



Subject card

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|---|---|--|--|------------|--|---------|-----|
| Subject name and code | Engineering problems in neurology, PG_00055758 | | | | | | |
| Field of study | Mechanical and Medical Engineering | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2022/2023 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | blended-learning | | |
| Year of study | 2 | Language of instruction | | | Polish | | |
| Semester of study | 4 | ECTS credits | | | 1.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | Grzegorz Kozera | | | | |
| | Teachers | | Grzegorz Kozera | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 10.0 | 0.0 | 5.0 | 0.0 | 0.0 | 15 |
| | E-learning hours included: 10.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | | Self-study | | SUM |
| | Number of study hours | 15 | 1.0 | | 9.0 | | 25 |
| Subject objectives | To acquaint the student with the basic causes, symptoms and treatments of diseases of the nervous system. Overview of the most important methods of neuroimaging, neurophysiological and ultrasound diagnostics used in neurology. Mastering by the student to solve the basic problems related to the prevention of diseases of the nervous system | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K6_U10] he/she is able to assess the human body physics and basic functioning of the body organs, he/she is able to use basic medical knowledge to solve mechanical-medical problems in the scope of the MME study | | The student describes the basic elements of the nervous system, explains the most important principles of their functioning and the main causes of disease symptoms | | [SU3] Assessment of ability to use knowledge gained from the subject | | |
| | [K6_K02] he/she is aware of importance of professional dealing and to fulfill ethics obligations, he/she understands other (non-technical) abilities of mechanical engineering professional, their influence on the society and security of environment, he/she is aware of importance of social cooperation | | The student is aware of the importance of non-technical conditions and effects of engineering activities. The student is aware of the responsibility for the decisions made. | | [SK2] Assessment of progress of work | | |
| | [K6_W12] he/she has basic knowledge in the field of fundamental medical sciences, human body anatomy, and physiology, salvage service | | The student is able to recognize the basic symptoms of disease, can select adequate diagnostic techniques and knows the rules of prevention. | | [SW1] Assessment of factual knowledge | | |

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| Subject contents | <p>1: Basics of the anatomy of the nervous system: - structure of the central and peripheral nervous system, - construction of the motor and sensory system, - the most common disorders in the sensory system.</p> <p>2: Vascular diseases of the brain - stroke / TIA: - epidemiology and risk factors, - main symptoms of the disease, - treatment methods, - diagnostics - neuroimaging techniques, - stroke prevention.</p> <p>3. Diseases of the spine and spinal cord: - anatomy and function of the spine and spinal cord, - the most common diseases of the spine and spinal cord, - diagnostic and therapeutic methods, - prevention of diseases of the spine.</p> <p>4. Methods of diagnosing nervous system diseases: neurophysiological basics, used used, clinical indications and obtained results</p> <p>A: electrophysiological tests:</p> <ul style="list-style-type: none"> - electroencephalography, - nerve conduction studies, electromyographic examination, - evoked potentials; <p>B: ultrasound examinations:</p> <ul style="list-style-type: none"> -ultrasound of intracerebral arteries, - transcranial ultrasound, - ultrasound of peripheral nerves. | | |
| Prerequisites and co-requisites | Basic knowledge of the subjects: Physics, Biology, Electrical Engineering | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Attendance / participation in classes | 80.0% | 100.0% |
| Recommended reading | Basic literature | Ryszard Podemski. Kompendium Neurologii. Via Medica Gdańsk 2019, wyd.4 | |
| | Supplementary literature | <p>Okrój-Lubecka Julitta, SZUROWSKA EDYTA, KOZERA GRZEGORZ: Metody neuroobrazowania ostrej fazy udaru niedokrwiennego mózgu w praktyce klinicznej Forum Med. Rodz. 2015 : t. 9, nr 6</p> <p>Radosław Kaźmierski (red.) <i>Podręcznik</i> diagnostyki ultrasonograficznej w neurologii, Czelej, Lublin 2011</p> <p>Grzegorz Kozera, Joanna Wojczal, Walenty Michał Nyka Zastosowanie badań ultrasonograficznych w profilaktyce udaru mózgu. Forum Medycyny Rodzinnej 2008. T 2, nr 6, s</p> | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| Example issues/ example questions/ tasks being completed | Discuss the structure of the nervous system. Justify the statement that a stroke is a growing threat of the 21st century, indicate its most common symptoms. Indicate the most important principles of the prevention of vascular diseases of the CNS, explain why "it is better to heal than to prevent". What does the "time is the brain" principle mean. Point out the advantages and disadvantages of individual neuroimaging techniques. Present the principles of work and everyday ergonomics, which are beneficial in reducing the risk of developing spine diseases. Define indications and discuss the methods of ultrasound and electrophysiological examinations used in neurology. | | |
| Work placement | Not applicable | | |