Teaching guide

IDENTIFICATION DETAILS

Degree:	Computer Engineering
Scope	Computer and Systems Engineering
Faculty/School:	Higher Polytechnic School
Course:	HISTORY OF SCIENCE AND TECHNOLOGY
Type:	Compulsory
ECTS credits:	3
Year:	1
Code:	5619
Teaching period:	Second semester
Subject:	Personal Development and Humanistic Training
Module:	Comprehensive Engineer Training
Teaching type:	Classroom-based
Language:	English
Total number of student study hours:	75

Teaching staff	E-mail
Paolo Pellecchia	paolo.pellecchia@ufv.es
David Rodríguez de Vera Ríos	d.rguezverarios.prof@ufv.es

SUBJECT DESCRIPTION

This subject tries a journey through the History of scientific discoveries and their technological applications. Following a methodology typical of the historiographic discipline, we will focus on the social context in which these discoveries happened, and especially on the ideas and beliefs of the society and the scientists.

In this way, it is sought that, at the beginning of the degree, the student can have a panoramic view of the most significant events that have marked the history of their own culture and, especially, the role that scientific development has played in the acceleration of modern history. This is also intended for students to position their profession and thus acquire historical awareness regarding their own branch of knowledge, their common roots with philosophy, mathematics and physics and their subsequent evolution linked to machine manufacturing, technology and system construction.

GOAL

It is intended that the student acquires the necessary foundations for a critical reflection on the meaning and scope of scientific knowledge, a panoramic vision of the History of Science and its main theories, as well as the close relationship between knowledge and the anthropological model underlying each era. The specific purposes of the subject are: Reflect on the object, limit, validity and pretensions of scientific knowledge. Discover the fundamental link between philosophy and science. Discover the relationship between the image of man and the scientific and philosophical ideas of each era and learn about the relationship of historical continuity of human pretensions. Know the impact of the main scientific conceptions and theories, evaluating favorable and questionable aspects. Analyze and reflect on today's science and technology goals.

PRIOR KNOWLEDGE

No previous knowledge is necessary

COURSE SYLLABUS

1.- Introduction:
Science, History of Science, Technology, Technology and Technoscience.
Anthropological perspective on knowledge of reality.
2.- Historical approach:
The notions of 'paradigm', 'normal science' and 'Scientific Revolution'.
The three great paradigms: from the philosophy of nature to contemporary science.
3. Epistemological approach:
Object, purpose, method and limits of knowledge.
Philosophy of Science. The question of the method. The Frontier Between Science and Speculation
4. The four milestones in the decentralization of man:
Copernicus, Darwin, Freud and Turing
5. Current Perspectives on Science and Technology:
Nanotechnology, biotechnology, computing and artificial intelligence, Neuroscience and Bionics, etc.
Humanism and posthumanism.
Horizons of Science and Technology: Human Eschaton. Science, Reason and Faith

EDUCATION ACTIVITIES

The work methodology is structured based on participatory expository classes, in which students adopt an active attitude based on the teacher's presentation in the classroom. Efforts will be made to specify the contents of the subject by solving problems or practical cases that help students connect their work with the reality they will face from their professional profile. To this end, the UFV Pedagogical Model (Awakening - Discovering - Deciding) will serve this purpose from an Open Reason perspective, so that, through fundamental questions (anthropological - epistemological - ethics - meaning), it is possible to broaden the horizons of the subject with a multidisciplinary perspective and in dialogue with Philosophy and Theology.
The work of the subject is complemented by a set of analysis and research activities, individual and collaborative or group, on different topics, following professional standards so that the student develops useful skills and tools, both for the degree and for future stages and, also, complementary activities that, together with personal study and virtual networking in the form of Discussion Forums, analysis of videos or articles proposed in the Virtual Classroom or participation in seminars and conferences that are propose, constitute the student's personal and autonomous work.
In order to verify the level of knowledge acquired, written tests will be carried out in person or online. Finally, an academic monitoring system will be implemented through weekly tutoring to promote personal support and help students who need it.

DISTRIBUTION OF WORK TIME

TEACHER-LED TRAINING ACTIVITIES	INDIVIDUAL WORK
30 Hours	45 Hours
Participatory exhibition class 16h Problem solving or case studies 12h Academic monitoring and evaluation activities 2h	Virtual classroom: virtual networking, review and viewing of material, chats 4h Personal work and independent study 22h Complementary activities: social practices, cultural activities, visits to exhibitions, museums, attendance at conferences, etc. 19h

LEARNING RESULTS

Intellectual capacity for analytical and synthetic reasoning, theoretical and practical, for reflection and criticism, and its application in the recognition of the most important manifestations of Western cultural heritage.

Capacity to understand the fundamental dimensions of the human being, as well as their practical realization in an attitude of dialogue and in a constructive way in relation to the truth.

SPECIFIC LEARNING RESULTS

It has a broad and complete view of the history of science and technology||Learn about the impact of the main scientific conceptions and theories, evaluating favorable and questionable aspects.

It understands the relationship between the different sciences, theology and philosophy.

It includes the anthropological, epistemological, ethical and religious questions posed by the humanistic dimension of Biomedical Engineering; the scope of scientific knowledge and its limits and its impossibility to give meaning to the whole of human existence

Discover and assess the possibilities for change offered by your discipline to improve society and the personal responsibility that such transformation requires.

LEARNING APPRAISAL SYSTEM

ORDINARY CALL
The evaluation system of the Ordinary Call is the main mode, applicable to all students who enroll for the first time in the subject, unless they have an academic exemption.
Weighting of the evaluation:

Participation and classroom activities (25%): Regular attendance, exercises and readings, contributions and interventions, etc., of an oral and written, individual and group nature that expresses the student's work, dedication, interest and progress.
Group work (20%)
Written or oral tests: (55%)

Partial tests (15%) Tests may be partially liberating. Students absent on the day of the exercise will accumulate the percentage of the exercise not completed for the final exam. All exercises will be scheduled long enough and, in the case of partial tests, at least one week before the date of completion.
Final test (40%) An exercise that will include questions from all over the subject. The questions of the evaluation exercises may be: dissertations/topics or text comments, analysis and commentary of cases, limited questions, either of description or relationship, questions of definition and conceptual precision, and test-type questions.

Students who, both in the final exam score and in the average score of the other criteria, obtain a score higher than 9, have submitted all compulsory and voluntary work in a timely manner and have actively participated during the course, will be eligible for Honorary Enrollment. Enrollment must be explicitly requested by the interested student. If there are more requests than enrollments available, the teacher will inform you of the procedure to follow.
STUDENTS WITH ACADEMIC EXEMPTION
Weighting of the evaluation:

Delivery of mandatory course activities or a similar assignment: 20%
Final exam: 80%.

EXTRAORDINARY CALL: If students do not pass the subject in the ordinary call they must submit an assignment similar to the workload of the compulsory activities of the course whose value will be 20% and a final exam that constitutes 80% of the grade. Students in second and subsequent enrollment will benefit from the evaluation system for students with a waiver.

TOTAL NUMBER OF CALLS: The student has six (6) calls to pass this subject, two per academic year. The UFV Evaluation Regulations include everything related to the evaluation and consumption processes of calls.
ACADEMIC INTEGRITY: Any type of fraud or plagiarism on the part of the student in an evaluable activity will be sanctioned as set out in the UFV Coexistence Regulations. For these purposes, any attempt to defraud the evaluation system, such as copying exercises, exams, practices, works or any other type of delivery, either from another colleague, or from unauthorized materials or devices, in order to make the teacher believe that they are his own, will be considered “plagiarism”.

ETHICAL AND RESPONSIBLE USE OF ARTIFICIAL INTELLIGENCE

1.- The use of any Artificial Intelligence (AI) system or service shall be determined by the lecturer, and may only be used in the manner and under the conditions indicated by them. In all cases, its use must comply with the following principles:
a) The use of AI systems or services must be accompanied by critical reflection on the part of the student regarding their impact and/or limitations in the development of the assigned task or project.
b) The selection of AI systems or services must be justified, explaining their advantages over other tools or methods of obtaining information. The chosen model and the version of AI used must be described in as much detail as possible.
c) The student must appropriately cite the use of AI systems or services, specifying the parts of the work where they were used and describing the creative process followed. The use of citation formats and usage examples may be consulted on the Library website(https://www.ufv.es/gestion-de-la-informacion_biblioteca/).
d) The results obtained through AI systems or services must always be verified. As the author, the student is responsible for their work and for the legitimacy of the sources used.
2.- In all cases, the use of AI systems or services must always respect the principles of responsible and ethical use upheld by the university, as outlined in the Guide for the Responsible Use of Artificial Intelligence in Studies at UFV. Additionally, the lecturer may request other types of individual commitments from the student when deemed necessary.
3.- Without prejudice to the above, in cases of doubt regarding the ethical and responsible use of any AI system or service, the lecturer may require an oral presentation of any assignment or partial submission. This oral evaluation shall take precedence over any other form of assessment outlined in the Teaching Guide. In this oral defense, the student must demonstrate knowledge of the subject, justify their decisions, and explain the development of their work.

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

Bauer Wise, Susan. The Story of Science. From the Writings of Aristotle to the Big Bang Theory. New York: Norton, 2015.

Kuhn, Thomas. The Structure of Scientific Revolution. Chicago: The University of Chicago Press, 2012.

José Luis Comellas. Historia sencilla de la ciencia

Luis E. Iñigo Historia de Occidente Punto de Vista Editores

J. Ordoñez | V. Navarro | J.M. Sánchez Ron Historia de la Ciencia Austral

Additional

Wagner, Rogers, Andrew Briggs. The Penultimate Curiosity. How Science Swims in the Slipstream of Ultimate Questions. Oxford: Oxford University Press, 2016.

Morus, Iwan Rhys (ed.). The Oxford Illustrated History of Science. Oxford: Oxford University Press, 2017.

Carlos Solís y Manuel Sellés. Historia de la ciencia / 9ª ed.

J.M. Sánchez Ron El poder de la Ciencia Crítica

Pierre Thuillier. De Arquímedes a Einstein: las caras ocultas de la invención científica