthening forensic science in the United States: A path forward*. Washington, DC: National Academy of Sciences, 2009


Scientific Working Group for Firearms and Toolmarks (SWGGUN)


U.S. Department of Justice, Office of Justice Programs, National Institute of Justice (US DOJ NIJ)

https://firearms-examiner.training.nij.gov/

Assessment of Knowledge and Skills

<table>
<thead>
<tr>
<th>ASSESSMENT METHOD</th>
<th>ASSIGNMENT WEIGHT</th>
<th>TOTAL WEIGHT</th>
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<tbody>
<tr>
<td>Classroom presentation (firearm)</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Classroom presentation (ammunition)</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Contribution to class discussions</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Quiz (x2)</td>
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<td>10%</td>
</tr>
<tr>
<td>Midterm Examination</td>
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<td>25%</td>
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<tr>
<td>Final Examination</td>
<td>25%</td>
<td>25%</td>
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<tr>
<td>Term Paper</td>
<td>25%</td>
<td>25%</td>
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<td></td>
<td></td>
<td>100%</td>
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</table>
Additional Grading Concerns

- **Late Submission of Assignments**
  - 10% deduction/day (0000-2359 hr past due date & time)-maximum deduction = 100%
  - Extensions will be granted for exigent circumstances (*documentation may be requested!*)

- **Attendance Policy:** Students are expected to attend every lecture (refer to University Faculty Senate *Policy 42-27: Class Attendance* for further information). Recurrent attendance issues will result in deductions from the final course score.
  - Two (2) unexcused absences: 10% deduction
  - Three (3) unexcused absences: 25% deduction
  - Four (4) unexcused absences: 40% deduction
  - *NOTE: Two (2) late arrivals equal one (1) unexcused absence*

Grading Scale (the cut-offs will be explained in class)

<table>
<thead>
<tr>
<th>Letter</th>
<th>Score (%)</th>
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<tbody>
<tr>
<td>A</td>
<td>93.00 ≤ x ≤ 100.0</td>
</tr>
<tr>
<td>A-</td>
<td>90.00 ≤ x &lt; 93.00</td>
</tr>
<tr>
<td>B+</td>
<td>87.00 ≤ x &lt; 90.00</td>
</tr>
<tr>
<td>B</td>
<td>83.00 ≤ x &lt; 87.00</td>
</tr>
<tr>
<td>B-</td>
<td>80.00 ≤ x &lt; 83.00</td>
</tr>
<tr>
<td>C+</td>
<td>77.00 ≤ x &lt; 80.00</td>
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<tr>
<td>C</td>
<td>70.00 ≤ x &lt; 77.00</td>
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<tr>
<td>D</td>
<td>60.00 ≤ x &lt; 70.00</td>
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<tr>
<td>F</td>
<td>x &lt; 60.00</td>
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</table>
ACADEMIC INTEGRITY

Academic Integrity is an essential component of your education. The following is quoted from the “PSU Faculty Senate Policies for Students”. “It is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.” All University and Eberly College of Science policies regarding academic integrity/academic dishonesty apply to this course and the students enrolled in this course. Refer to the following URL for further details on the academic integrity policies of the Eberly College of Science: http://www.science.psu.edu/academic/Integrity/index.html. Matters of academic dishonesty will be turned over to the University disciplinary system and may result in the failing of the course.

Code of Mutual Respect

The Eberly College of Science Code of Mutual Respect and Cooperation (www.science.psu.edu/climate/Code-of-Mutual-Respect final.pdf) embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.

DISABILITY POLICY

“Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at http://equity.psu.edu/ods/.

In order to receive consideration for course accommodations, you must contact ODS and provide documentation (see the documentation guidelines at http://equity.psu.edu/ods/guidelines/documentation-guidelines). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.”

Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients’ cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity
Course Objectives

**OBJECTIVES**

- **Become familiar with the techniques used in firearm and toolmark examination covered in lecture**

- **Distinguish among the machines and processes used to manufacture firearms**

- **State the development milestones of firearms from the past to the present**

- **Contrast the construction of ammunition between the past and the present**

- **Explain the different types of firearm actions and how they function with respect to cycling the ammunition**

- **Identify and recognize the instruments used to perform firearm examination**

- **Outline the ethics, quality assurance and quality control that should accompany a firearm examination**

**STRATEGIES AND ASSESSMENT**

- Lectures illustrating the techniques used in firearm examination
- Written examination questions to assess fundamental knowledge
- Lectures outlining the various processes used to manufacture firearms
- Written examination questions to assess fundamental knowledge
- Lectures illustrating the development of firearms from the past to the present
- Written examination questions to assess fundamental knowledge
- Lectures illustrating the development of ammunition from the past to present
- Written examination questions to assess fundamental knowledge
- Lectures describing the different types of firearms and how they function
- Written examination questions to assess fundamental knowledge
- Lectures outlining the instruments used in firearm examination
- Written examination questions to assess fundamental knowledge
- Discussion of professional issues in forensic science pertaining to firearm examination including but not limited to bias, ethics, technical competence