1st Level Degree (Bachelor Degree) in
Investigation Sciences
Research, Evaluation and Use of Evidence Integrated Course
Forensic Ballistics, Firearms Investigations and Handwriting Examination Module
Academic Year 2022/2023
2nd Year – 2nd Semester
IUS/16 - 5 ECTS (Italian CFU) - 30 hours
Teacher: Eng. Angelo Salici

English Text

Course Information	**RESEARCH, EVALUATION AND USE OF EVIDENCE INTEGRATED COURSE** **Forensic Ballistics, Firearms Investigations and Handwriting Examination** 1st Level Degree (Bachelor Degree) in Investigation Sciences Degree Classification L 14 – Legal Services Academic Year 2022/2023, 2nd Year, 2nd Semester SSD IUS/16, CFU 5, 30 Hours
Teacher Information	Eng. Angelo Salici, PhD. Email: angelo.salici@unicz.it Reception hours: on request.
Course Description	The course is a module of the Research, Evaluation and Use of Evidence integrated course. It is aimed at non-specialists from a variety of backgrounds who would like to learn the fundamental principles of forensic firearms examination and ballistic investigations. The course aims to provide knowledge of how firearms and ammunition function, about the science of ballistic, the role of the forensic firearm examiner and how the forensic evidence produced in gun crime can be used to resolve issues in relation to criminal law. It also gives emphasis on the history of the italian law in relation to weapons in order to give a comprehensive and full understanding of the definition of firearms and introduce the fundamental principles in firearms examination and investigation. Moreover, the course deals with the principles of firearms identification and cartridge cases and bullet comparison, the gunshot residues analysis aimed at determining if a person has recently handler or fired a weapon, and how to use the outcome of these examinations as an evidence to present in the court of law. During the course will be examined in depth the role of a firearm examiners, the types of work that they cover and what the examiner may be able to determine analysing firearms-related evidence found at crime scenes to help investigators to solve criminal cases, and how prepare the reports for criminal and civil proceedings. In addition, the course also provide an outline on forensic document examination, particularly on handwriting examination that typically involves the comparison of known specimens to handwriting evidence found on questioned or disputed documents.

Course Goals and Objectives. Expected Learning Outcomes:	By the end of the course each student will be familiar with: • Understand the technical and legislative definitions of weapon; • Identify and describe the different types of firearms and ammunition; • Explain the general concepts and the main type of forensic ballistic examinations carried out on firearms-related evidence; • Understand how the forensic evidence related with a gun crime can be used to help resolve issues in relation to criminal law; • Understand and evaluate the outcome of a forensic ballistic report; • Understand and explain the importance and characteristics of firearms-related evidence; • Crime scene reconstruction carried out through the study and interpretation of the scene patterns and the evaluation of physical evidence; • Forensic Ballistic Databases and Automated Ballistic Identification Systems; • Theory behind number restoration and chemical methods to restore erased stamped serial numbers on firearms, cars and motorcycles; • General concepts and fundamental operating principles of a Scanning Electron microscope; • The chemical and physical process that lead to the formation of GSR particles; • Concepts and techniques of analysis relevant to identify a GSR particles by using a Scanning Electron Microscope; • The notion of expert court testimony; • General concepts and main techniques of a forensic handwriting examination.
Educational Programme (contents, modalities).	• History and Background of Forensic Firearms Identification; • Firearms and Ammunition: Classification and Characteristics; • Components of Firearms, different systems and their functions; • Current Italian Firearms Legislation; • Constructional features of different types of cartridges; • Types of primer and various types of bullets and compositional aspects; • Overview of the role of a forensic firearm examiner; • Examination of firearms, cartridge cases and bullets in the laboratory; • Cartridge cases and bullet comparison and identification; • Class, Subclass and individual characteristics on bullet and cartridge cases; • AFTE Theory of identification and range of conlcusions; • ENFSI range of conclusions; • Terminal Ballistics. Effect of projectile on the target; • Determination of range of firing and identification of origin; • Ballistic Databases and Automated Ballistic Identification Systems; • Restoration of erased stamped serial numbers on firearms; • Theory behind number restoration and chemical methods; • Introduction and a brief history of Electron Microscopy; • Scanning Electron Microscope; • Gunshot Residue: introduction and methods of analysis; • The expert testimony: an overview; • Introduction of forensic handwriting examination.

Estimated hours required for self-study.	The estimated time for exam preparation will vary depending ont the individual student's learning ability as well as backgroung knowledge. The self-study time for attending students is estimated to be around 150 hours. The self-study time for non-attending students is estimated to be around 200 hours.
Teaching methods	The course takes place in the secod semester of the academic year and the method of delivery consists of classroom lessonsduring which the topic covered in the program will be dealt with. Overhed projectors, PC, video projector wil be used for projecting slides in order to further clarify the main subject. All documentation (slides, handouts, notes, etc.) will be provide to the students to study the subject. Moreover, meeting, workshop and practical sessions with practitioners and experts in the subject may be carried out.
Learning Resources (recommended textbooks, any additional recommended reading for further study, other learning materials)	Handouts, Lecture and Case Studies notes. Reccomended Textbooks: - Codice delle Armi e degli Esplosivi 2022 – Author: Edoardo Mori – La Tribuna; SKU/ISBN: 9788829109777 - Shooting Incident Reconstruction – 3rd Edition – Authors: Michael G. Haag and Lucien C. Haag. – Academic Press. ISBN: 978-0-12-819397-6 https://doi.org/10.1016/C2018-0-03137-0
Supporting Activities:	In addition to the lessons of the course, additional activities are planned such as seminars with the presence of teachers from other universities and qualified experts in forensic firearms field, as well as participation in criminal hearings and exercises.
Methods of attendance:	The module is scheduled in the 2nd Semester of the 2nd year of the Academic Course. Attendance at the course, although not mandatory, it is strongly recommended, considering the complexity of the subjects.
Type of assessment mode of examination:	The general modalities are indicated in the academic regulation of the University at art.22 available at the link http://www.unicz.it/pdf/regolamento_didattico_ateneo_dr681.pdf . The final examination will be conducted in written form. If the student wishes to improve the final vote, he can take an (optional) oral examination on the entire program of the course. The student must be able to carry out correct analyses, supported by logical arguments such as to demonstrate the knowledge of the fundamental institutes of the discipline. The evaluation, more or less high, is graded according to the combination of a series of elements not considered in isolation but integrated with each other. It alludes to the property of language, to the knowledge of the various institutions

of special law, to the orientations of doctrine and jurisprudence, and, more generally, to the ability to connect, in a vision of synthesis, the skills acquired. The exam is passed if the candidate reaches a minimum grade of at least 18/30. The criteria listed in the following table will be used:

Vote	**Knowledge and understanding of the topic**	**Analysis and Synthesis Skills**	**Use of References**
Ineligible	Significant deficiencies. Significant inaccuracies.	Irrilevant. Frequent generalizations. Inability to synthesise.	Completely inappropriate
18-20	Level Threshold. Obvious imperfections	Just sufficient ability	Just appropriate
21-23	Routine knowledge	Can analyse and synthesise correctly. Argues logically and coherently	Uses standard references
24-26	Good knowledge	Has good analytical and synthesis skills. Topics are expressed coherently	Uses standard references
27-29	More than good knowledge	Has remarkable analytical and synthesis skills	Has deepened the topics
30-30L	Excellent knowledge	Has excellent analytical and synthesis skills	In-depth study