## Information about the subject

**Degree:** Bachelor of Science Degree in Criminology

**Faculty:** Faculty of Legal, Economic and Social Sciences

**Code:** 1300208 **Name:** Techniques of Forensic Analyses

**Credits:** 6,00 **ECTS Year:** 2 **Semester:** 2

**Module:** Methodology. Scientific-technical.

**Subject Matter:** Forensic Science **Type:** Compulsory

**Field of knowledge:** Other branches

**Department:** Criminology

**Type of learning:** Classroom-based learning

**Languages in which it is taught:** Spanish

**Lecturer/-s:**

## Module organization

### Methodology. Scientific-technical.

| Subject Matter | ECTS | Subject | ECTS | Year/semester |
|---|---|---|---|---|
| Social | 6,00 | Research Methodology and Techniques in Social Sciences | 6,00 | 1/2 |
| Criminalistics | 18,00 | Applied Criminalistics | 6,00 | 3/2 |
| | | Criminalistics Laboratory. Scientific Police | 6,00 | 2/2 |
| | | Documentoscopy and Graphology | 6,00 | 4/1 |
| Forensic Science | 24,00 | Forensic Psychiatry | 6,00 | 3/1 |
| | | Human Anatomy and Physiology | 6,00 | 1/2 |
| | | Legal Medicine | 6,00 | 2/1 |
| | | Techniques of Forensic Analyses | 6,00 | 2/2 |

## Recommended knowledge

Basic knowledge of chemistry, physics, anatomy and human biology is required. "Bachiller" level.

## Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1      Acquiring detailed knowledge about the situations that the regulations foresee regarding the different types of death and especially the cases of suspicious and violent death .

R2      Knowing how to examine injuries caused by different types of weapons.

R3      The ability to examine the most commonly used registers in human identification, and to interpret the reports in the field of identification and criminalistics.

R4      The ability to assess and argue cases of domestic violence injuries and child abuse.

R5      The ability to apply the knowledge acquired in forensic psychopathology to identify the possible criminal origin of certain behaviours.

R6      Knowing how to identify the possible criminal origin of certain behaviors associated with the acute or chronic consumption of narcotic substances and/or that create dependency.

# Competencies

**Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):**

| BASIC | | Weighting | | | |
|---|---|:---:|:---:|:---:|:---:|
| | | 1 | 2 | 3 | 4 |
| CB1 | Showing a command and understanding of knowledge in an area of study that is based on the general secondary education and that is usually at a level that implies the support on advanced textbooks but also the inclusion of knowledge from the cutting edge of their field of study. | | | | x |
| CB2 | Being able to apply their knowledge to their jobs or vocational activities professionally and holding the competences that are demonstrated through the elaboration and defence of arguments as well as the solution of problems within their area of study. | | | | x |
| CB3 | The ability to gather and interpret relevant data (normally within their area of study) so as to make judgements that include a reflection on relevant social, scientific or ethical issues. | | | | x |
| CB4 | Being able to convey information, ideas, problems and solutions to a specialised or non-specialised public. | x | | | |
| CB5 | Having developed the learning abilities necessary to pursue postgraduate studies with a high degree of autonomy. | | | | x |

| GENERAL | | Weighting | | | |
|---|---|:---:|:---:|:---:|:---:|
| | | 1 | 2 | 3 | 4 |
| CG5 | The capacity to obtain and manage efficiently the information from the scientific literature, specialised journals, databases and other sources. | | | | x |
| CG6 | The capacity to establish explanatory hypotheses, using predictive and operative relationships that offer responses to the criminal phenomenon in a criminological context. | | | | x |
| CG7 | The capacity to take decisions and to design programs and strategies for both prevention and treatment of the criminal phenomenon. | x | | | |

| | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| CG16 | Oral and written communication skills in the native language with regards to Criminological Science in order to present, circulate and validate the outcomes of criminological and criminalistic research both through scientific development and through the proposal of specific policies and lines of action. | | | | **x** |

| **SPECIFIC** | | **Weighting** | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| CE23 | Knowledge and application of scientific research techniques in the medical-legal and criminalistic field, as well as the basis and preparation of various expert reports. | | | | **x** |
| CE24 | Training in the elaboration of criminologist expert reports as well as in expert intervention in the different phases of the procedures. | **x** | | | |

# Assessment system for the acquisition of competencies and grading system

| Assessed learning outcomes | Granted percentage | Assessment method |
|---|---|---|
| R1, R2, R3, R4, R5, R6 | 55,00% | Analysis and resolution of case studies. |
| R1, R2, R3 | 15,00% | Attendance and participation in class. |
| R1, R2, R3, R4, R5, R6 | 30,00% | Exam or objective test to measure obtained competences. |

**Observations**

Evaluation techniques and instruments: tasks, cases, oral presentation of work, simulation laboratory-classroom, written test (objective test of conceptual development through questions development and short), research work, etc... Minimum score required 5.0 out of 10 in the objective test to pass the minimum knowledge (equivalent to 30%), so that the percentages obtained from the grades of the practical part (55%) can be applied, as well as such as the grade obtained for attendance and participation in class (15%), and thus obtain the final grade of the subject, which must be equal to or greater than 5 out of 10 after the final sum of the three evaluation instruments. There is no single assessment.

## CLASS ATTENDANCE IN FACE-TO-FACE DEGREES

In accordance with the development guidelines of the General Regulations for the Evaluation and Qualification of Official Teachings and Own Degrees of the UCV, in face-to-face degrees, class attendance with a minimum of 80% of the sessions of each subject will be required as a requirement. to be evaluated. This means that, if a student does not attend the sessions of each subject, in a percentage greater than 20%, he/she will not be able to be evaluated, neither in the first nor in the second call, unless the person responsible for the subject, with the approval of the person responsible for degree, in view of duly justified exceptional circumstances, exempt from the minimum attendance percentage.The same criterion will be applicable for hybrid or virtual degrees in which teachers must maintain the same percentage in the requirement of "presence" in the different training activities , if any, even if these are carried out in virtual environments.

## MENTION OF DISTINCTION:

The mention of "Honors" may be awarded to students who have obtained a grade equal to or greater than 9.0. Their number may not exceed five percent of the students enrolled in a group in the corresponding academic year, unless the number of students enrolled is lower.

## Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1      Presentation of contents by the teacher, analysis of competencies, explanation and demonstration of abilities, skills and knowledge in the classroom.

M2      Specific instructions about group and individual assignments for each topic.

M3      Group work sessions supervised by the teacher. Study of legal cases, both real and fictitious, analysis, diagnosis, problems, field study, computer room, visits, data search, libraries, network, Internet, etc. Significant construction of knowledge through student interaction and activity. Critical analysis on values and social commitment.

M4      Application of interdisciplinary knowledge.

M5      Supervised monographic sessions with shared participation

M6      Personalized attention and in small groups. Period of instruction and/or orientation carried out by a tutor with the objective of reviewing and discussing the materials and topics presented in the classes, seminars, readings, completion of assignments, etc.

M7       Set of oral and/or written tests used in the initial, formative or summative evaluation of the student.

M8       Group preparation of readings, assumptions and problem -olving to present, discuss or deliver in class or tutorial.

M9       Student's study: Individual reading preparation, case studies, jurisprudence. Writings and papers to be presented or delivered in the classes or tutorials.

## IN-CLASS LEARNING

### IN-CLASS LEARNING ACTIVITIES

|  | LEARNING OUTCOMES | HOURS | ECTS |
|---|---|---|---|
| In-person class<br>M1, M2, M3, M6 | R1, R2, R3, R4, R5, R6 | 15,00 | 0,60 |
| Practical class<br>M2, M3, M5 | R1, R2, R3, R4, R5, R6 | 30,00 | 1,20 |
| Seminar<br>M1 | R1, R2, R3, R4, R5, R6 | 2,50 | 0,10 |
| Group work presentation<br>M3, M4, M5 | R1, R2, R3, R4, R5, R6 | 5,00 | 0,20 |
| Tutorial<br>M6 | R1, R2, R3, R4, R5, R6 | 5,00 | 0,20 |
| Evaluation<br>M7, M8, M9 | R1, R2, R3, R4, R5, R6 | 2,50 | 0,10 |
| **TOTAL** |  | **60,00** | **2,40** |

### LEARNING ACTIVITIES OF AUTONOMOUS WORK

|  | LEARNING OUTCOMES | HOURS | ECTS |
|---|---|---|---|
| Group work<br>M2, M3, M5, M8 | R1, R2, R3, R4, R5, R6 | 30,00 | 1,20 |
| Individual work<br>M2, M6, M9 | R1, R2, R3, R4, R5, R6 | 60,00 | 2,40 |
| **TOTAL** |  | **90,00** | **3,60** |

## Description of the contents

Description of the necessary contents to acquire the learning outcomes.

### Theoretical contents:

| Content block | Contents |
| --- | --- |
| Topic-1 | Forensic Laboratory Sciences and Types. Frame legal in Spain. Forensic laboratories in Spain. The Network European Forensic Laboratories (ENFSI) |
| Topic 2 | General organization of the forensic laboratory. Biological and non-biological vestiges and indications. Personnel, quality and homogeneity of analytical expertise |
| Topic-3 | Collection, remittance, reception, registration and custody of samples. Chain of custody. Risk prevention Work in forensic laboratories |
| Topic-4 | Specific rules for the submission of samples to the Different forensic laboratories for the study of evidence and biological samples. |
| Topic-5 | The expert and the analytical expert evidence. The report analytical or laboratory expert. |
| Topic-6 | Macro and microscopic techniques. Florescence and phosphorescence (forensic lights). Forensic histopathology. |
| Topic-7 | Qualitative and quantitative analysis techniques (electrophoretic, colorimetric, immunoassay, spectroscopic, chromatographic, Rx diffraction). |
| Topic-8 | Osteological and dental techniques: morphometry and odontometry. Skeletonization technique. |
| Topic-9 | Radiological techniques. Photography and infographics forensic. |

| Topic-10 | Techniques in Molecular Biology. Types of DNA: genetic heritage. DNA extraction and quantification. Polymerase chain reaction (PCR). Genetic markers (STRs, SNPs, others). Databases of criminal interest. Organic Law 10/2007. |

| Topic-11 | Techniques for the analysis of biological and non-biological evidence biological in Criminalistics. 11.1. Analysis of stains blood.11.2. Analysis of semen, saliva and other stains secretions. 11.3. Hair and nail analysis. 11.4. General system of analysis of non-biological evidence (fibers, glass, paints, floors, traces of explosives and fires). |

| Topic-12 | Analysis techniques in Forensic Archaeology. Protocols for exhumation, removal and remission of remains to the Forensic Anthropology laboratory. |

| Topic-13 | Analysis techniques in Forensic Anthropology. 13.1. Systematic anthropological study in the laboratory. 13.2. Analysis of the biological profile (sex, age, height). 13.3. Analysis of individualizing characteristics and bone pathology for identification. 13.4. Estimation of the age of the living subject. |

| Topic-14 | Analysis techniques in forensic dentistry. 14.1. Introduction to dental identification. Methods reconstructive and comparative. 14.2. Dental anatomy: deciduous and permanent dentition. 14.3. Dental age: Chronology of tooth eruption. 14.4. Delivery systems Dental notations: odontogram. Necroidentification through the INTERPOL dental file. 14.5. Other dental methods of identification. |

| Topic-15 | Analysis techniques in forensic pathology. 15.1. Study of wounds in the Crime Laboratory. Dynamics of the research (clothing, skin plane, plane bone, instrument or weapon). 15.2 Vital reactions and postmortal. Perimortem and postmortem wounds. 15.3. Examples: Laboratory study of weapon wounds fractures and contusions, hanging grooves. |

| Topic-16 | Analysis techniques in Forensic Ballistics of effects. 16.1 Ballistics and its branches. Firearms: definition, types and parts. Elements of the shot. 16.2. Ballistics of effects: study of gunshot wounds in the Criminalistics laboratory (clothing study, floor plan cutaneous and bony plane). 16.3. Techniques for the analysis of residues of the shot. |
|---|---|
| Topic-17 | Introduction to Forensic Entomology and others Laboratory analysis techniques for the establishment of the postmortal interval. 17.1. Concepts of chronotanatodiagnosis and postmortal interval. 17.2. Fresh corpse: introduction to thanatochemistry. 17.3. Rotting corpse: introduction to entomology forensic. 17.4. Ancient corpse: dating techniques. |
| Topic-18 | Analysis techniques in Forensic Genetics. 18.1. DNA and genetic heritage. Genetic profile and bases of genetic data (reminder). 18.2. Criminal Sphere: analysis forensic genetics in samples of criminal interest. 18.3. Civil Field: biological investigation of paternity and motherhood. 18.4. Forensic genetics in other fields: major catastrophes, multi-casualty accidents, disappeared persons and cases of irregular adoptions or abduction of newborns. |

Temporary organization of learning:

| Block of content | Number of sessions | Hours |
| --- | --- | --- |
| Topic-1 | 1,00 | 2,00 |
| Topic 2 | 1,00 | 2,00 |
| Topic-3 | 2,00 | 4,00 |
| Topic-4 | 2,00 | 4,00 |
| Topic-5 | 1,00 | 2,00 |
| Topic-6 | 2,00 | 4,00 |
| Topic-7 | 2,00 | 4,00 |
| Topic-8 | 1,00 | 2,00 |
| Topic-9 | 1,00 | 2,00 |
| Topic-10 | 2,00 | 4,00 |
| Topic-11 | 4,00 | 8,00 |
| Topic-12 | 1,00 | 2,00 |
| Topic-13 | 3,00 | 6,00 |
| Topic-14 | 2,00 | 4,00 |

| | | |
|---|---|---|
| Topic-15 | 1,00 | 2,00 |
| Topic-16 | 1,00 | 2,00 |
| Topic-17 | 1,00 | 2,00 |
| Topic-18 | 2,00 | 4,00 |

# References

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