COURSE DATA

DATA SUBJECT

Code: 35076
Name: Transmissions, Image and Sound
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1302 - Degree in Criminology	Facultat de Dret	2	Second quarter
1923 - Double Degree Programme Law-Criminology	Facultat de Dret	3	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1302 - Degree in Criminology	Forensic techniques	COMPULSORY
1923 - Double Degree Programme Law-Criminology	Year 3 compulsory subjects	COMPULSORY

COORDINATION

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SUMMARY

The course **Transmissions, Image and Sound** is a basic and compulsory training course, corresponding to the second year of the Degree in Criminology, with a workload of 6 ECTS credits.
It is composed of two parts with different approaches. In the specific technological part, the following will be addressed: the fundamentals of digital audio, digital image/video and, principally, their transmission through the network. In the specific legal part, legal aspects related to communications, ICTs, video surveillance and data protection will be examined.
In this way, the transmissions section introduces the fundamentals of networks and security, as well as some of the multimedia information transmission protocols currently in use. In the legal aspects section, particular attention is paid to the evidentiary relevance of the processing of data, images, communications, etc., and the digital medium, images and personal data are examined from a legal and fundamental rights perspective. Police and criminal-interest files are studied. The processing of video surveillance, websites and social networks is also analysed.
Overall, the fundamental objective of the course is for students to acquire knowledge of information and communication technologies, their application in the field of criminalistics, and the legal context in which they are framed.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

No previous knowledge is specified to take this subject.

COMPETENCES / LEARNING OUTCOMES

1302 - Degree in Criminology

Conocer las utilidades y funciones de los distintos sistemas de telecomunicación y saber aplicarlas. G: 1,9 y E: 11, 12

Detectar un uso ilegal de los sistemas de telecomunicación o de grabación y almacenamiento de imagen y sonido. G: 1 y E:11, 12

Saber discernir la adecuación de solicitar determinadas pruebas forenses. G:1,9 y E: 4, 12,22

DESCRIPTION OF CONTENTS

Introduction; Basic concepts. Types of signals. Classification of telecommunication systems.
Propagation of Electromagnetic Waves. Modulation. Mobile communications
Reference models in networks. Typologies of networks; IP addressing (classes of networks in IPv4);
Network hardware and software

Layer model (OSI); Physical layer; Link layer; MAC sublayer; Network layer; Transport layer (TCP / UDP); Application layer

Introduction. Streaming Audio / Video on the Internet. Video conference Unicast transmissions.
Multicast transmissions RTP and PSTN protocols. Protocols H.323, SIP in videoconference.

Cryptography; Security algorithms; Digital signature; Certificates; Security in communication (Ipsec, Firewall, VPN, wifi security, mobile phone security)

1. Introduction to telecommunications and networks (Basic concepts)

Introduction; Basic concepts. Types of signals. Classification of telecommunication systems. Propagation of Electromagnetic Waves. Modulation. Mobile communications

2. Communication between systems

3. Multimedia transmission in IP networks

Introduction. Streaming Audio / Video on the Internet. Video conference Unicast transmissions.

4. Fundamentals of computer security in networks

5. Principis bàsics d'imatge i so digital i psychoacoustics.

Introduction; eye, image formation, capture, sampling and quantization, color models (RGB, CMYK) image formats (JPEG, TIF, PNG, GIF), Mathematical Foundations for analysis (histogram, space operations, transformations, probabilistic methods).

6. LEGAL ASPECTS (Dept. of Constitutional Law)

20 hours
Topic 1
Introduction: Technologies, Law and fundamental rights. Legal apprehension of the image, voice, sound, DNA, personal data, traffic data, communication signals, etc. The special probative value in the criminal field.

Topic 2
Regulation of the electronic document and the test in digital format (LEC, LECRIM, etc.). Specialized bodies of the FCS.

Theme 3
Privacy and own image in the police action and private security. LECRIM, Law 1/1982

Theme 4
Protection of personal data in police action and private security. LECRIM, Law 1/1982, LOPD.

Topic 5
Police files. Communication of information to the FCS, judges and prosecutor. Legal treatment. Biometric, genetic identifiers, etc. LO 10/2007, of October 8, regulating the police database on identifiers obtained from DNA.

Topic 6
Public and private video surveillance ORGANIC LAW 4/1997, of August 4 public camcorders; private security legislation and LOPD.

Topic 7
Secrecy and Interception of telephone, postal, telegraphic and internet communications. LECRIM. SITEL system

Topic 8
Regulation and treatment of telecommunications traffic data: Law 25/2007 and Regulation.

Topic 9
Tracking and closing of web pages. LSSICE (Law 34/2002) and other legislation.

Topic 10
Privacy, image and personal data of members of the FCS and private security.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theoretical and practical classes	60,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	6,00
Individual or group project	18,00
Independent study and work	16,00
Preparation of lessons	14,00
Preparation for assessment activities	15,00
Resolution of case studies	6,00
Total hours	**75,00**

TEACHING METHODOLOGY

The teaching methodology will combine training activities of a theoretical and practical nature, tutoring activities, and those involving study, assessment and, in general, both individual and group work by the students.
The functioning of the activities will be as follows:

1. **Theoretical classes:** The teaching staff will explain the topics through lectures, encouraging students' participation throughout the session. Students must prepare the classes using the material provided or indicated by the teaching staff, as instructed, with the aim of fostering teacher–student dialogue.
2. **Practical classes:** The practical classes will be based on applied tasks grounded in theory and on the use of the computer as a useful tool for achieving the objectives set out in each practical session. These will be based on developed guidelines aimed at illustrating simple practical cases that may be encountered in real situations. Communication between teaching staff and students, dialogue among students, and teamwork will also be encouraged.
3. **Assignments:** Small projects or practical assignments will be proposed, which may be carried out individually or in groups, with the aim of applying and expressing knowledge orally or in writing, and of researching new concepts that may arise.
4. **Lectures, seminars, workshops, etc.:** These activities complement the syllabus. The organisation of talks or lectures delivered by professionals who are experts in the field may be considered.

5. **Examinations.**

EVALUATION

The course consists of **two differentiated parts**: the Legal part and the technical part. The Legal part is weighted at 0.33, and the technical part at 0.67. That is: 1/3 of the final mark corresponds to the Legal part, and 2/3 to the technical aspects. In addition to achieving a minimum mark of 5 in the final weighted grade of both parts- only in the case of passing the global exam with a minimum mark of 5 out of 10 will the weighting with continuous assessment be applied-, it is also essential to have obtained a minimum of 4 out of 10 in each block to pass the course.
The final determination of the grade will in any case be subject to the overall assessment carried out jointly by the teaching staff of both blocks.
Passing one block of the course (Legal part or technical part) will be maintained in the event of failing the other block in the first examination session. In this way, in the second examination session students may attend only to take the written test of one of the two blocks (the one not passed). The mark corresponding to continuous assessment will be retained for the second examination session of the same academic year.
The teaching staff responsible for the course may determine, in the annex to the course guide, the possibility of changing, with due justification, the modality of the final exam when they are required to administer the assessment on a date different from the official one, in accordance with the rules established for cases of exam overlap in the Regulations on Assessment and Grading of Bachelor's and Master's Degrees of the University of Valencia, or for any other cause established by regulation (e.g., duly justified force majeure). In such cases, the new exam modality must maintain the same level of demand and difficulty as that administered, in general, to the rest of the group.
Students who have followed continuous assessment and have been evaluated accordingly, but who do not attend the final exam on the official examination date (in either the first or second sitting), will receive the grade of Absent.
Specific assessment of the two parts.
In the **technical aspects part**, assessment will be carried out as follows:

- **with 10% for attendance at classes and lectures and participation in the classroom,**
- **with 20% for the required assignments and activities,**
- **and the remaining 70% through an individual TEST-type examination.**

To assess the degree of acquisition of competences in the **Legal part**, the following instruments will be used:

- **Continuous assessment:** students will be assessed based on their participation throughout the theoretical, practical and applied sessions, as well as complementary activities. This includes assignments, activities and practical cases carried out. The student's contribution to the course and their development and content will also be considered.
- **Final examination of the course:** this may be theoretical or theoretical-practical, as determined by the coordination and the teaching staff of the corresponding block.

For the completion of applied and complementary activities, the teaching staff may use the Service-Learning methodology.
The grade for the Legal aspects block will result from the written examination weighted at 70% and the continuous assessment- as detailed in the Annex to the course guide-**weighted at 30%.**
Students who, exceptionally, do not meet the requirements for continuous assessment may pass the

course by taking the final examination. However, through this route only a maximum mark of 7 out of 10 may be obtained. Thus, to achieve a 5 in this block, it will be necessary to have obtained a minimum mark of 7 in the examination.
The teaching staff and the responsible coordinator may determine that the final written examination is differentiated for students who have followed the course continuously and those who have not.
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REFERENCES

BASIC

- AndrewS.Tanenbaum;RedesdeComputadoras
- OCWDerechoeinternet.http://ocw.uv.es/ciencias-sociales-y-juridicas/plant/Course_listing
- OCWDerechosfundamentales.http://ocw.uv.es/ciencias-sociales-y-juridicas/1-5/Course_listing
- LOPD: http://www.agpd. es/portalwebAGPD/canaldocumentacion/publicaciones/common/Guias/GUIA_CIUDADANO_OK. pdf
- Videovigilancia:https://www.agpd. es/portalwebAGPD/canaldocumentacion/publicaciones/common/pdfs/guia_videovigilancia.pdf
- Seguridad: https://www. agpd. es/portalwebAGPD/canaldocumentacion/publicaciones/common/Guias/GUIA_SEGURIDAD_2010.pdf
- Resp. ficheros: http://www. agpd. es/portalwebAGPD/canaldocumentacion/publicaciones/common/pdfs/guia_responsable_ficheros.pdf
- PD Rel. Laboral: http://www.agpd. es/portalwebAGPD/canaldocumentacion/publicaciones/common/pdfs/guia_relaciones_laborales.pdf
- W.Stallings;Fundamentosdeseguridadenredes
- J.Watkinson;Anintroductiontodigitalvideo
- L.E.Kinsler;Fundamentosdeacústica.Ed.Limusa
- H.Fastl,E.Zwicker;Psycho-acoustics:Factsandmodels.Springer

SUPPLEMENTARY

- .W.Stallings; Fundamentos de seguridad en redes
- J. Watkinson; An introduction to digital video
- L.E. Kinsler; Fundamentos de acústica. Ed. Limusa
- R.C.González,R.E.Woods,S.L.Eddins;DigitalimageprocessingusingMATLAB.PrenticeHall
- M.J.Crocker; Handbook of Acoustics. John Wiley & Sons
- I.McLoughlin; Applied Speech and Audio Processing with MATLAB Examples. Cambridge.