# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Equipment of surgical and medical rooms [S2IBio1>WSO]

## Course

Field of study
Biomedical Engineering

Year/Semester
1/2

Area of study (specialization)
Bionics and Virtual Engineering

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
0

Other
0

Tutorials
0

Projects/seminars
15

## Number of credit points

2,00

## Coordinators

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## Lecturers

## Prerequisites

The student should have knowledge of ergonomics in medicine and basic knowledge of the operation and organization of medical facilities in Poland. Students should be able to use regulations and normative acts and have a basic knowledge of English.

## Course objective

The aim of the course is to familiarize the students with the basic and specialist medical equipment, the quality systems, the rules and procedures of the operating block, as well as with questions about architectural requirements, surface materials and necessary installations on the premises of the entity performing the therapeutic activity.

## Course-related learning outcomes

Knowledge:
The student has knowledge about devices and equipment used in medicine, medical robots and laser devices.
The student has knowledge of development trends and the most important new achievements specific to biomedical engineering.

The student has knowledge of information systems in medicine, including in particular medical electro-diagnostic and diagnostic imaging systems.

Skills:
The student is able to obtain information from literature, databases and other properly selected sources (also in English).
The student is able to make a critical analysis of the functioning and evaluate existing technical solutions, in particular regarding medical devices.
The student is able to propose improvements to existing technical solutions in medicine.

Social competences:
The student is aware of the importance and understands non-technical aspects and effects of engineering activities, including their impact on the environment and the related responsibility for decisions taken.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired as part of the lecture is verified on the basis of the final test during the last class in the semester. The test consists of 10 single-choice questions. In each question, 1 point is obtained for the correct answer. Passing threshold: 50%.
The knowledge and skills acquired during the project classes are verified by the presentation of the project developed by the students (in groups) and a discussion about the work.

## Programme content

Lecture:
Basic functions of operating theatres; Medical devices – classification of medical devices, safety and performance requirements; Operating unit premises – organisation of premises, basic equipment, medical equipment; Current trends in operating theatres – integrated operating theatres, control and recording systems for operations, hybrid theatres, mobile operating theatres; Quality systems of the operating unit – quality of medical equipment, rooms and air, day-to-day activities of staff; Architectural solutions for the operating room – architectural requirements, ergonomic room organisation, surface materials, necessary installations; rules and procedures on the operating block; Basic equipment of medical practices – example of practice organization.
Project:
Description of the device or system of equipment: principle of operation, significance in the equipment of operating theatres or medical practices, description of correct operation and control, conditions for maintaining efficiency, most frequent malfunctions, servicing, disposal.

## Course topics

1. Medical equipment (medical devices) - classification.
2. Operating unit premises, basic equipment.
3. Current trends – integrated, hybrid, mobile operating theatres.
4. Quality systems of the operating unit, rules and procedures on the operating block.
5. Architectural solutions for the operating room, necessary installations.
6. Principle of operation, disposal of selected medical devices.

## Teaching methods

Lecture: multimedia presentation illustrated with examples and workshops in cooperation with companies producing equipment for medical facilities.
Project: presentation of the project developed by students (in groups), searching for sources, teamwork, discussion.

## Bibliography

Basic
Dołba A., Blok operacyjny - praktyczne ABC, MediPage, Łódź 2019.
Grzymała-Kozłowski M., Optymalizacja bloku operacyjnego z punktu widzenia architekta, Ogólnopolski

Przegląd Medyczny, 5/2014.
Sobierajska A., Lenarski R., Wentylacja i klimatyzacja w szpitalu – wytyczne do projektowania, wykonania, odbioru i eksploatacji, Ogólnopolski Przegląd Medyczny 6/2018.
Piotrowski M. (red.), Blok operacyjny XXI wieku – organizacja i funkcjonowanie, 2020.
Woszczyna Z., Sopel A., Blok operacyjny – optymalizacja organizacji pomieszczeń i wyposażenia, Ogólnopolski Przegląd Medyczny 5/2014.
Additional
Kaiser K., Sale operacyjne i zabiegowo-operacyjne, www.chlodnictwoiklimatyzacja.pl [dostęp 21.06.18]
Landau M., Historia medycyny: chirurdzy w czarnych fartuchach, www.focus.pl, [dostęp 13.06.18].
Mach T., Gil A., Ergonomia na bloku operacyjnym z punktu widzenia architekta, Ogólnopolski Przegląd Medyczny, 6/2015.
Rozporządzenie Ministra Zdrowia z dnia 26 marca 2019 r. w sprawie szczegółowych wymagań, jakim powinny odpowiadać pomieszczenia i urządzenia podmiotu wykonującego działalność leczniczą, Dz.U. 2019 poz. 595, .
Rozporządzenie Ministra Zdrowia z dnia 5 października 2017 r. w sprawie szczegółowego sposobu postępowania z odpadami medycznymi. Dz.U. 2017 poz. 1975.
Skalski J, Początki chirurgii w najdawniejszych czasach, CX News nr 3/37/2011.
Ustawa z dnia 15 kwietnia 2011 r. o działalności leczniczej, Dz.U. 2011 nr 112 poz. 654.
Ustawa z 7 kwietnia 2022 r. o wyrobach medycznych – Dz.U., 2022, poz. 974.

## 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 |