COURSE DESCRIPTION CARD - SYLLABUS

Course name
Telemedical engineering [S2IBio1>IT]

Course

Field of study
Biomedical Engineering

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
15

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

Lecturers

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Prerequisites

Person knows how to represent information in digital systems, It has basic knowledge in computer science and especially in database design. Can use system software. Can describe the structure of computer networks, basic network services and basic data security principles in computer systems. Can design a relational database. Is open to the deployment of modern information technology in science and technology. Is able to develop its own knowledge of the subject.

Course objective

UTo familiarize students with the basics of software and hardware used in telemedicine. Acquiring skills in designing and operating simple telemetry systems used in medicine.

Course-related learning outcomes

Knowledge:
Defines, distinguishes and classifies medical telemedicine concepts. Knows the basic standards of data exchange and how to transfer them in the field of telemedicine. Distinguishes and characterizes the basic systems of remote medical data acquisition and automated diagnostic methods. Knows how tele-diagnostic systems work as well as tele-therapeutic and patient monitoring systems (remotely). Has

knowledge of systems for teleconferences and medical teleconferences.

Skills:
Can apply appropriate technologies and network protocols used in telemedicine. Is able to characterize medical data. Has the ability to select, configure and use the medical telemedicine system.

Social competences:
Is aware of the importance and understanding of non-technical aspects and effects of engineering activities. Can use multimedia technologies in communication and teamwork.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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IIntermediate rating:
Laboratory: on the basis of an assessment of the progress of laboratory tasks
Lecture: based on answers to questions about the material discussed in previous lectures
Summary rating:
Laboratory: credit based on tasks performer during laboratory (credit on computer workstation) and the implementation of the report of the exercises. The student must obtain a positive assessment of the executed report.
Lecture: credit based on test consisting of open questions in a scale 0-1. Test is passed after obtaining at least 55% of all points. Laboratory completion is needed to begin final test papers. Discussion of the test results. Test is carried out at the end of the semester.

Programme content

Lecture:
Basic concepts related to telemedicine.
Classification and characteristics of telemedicine services.
Characteristics of telemedicine data.
Technologies and protocols for telemedicine data exchange.
Quality and data security.
Telemedicine systems that support patient treatment and monitoring, usage and construction.
Telemedicine and teleconferencing systems in medical applications.
Medical Internet.
Laboratory:
Get acquainted with the construction of telemedicine systems.
Develop a scenario for medical consultation from a selected area.
Simulation of remote medical consultation using TeleDICOM.
Preparation and execution of a telemedicine project with the specified functionality, taking into account relevant network protocols and hardware configuration.

Teaching methods

Lecture: multimedia presentation illustrated with examples given on a board, problem solving.
Laboratory: solving tasks at the computer. Practical exercises and discussion.

Bibliography

Basic
1. Fong B., Fong A., Li C., Telemedicine Technologies, Information Technologies in Medicine and Telehealth, Wiley, 2010
2. Nałęcz T. (red.), Systemy komputerowe i teleinformatyczne w służbie zdrowia, Biocybernetyka i inżynieria biomedyczna 2000, Tom 7
3. Moczko J., Kramer M., Cyfrowe metody przetwarzania sygnałów biomedycznych, Wydawnictwo Naukowe UAM, Poznań 2001
Additional
1. Glinkowski W. (red.), Postępy Międzynarodowej Telemedycyny i e-Zdrowia, MediPage, 2006
2. Xiao Y., Chen H., Mobile Telemedicine: A Computing and Networking Perspective, Auerbach Publications, 2008

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00