COURSE DESCRIPTION CARD - SYLLABUS

Course name
Fundamentals of Entrepreneurship in ICT [S1Teleinf1>HTiI]

Course

Field of study
Teleinformatics

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

The student has knowledge of the basic issues of electronics, telecommunications, and computer science. The student is able to use scientific and technical literature in Polish and English, both books and available on the Internet. In the field of social competence, the student must present such attitudes as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, and respect for other people.

Course objective

Familiarizing students with the history of electronics, telecommunications and computer science in order to learn the basics of the creation of ICT.

Course-related learning outcomes

Knowledge:
1. The student has knowledge of the basic achievements of science and technology in the course of the development of electronics, telecommunications, and computer science.
2. Knows the development trends of the above mentioned scientific and technical disciplines.
3. Knows the milestones leading to the development of modern wireless communication systems.

Skills:
1. The student is able to acquire, integrate, interpret information from literature, databases, and other properly selected sources, also in English or another foreign language recognized as the language of international communication, as well as draw conclusions and formulate and justify opinions.
2. He has the ability to self-educate himself and understands its need.
3. Has the preparation necessary to work in the environment of ICT systems and networks and knows the principles of operation of not only the latest devices and systems, but also those that are operated for a longer time.

Social competences:
1. The student understands the need and knows the possibilities of continuous further education (first-, second-, and third-degree studies, postgraduate studies, courses) - to improve professional, personal, and social competences; can argue the need for lifelong learning.
2. Be aware of the importance and understand the nontechnical aspects and effects of engineering activities,
including their impact on the environment and related responsibility for the decisions taken.
3. Understands the impact of wireless communication on the development of modern societies.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures passing based on the written test from content of the lectures. The written test contains open and/or closed questions and takes place in the last lecture. Passing the 50% threshold of points.
Grading scale: <50% → 2.0 (ndst); 50% - 59% → 3.0 (dst); 60% - 69% → 3.5 (dst +); 70% - 79% → 4.0 (db); 80% - 89% → 4.5 (db +); 90% - 100% → 5.0 (bdb). The passing threshold may change depending on the results of the test.

Programme content

Lectures related to the history of information theory and computing. History of multimedia telekommunications. Evolution of telecommunication, computer and mobile networks, and the history of the Internet. Evolution of various hardware interfaces.

Course topics

Lectures are conducted by employees of the Faculty of Computing and Telecommunications.
Topics of the lectures.
1. History of information theory.
Topics of information theory and its applications. Some facts on Claude Shannon, the inventor of information theory. Model of an information system. Notion of information and measure of it. Rules and limits of source and channel coding. Channel capacity. Shannon theorem on channel coding. The most important achievements in information theory and digital communication systems and their dates.
2. History of multimedia telekommunications.
3. History of telecommunications networks.
Development of telecommunications networks from the telephone network to data transmission, the functional evolution of nodes with the advancement of integrated circuits and processors technology. Prospects for further development of telecommunications networks and services.
4. History of computer networks and the Internet.
Reasons for the creation and development of data transmission networks. Integration of telecommunications services based on Internet protocols. New applications and directions of the Internet development.
5. History of computing.
First known number systems, abacus and its variants, astronomical devices and Antikithira machine, number zero, slide rule, analog computing - till analog machines, Pascal's calculator - arithmometer - Babbage's analytical machine, dawn of modern computing, what next?
6. The milestones in the development of wireless communication, from antiquity (electromagnetic phenomena) until 21st century (5G cellular systems).
7. A brief history of interfaces.
Hardware and software interfaces, internal and external interfaces, serial and parallel interfaces. Data transfer methods. Genesis of hardware interfaces and their development. Serial or parallel interface?

History of interface standardization. Wireless interfaces. Application of interfaces in intelligent sensors. Are historical interfaces still used?

Teaching methods

Lecture: a traditional multimedia presentation, illustrated with examples, and a lecture with elements of discussion.

Bibliography

Basic:
1. Articles from the series Artykuły z serii History of Communications, IEEE Communications Magazine.
2. Articles in IEEE Spectrum.
3. Recommended Wikipedia articles.
4. K. Wojtuszkiewicz, Urządzenia techniki komputerowej. Część 2. Urządzenia peryferyjne i interfejsy, Wydawnictwo naukowe PWN, Warszawa 2009.

Additional:
1. A. A. Huurdemann, The Worldwide history of telecommunications, Wiley-IEEE Press 2003.
2. F. Nebeker, Signal processing: The emergence of a discipline 1948 to 1998, IEEE History Center, Rutgers 1998.
3. The history of high definition television, IET 2007.
4. T. Bilski, Interfejsy i urządzenia zewnętrzne, Wydawnictwo Politechniki Poznańskiej, Poznań 2007.

Breakdown of average student's workload

	Hours	ECTS
Total workload	26	1,00
Classes requiring direct contact with the teacher	15	0,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	11	1,00