COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information systems in medicine [S2IBio1>SIwM]

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
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

dr hab. inż. Hubert Jopek
hubert.jopek@put.poznan.pl

Lecturers

Prerequisites

The student should have basic computer skills and the use of typical programs such as a spreadsheet. The student should also efficiently search, analyze and process the obtained data.

Course objective

The aim of the course is to familiarize students of Biomedical Engineering with the basic applications of the so-called medical informatics, i.e. IT support in the field of daignostics, therapy and organization of processes in health care units. Classes mainly cover issues related to modeling the exchange and use of medical data, as well as the design and use of medical databases.

Course-related learning outcomes

Knowledge:
1. The student knows the basic concepts of medical informatics
2. Has knowledge of the possibilities of modern information systems in medical applications
3. The student knows the basic ways of representing medical data
4. The student understands the concept of interoperability and the need to apply data exchange standards in medicine

Skills:
1. Student can model medical data using appropriate standards
2. Can design and use simple databases
3. Has the ability to analyze data with the use of SQL language

Social competences:
1. The student is aware of the role played by information systems in public life
2. The student is able to use IT tools to improve teamwork

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Passing the lecture on the basis of the points obtained during the exam and during active participation in classes
Completion of the laboratory requires the creation of a database project in accordance with the guidelines.
Passing requires more than 50% of points:> 50% - 3.0,> 60% - 3+,> 70% - 4,> 80% - 4+,> 90% of points - 5.0

Programme content

Lecture:
- introduction to the use of computer science in medicine
- Theoretical and practical aspects related to the construction of information systems.
- Coding and classification of medical data.
- Basics of building and using relational databases
- Data modeling, in particular medical data (PN-EN 13606 and HL7 CDA standards).
- Security and confidentiality of data in IT systems
- Interoperability
- the use of artificial intelligence and expert systems in medical diagnostics

Lab:
- Data modeling.
- Data recording formats including data quality, semantics and interoperability.
- Use of relational databases
- Use of SQL for data analysis

Course topics

none

Teaching methods

Lecture: Traditional lecture with the use of multimedia presentations
Laboratory: computer laboratory either in the classroom or remotely with the use of elearning tools

Bibliography

Basic
R. Rudowski (red.) „Informatyka medyczna”, Wydawnictwo Naukowe PWN, 2003
E. Piętka „Zintegrowany system informacyjny w pracy szpitala”, Wydawnictwo Naukowe PWN
D. Mendrala, M.Szeliga, "Praktyczny kurs SQL", Helion, 2015
Specifications and technical documentation available on the Internet
Standards and law regulations in force in Poland in the field of IT systems in healthcare
Additional
E. Shortliffe i inni, "Medical Informatics", Springer Verlag, New York, 2001
W. R. Hersh, R. E. Hoyt, "Health Informatics: Practical Guide", lulu.com, 2018
L. Burke, B. Weill, "Information Technology for the Health Professions", Pearson, 2018

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	47	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	28	1,00