COURSE DESCRIPTION CARD - SYLLABUS

Course name
Medical equipment in clinical practice [S2IBio1E-UMiR>AMwPK]

Course

Field of study
Biomedical Engineering

Year/Semester
1/2

Area of study (specialization)
Medical and Rehabilitation Devices

Profile of study
general academic

Level of study
second-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
15

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

- basic knowledge in the anatomy and activities of the human respiratory system basic with mechanics - logical thinking and planning, using information obtained from the library and the Internet - understanding the need to learn and acquire new knowledge

Course objective

Obtaining by the student-bioengineer the knowledge and skills in the basics of issues related to medical and rehabilitation devices used in the diagnosis and monitoring of treatment of respiratory diseases

Course-related learning outcomes

Knowledge:
1. Student has a basic knowledge of the clinical basis

Skills:
1. Student is able to characterize and determine basic properties in health conditions and for selected pathologies.
2. Student can prepare and present an oral and written presentation on the basic clinical issues of

pulmonary equipment applications.

Social competences:
1. Student is able to cooperate in a group.
2. Student is aware of the basic clinical significance of medical and rehabilitation devices used in the diagnosis and monitoring of the treatment of respiratory diseases.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Forming rating:
Lectures:
- Based on answers to questions concerning the material discussed in previous lectures
Projects / seminars:
- On the basis of an assessment of the current progress of tasks,
Summary rating:
Lecture: A test that captures the whole message from the subject, carried out at the end of the semester. Completion of the subject - in the case of a correct answer for min. 60% of final test questions; proportional scale of positive grades (dst, dst +, db, db +, very good).
Projects / seminars: Credits based on an oral or written answer regarding the content of each project / seminar project, a report on each class according to the teacher"s instructions. To get credit all project / seminar classes have to be passed (positive assessment of the answer and report).

Programme content

lectures:
1. Introduction to respiratory diseases - epidemiological issues and social challenges.
2. Aspects of diagnosis of respiratory system diseases including: a / obstructive diseases, b / neoplastic diseases, respiratory infections, d / breathing disorders during sleep.
3. Selecting aspects of therapy of respiratory diseases including: a / obstructive diseases, b / neoplastic diseases, respiratory infections, d / breathing disorders during sleep.
4. A place of a rehabilitation technician in dealing with people with respiratory problems.
5. Basics of construction and principles of functioning and the use of equipment for functional tests of the respiratory system used in the techniques of: a / spirometry, b / plethysmography and 3 / gas diffusion.
6. Basics of construction and principles of operation and the use of equipment for functional tests - gasometry
7. Basics of construction and principles of operation and the use of endoscopic equipment for respiratory system used in bronchoscopy techniques.
8. Basics of construction and principles of functioning and application of equipment for ultrasound examination of the respiratory system, including in the scope of endobronchial tests.
9. Basics of construction and principles of functioning and the use of equipment for the diagnosis of breathing disorders during sleep: a / polisomnography, b / polygraphy.
10. Basics of construction and principles of operation and the use of breathing apparatus in non-invasive ventilation techniques: a / CPAP, b / BPAP, c / auto? CPAP, d / auto-BPAP, e / autoservice fans.
11. Basics of construction and principles of operation and the use of apparatus for the study of oximetry and percutaneous capnometry.
12. Basics of construction and principles of operation and the use of devices for administration of drugs by inhalation.
13. Basics of construction and principles of operation and the use of devices for rehabilitation in people with respiratory problems.
14. Challenges of diagnostics and therapy, including rehabilitation, concerning respiratory system diseases.
Projects / seminars:
1. Basics of construction and principles of functioning of the respiratory system functional apparatus used in the techniques of: a / spirometry, b / plethysmography and 3 / gas diffusion.
2. Basics of construction and principles of operation and the use of equipment for functional tests - gasometry
3. Basics of construction and principles of operation of endoscopic apparatus for respiratory system

used in bronchoscopy techniques.
4. Basics of construction and principles of operation of ultrasound devices for respiratory system, including in the scope of endobronchial tests.
5. Basics of construction and principles of functioning of the apparatus for the diagnosis of breathing disorders during sleep: a / polysomnography, b / polygraphy.
6. Basics of construction and principles of functioning of breathing apparatus in non-invasive ventilation techniques: a / CPAP, b / BPA.

Course topics

none

Teaching methods

1. Lecture: multimedia presentation.
2. Project: project development, discussion, team work.

Bibliography

Basic
1. Choroby wewnętrzne, Szczeklik Andrzej (red). Medycyna Praktyczna, Kraków, 2013
2. Kompendium pulmonologiczne. H.Batura ? Gabryel, (red.), Poznań 2013
3. Respiratory Medicine. P. Palange, A. Simonds (red), European Respiratory Society 2010
Additional
1. Infekcje układu oddechowego. oddechowego.H. Batura ? Gabryel (red.), Termedia., Poznań 2009
2. Przewlekła obturacyjna choroba płuc ? podstawy diagnostyki i terapii. H. Batura ? Gabryel (red.).Termedia, Poznań 2007
3. J. Zieliński, M. Koziej, M. Mańkowski.: Zaburzenia oddychania w czasie snu. Wydawnictwo Lekarskie PZWL Warszawa 1997
4. American Academy of Sleep Medicine. Sleep-related breathing disorders in adults: recommendations for syndrome definition and measurement techniques in clinical research: the report of an American Academy of Sleep Medicine Task Force. Sleep. 1999; 22: 667-689
5. R. Resnick, D. Halliday.: Fizyka 2, Wydawnictwo Naukowe PWN, Warszawa

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