

Academic Year: (2023 / 2024)

Review date: 02-06-2023

Department assigned to the subject: Mechanical Engineering Department, Transversal matters

Coordinating teacher: LUIS GARCÍA, JUAN

Type: Compulsory ECTS Credits : 3.0

Year : 3 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

None.

OBJECTIVES

The abilities acquired by the students are the next:

- To apply correctly the methods, procedures and technics of research in order to resolve crimes.

To reach this goal is necessary to obtain the following results of learning:

- Knowing the methods, procedures and technics of research that, from the point of view of the current technology, help the resolve of crimes.

DESCRIPTION OF CONTENTS: PROGRAMME

1. DNA: DNA (Deoxyribonucleic Acid) is a molecule that contains the genetic information of living beings and is transmitted from generation to generation. In forensic science, DNA is used as a valuable tool for the identification of individuals and to solve crimes.

The importance of DNA in forensic science lies in its ability to provide unique and irrefutable biological evidence that can identify a person with high certainty. DNA profiles can be obtained from a wide variety of biological materials, including blood, semen, saliva, hair, skin, and bones, making it a very versatile tool for forensic investigators.

DNA analysis can be used to compare profiles of different individuals and determine whether they come from the same person or different individuals, which can help identify suspects or exclude innocent people. In addition, DNA can be used to identify human remains and establish family relationships, which can be useful in cases of missing persons.

In summary, DNA is a powerful tool in forensic science that has revolutionized the way crimes are investigated and people are identified. The ability of DNA to provide unique and irrefutable biological evidence makes it a crucial tool in criminal investigations.

2. Lofoscopy: Lofoscopy is a branch of forensic science that deals with the analysis and study of fingerprints. Fingerprints are unique to each person and do not change throughout life, making them a valuable tool for identifying people at the crime scene.

Lofoscopy is used in criminal investigations to collect and analyze fingerprints found at the crime scene. These prints can be visible or latent, meaning they can be seen with the naked eye or may require special techniques to be revealed, such as the use of powders or chemical reagents.

In addition to identifying individuals, lofoscopy can also be used to determine the sequence of people's movements at the crime scene and to establish relationships between different objects or people at the scene.

In summary, lofoscopy is an important technique in forensic science used for the identification of people and the collection of evidence at the crime scene.

3. Computer and Electronic Forensics: Computer and electronic forensics are branches of forensic science that deal with the analysis of electronic devices and computer systems to find and analyze digital evidence in criminal investigations.

Computer forensics focuses on the recovery of information and data stored on electronic devices such as computers, mobile phones, hard drives, USB drives, among others. Specialized tools and techniques are used to extract, preserve, and analyze digital data forensically in order to identify potential evidence related to cyber crimes, fraud, cyber threats, espionage, and others.

On the other hand, electronic forensics focuses on the recovery of information and data stored on electronic devices found at the crime scene, such as security cameras, surveillance systems, audio recording systems, among others. Specialized tools and techniques are also used to extract, preserve, and analyze digital data forensically in order to identify potential evidence related to crimes such as theft, assault, murder, and others.

Computer and electronic forensics are constantly evolving fields due to the rapid advancement of technology. Specialists in these areas must stay updated on tools, techniques, and trends to be able to effectively apply them in the investigation of crimes and the collection of digital evidence.

4. Technical Ocular Inspection (TOI): Technical ocular inspection is a technique used in forensic sciences for the collection and analysis of physical evidence at the crime scene. It involves a detailed evaluation of the crime scene by forensic investigators in order to collect and preserve all available physical evidence.

During the technical ocular inspection, forensic investigators carefully examine the crime scene to identify possible physical evidence, such as fingerprints, hairs, fibers, bloodstains, among others. Photographs are also taken and detailed measurements of the scene are made to create an accurate graphical representation of the scene.

In addition to the collection of physical evidence, the technical ocular inspection can also be used to determine the sequence of events at the crime scene, establish relationships between different objects or people in the scene, and to reconstruct the crime scene based on the collected physical evidence.

In summary, the technical ocular inspection is an important technique in forensic sciences that is used for the collection and analysis of physical evidence at the crime scene. The technique is critical for criminal investigations, as physical evidence can be used to identify perpetrators and support the case in court.

Virtual Reality Practices: Virtual reality is an emerging tool in forensic sciences that is being used to recreate and analyze crime scenes in a more efficient and accurate manner. Virtual reality technology allows forensic investigators to recreate crime scenes in a controlled and manipulable environment, which allows them to examine the scene in detail and gain a better understanding of what happened at the scene.

Virtual reality also allows for the creation of 3D virtual environments from physical evidence collected at the crime scene, which can help investigators reconstruct the scene and identify possible lines of investigation. Virtual reality technology can also be used to recreate the sequence of events at the crime scene, which helps investigators understand how the incident unfolded.

In addition, virtual reality can also be used for the training and education of forensic professionals, as it allows them to practice evidence collection and crime scene analysis in a safe and controlled virtual environment.

In summary, virtual reality is an emerging technology that is being used in forensic sciences to recreate, analyze, and reconstruct crime scenes. This technology allows forensic investigators to gain a better understanding of the crime scene and can assist in identifying possible evidence and lines of investigation. It can also be used for the training and education of forensic professionals.

Both face-to-face and non-face-to-face activities are included with teacher support.

Face-to-face ECTS: 2.4 credits out of 6 ECTS for each subject, or 1.2 credits out of 3 ECTS for each subject, correspond to face-to-face work by the student with the support of teachers (lectures, problem-solving and doubt resolution classes in small groups, laboratory classes, student presentations).

Non-face-to-face ECTS: 3.6 credits out of 6 ECTS for each subject, or 1.8 credits out of 3 ECTS for each subject, correspond to personal work by the student (including study, completion of assignments, tests and exams, etc.).

50% of the training activities (3 ECTS in 6 ECTS subjects, or 1.5 ECTS in 3 ECTS subjects) are focused on acquiring theoretical knowledge. The remaining 50% is focused on acquiring practical skills related to the program of each subject.

Around 10% of face-to-face tutoring sessions are planned, and any queries from students can also be made asynchronously.

Finally, theoretical and practical knowledge will be complemented with visits to various organizations and institutions related to the subject matter.

ASSESSMENT SYSTEM

% end-of-term-examination:	40
% of continuous assessment (assignments, laboratory, practicals...):	60

The evaluation system will be based on continuous evaluation through the completion of three partial exams throughout the semester. These exams will cover material that has been taught and may be complemented with practical assignments that will be weighted according to the criteria established for each module.

Each of the partial exams will be weighted as follows:

- Module I Exam: 33% of the final grade.
- Module II Exam: 33% of the final grade.
- Module III Exam: 34% of the final grade.

To pass the subject, students must obtain a minimum grade of 5 out of 10, taking into account the grade of the three partial exams according to the weighting described. In the event that students do not achieve a grade of 5, they must take a final exam covering the entire syllabus of the subject on the date scheduled in the final exams calendar.

The Department may carry out complementary activities that can add a maximum of 0.5 points to the final grade, which in no case can exceed the maximum of 10.

BASIC BIBLIOGRAPHY

- Antón Barberá Manual de Técnica Policial, Tirant lo Blanch , 1991
- Beatriz Miguélez Garrido CIENCIAS FORENSES I: Química Forense, CUGC, 2020
- Emilio Verón Bustillo (Coordinador y coautor) y Juan Luis Barrios Dolader (Coautor). La Inspección Técnico Ocular: Aspectos técnicos y jurídicos., Centro Universitario de la Guardia Civil, 2022
- Guardia Civil Manual de Policía Judicial de la Guardia Civil, Guardia Civil, 2011
- José Ibañez Peinado Técnicas de investigación criminal, Dykinson SL, 2012

- Juan Luis Barrios Dolader (Coordinador); Ángel Tomás Ledo Iglesias CIENCIAS FORENSES I: Informática Forense, CUGC, 2020

- Juan Luis Barrios Dolader (Coordinador); Ángel Tomás Ledo Iglesias CIENCIAS FORENSES I: Informática Forense, CUGC, 2020