

COURSE OUTLINE

(1) GENERAL

SCHOOL	Social Sciences		
ACADEMIC UNIT	Sociology		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	647	SEMESTER	6 th
COURSE TITLE	Cultures, Technology and Social Change		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		3	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Compulsory Elective/General Background		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (written essay in English)		
COURSE WEBSITE (URL)	https://www.soc.aegean.gr/ext-files/pm/pps/2022-647-en.pdf		

(2) LEARNING OUTCOMES

Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i> <i>Consult Appendix A</i> <ul style="list-style-type: none"> • Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area • Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B • Guidelines for writing Learning Outcomes
<p>By attending the course and studying the suggested bibliographical sources, it is expected that by the end of the semester students should be able to:</p> <ul style="list-style-type: none"> - understand technology as a social phenomenon, as it is produced in different historical and cultural contexts in the framework of the sociology of social change, - understand the social transformations that takes place combined with the technological phenomenon within the modern condition, - deepen their knowledge on theoretical approaches to the technological phenomenon, - deepen their knowledge on the sociological conversations about the technological phenomenon, especially as it is shaped in late modernity, - reflect on the relationship between science, technology and society, as it is shaped in the 4th industrial revolution conditions.
General Competences <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma</i>

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,
with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and
sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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- Criticism and self-criticism.
- Demonstrate social, professional and ethical responsibility, as well as sensitivity regarding gender issues.
- Generation of new research ideas.
- Promotion of free, creative and inductive thinking.
- Respect for diversity and multiculturalism.

(3) SYLLABUS

The course delves into the sociology of technique and the technological phenomenon as they are formed in different historical-cultural contexts in the pre-modern period and within the modern condition, combined with the sociology of social change. The starting point of the course is the understanding of technology as a social and cultural phenomenon and the in-depth study of the social changes that take place through the historical periodization of the technological phenomenon. In this context, aspects of the technique in the pre-modern period and the genealogy of technology in the modern condition are initially examined. Subsequently, the course focuses on the way the technological phenomenon within the modern condition is shaped, utilizing approaches of classical and modern sociological theory. Combining historiography with sociology, the critique developed in relation to technological determinism and technocracy is analyzed introductorily, as well as the genealogy and evolution of the field of science, technology and society (Science and Technology Studies/STS), with an emphasis on approaches to the social construction of technology, technology in the light of actor network theory and the contribution of studies on technological systems, ending in the opening of the "black box" of technology in the modern condition. In light of the above, the focus of interest is on the social transformations brought about by the technique of ancient times in different cultures, on the way the technique is shaped in the medieval period and on the genealogy of the technological phenomenon in the modern condition, inextricably linked to the consolidation of the modern science and the era of revolutions. Special focus is given to the relationship between technological phenomenon and social change, from the mechanical age and the emergence of the principle of the steam engine to its reproduction in the electric and electronic age, ending with the transformations that take place in conditions of the 4th industrial revolution in the age of genetic engineering, artificial intelligence (AI), algorithms and big data. In this context, special focus is given to opening the "black boxes" of biotechnology and nanotechnology through a sociological perspective.

Course Schedule – Curriculum:

Week 1: Brief introduction to the content of the course.

Presentation of main bibliography.

Explanation of teaching and assessment methods.

Introduction: Cultures, Technology and Social Change.

Week 2: Introduction - - Aspects of technique in the pre-modern period, the genealogy of technology in the modern condition and contrasting interpretations: The Critique of technological determinism and the technocratic ideal, and the genealogy - development of

the field Science, Technology, Society (Science and Technology Studies/ Science, Technology Studies-STs).

- The social construction of technology
- Technoscience and actor network theory
- The contribution of tech system studies
- Opening the "black box" of technology in the modern condition.

Week 3: Cultures, Technique and Social change in ancient times.

Week 4: Medieval technique and social change.

Week 5: Technology and social change in the modern condition Part 1. The scientific revolution and the laboratory space in early (western) modernity.

Week 6: Technology and social change in the modern condition Part 2. The effect of Enlightenment, the consolidation of modern science and "laboratory experiments", the age of revolutions and the technological transformations from mechanization to the networking of machines (18th - early 20th century).

- Aspects of the first industrial revolution and the beginnings of the circuit, the steam engine, the factory, capitalist mass production/industrial capital and the machine age.

- Aspects of the second industrial revolution and the reproduction of the principle of the steam engine through the transition from the electric generator to the electric motor and the electric age. Taylorism - Fordism. The importance of electrification and the laws of thermodynamics. Technologies of energy - transport - warfare and techno-social networks. Technologies in confrontation.

Week 7: Transformations of the technological phenomenon in Europe and America during the 20th century with an emphasis on the Second World War.

- Universal Turing Machine and Governmentality.
- Molecular biology technologies

Week 8: The replication of the steam engine principle through the network of electronic communication/computing devices in the context of the third industrial revolution (post-war, with an emphasis from 1970 onwards). The metaphorical condition and technology in the market society/technological politics in late modernity.

Nuclear, military, space technologies in the Cold War period and afterwards.

Week 9: Technology, social change and globalization in the context of the 4th industrial revolution: The expanded geneticization/digitalization of society. Sociological approaches to "information", "network" and "risk" societies.

Viewing of audiovisual material and discussion.

Week 10: The analog-digital distinction as a historical process and aspects of the automation/robotization/algorithmization of work.

Week 11: The relationship between society and biotechnology.

- Biotechnological research on a local and global context: the use of embryonic stem cells.

- Technologies "transcending" nature: Genetically Modified Plants, animals, humans, and societies in the age of genetic engineering.

Week 12: Society and artificial intelligence, algorithmic cultures, big data.

- Aspects of the robotization of social life.
- Virtual reality technologies: metaverse, avatars, blockchains, cryptocurrencies.

Week 13: Summary of the course modules.

Reflection on the technological phenomenon and social change in the modern condition.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in teaching and communication with students.	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	Lectures	39
	Study during semester	75
	Study for examination	33
	Examination	3
	Course total (25 hours per ECTS)	150 ώρες (6 ECTS)
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Language of evaluation: Greek and English (in the case of foreign exchange students). Methods of evaluation: Written exams. Evaluation criteria: Understanding the content of the course.	

(5) ATTACHED BIBLIOGRAPHY

- Προτεινόμενη Βιβλιογραφία

a) Basic Textbooks

Bijker, W., E., Pinch, T., J., Hughes, T., P., Law, J., Cowan, R., S., Callon, M., Misa, T., J., & Latour, B. (2013). *Διαμορφώνοντας την Τεχνολογία – Δομώντας την Κοινωνία. Η Κοινωνική Κατασκευή των Τεχνολογικών Συστημάτων*. Αθήνα: Ε.Μ.Π. Πανεπιστημιακές Εκδόσεις.

Hard, M., & Misa, T., J. (Επιμ.), (2011). *Ο τεχνολογικός χαρακτήρας της πόλης. Νεοτερικότητα και αστική ζωή στην Ευρώπη*. Αθήνα: University Studio Press.

Τύμπας, Τ., & Μεργούπη- Σαββαΐδου, Ε. (2013). *Ιστορίες της Τεχνολογίας του Εικοστού Αιώνα. Ηλεκτρικά Αυτοκίνητα, Ξύλινα Αεροπλάνα, Γαλλικοί Αντιδραστήρες, Γυναίκες Υπολογιστές*. Ρέθυμνο: Πανεπιστημιακές Εκδόσεις Κρήτης.

b) Additional References

Αραποστάθης, Σ., Παπανελοπούλου, Φ., & Τύμπας, Τ., (Επιμ.), (2015). *Τεχνολογία και Κοινωνία στην Ελλάδα. Μελέτες από την Ιστορία της Τεχνολογίας και τις Σπουδές Επιστήμης και Τεχνολογίας*. Αθήνα: Εκδοτική Αθηνών Α.Ε.

Berner, B., & Summerton, J., (Eds.), (2020). *Constructing Risk and Safety in Technological Practice*. London: Routledge.

Bharadwaj, A., & Glasner, P. (2012). *Local Cells, Global Science. The Rise of Embryonic Cell Research in India*. London: Routledge.

- Biagioli, M. (2006). *Ο Γαλιλαίος Αυλικός. Η πρακτική της επιστήμης στο πλαίσιο της κουλτούρας της απολυταρχίας*. Αθήνα: Κάτοπτρο.
- Bijker, W., E. (1995). *Of Bicycles, Bakelites, and Bulbs. Toward a Theory of Sociotechnical Change*. Cambridge, Mass: MIT Press.
- Bijker W., E., Hughes T., and T. Pinch (eds) (1987). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, Mass: The MIT Press.
- Bucci, M. (2009). *Beyond Technocracy. Science, Politics, Citizens*. Cham: Springer.
- Collins, H., M. (1990). *Artificial experts: Social knowledge and intelligent machines*. Cambridge, MA: The MIT Press.
- Cooper, S. (2014). *Technoculture and Critical Theory: In the Service of the Machine?* London: Routledge.
- Glennan, S., & Illary, P., (Eds.), (2017). *The Routledge Handbook of Mechanisms and Mechanical Philosophy*. London: Routledge.
- Hobsbawm, J., E. (2015). *Η Εποχή των Επαναστάσεων, 1789-1848*. Αθήνα: Μορφωτικό Ίδρυμα Εθνικής Τραπέζης.
- Hommels, A., Mesman, J., & Bijker, W., E. (2014). *Vulnerable in Technological Cultures: New Directions in Research and Governance*. Cambridge, MA: MIT Press.
- Ichikawa, H. (2018). *Soviet and Engineering in the Shadow of the Cold War*. London: Routledge.
- Knorr-Cetina, K. (1999). *Epistemic Cultures: How the Sciences Make Knowledge*. Harvard, MA: Harvard University Press.
- Johnson, D., G., & Wetmore, J., M. (2008). *Technology and Society: Building our Sociotechnical Future*. Cambridge, MA: MIT Press.
- Koch, G. (2017). *Digitisation. Theories and Concepts for Empirical Cultural Research*. London: Routledge.
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- Mayntz, R., & Hughes, T. (2021). *The Development of Large Technical Systems*. London: Routledge.
- Merton, R. (1970). *Science, Technology & Society in Seventeenth Century England*. New York: Harper Torchbooks.
- O'Connor, P., & Bența, M., I. (Eds.). (2021). *The Technologisation of the Social. A Political Anthropology of the Digital Machine*. London: Routledge.
- Ρεντετζή, Μ., (Επιμ.), (2014). *Ο χώρος του επιστημονικού εργαστηρίου (16ος-20ός αιώνας)*. Ηράκλειο: Πανεπιστημιακές Εκδόσεις Κρήτης.
- Rifkin, J. (2012). *Η Τρίτη Βιομηχανική Επανάσταση. Πώς η Οριζόντια Ισχύς Μεταμορφώνει τους Ενεργειακούς Πόρους, την Οικονομία και τον Κόσμο*. Αθήνα: Λιβάνης.
- Seyfert, R., & Roberge, J., (Eds.), (2016). *Algorithmic Cultures. Essays on meaning, performance and new technologies*. London: Routledge.
- Shapin, S., & Schaffer, S. (2017). *Ο Λεβιάθαν και η αντλία κενού. Ο Χόμπς, ο Μπόιλ και η Πειραματική Ζωή*. Αθήνα: Ροπή.
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- Long, V., & Holmén, M., (eds.), (2021). *Technological Change and Industrial Transformation*. London: Routledge.

Walton, S., A., (Ed.), (2019). *Fifty Years of Medieval Technology and Social Change*. London: Routledge.

-Συναφή επιστημονικά περιοδικά:

AI and Society

American Journal of Sociology

Big Data and Society

BioSocieties

European Journal of Sociology

Επιθεώρηση Κοινωνικών Ερευνών

Κρίση

Science, Technology and Human Values

Societies

Sociology

Trends in Biotechnology