

DEPARTMENT: DIETETICS

the list of subjects for ERASMUS+ incoming students



**ERASMUS+ PROGRAMME**  
**FIELD OF STUDY: DIETETICS**  
**LIST OF SUBJECTS FOR WINTER OR SUMMER SEMESTER 2022/2023**

| No.           | SUBJECT   | HOURS/<br>ECTS | Form of<br>passing |
|---------------|---|----------------|--------------------|
|               | Basics of Dietetics (Podstawy Dietetyki)  | 15/4           | Exam/raports       |
| 02-DT-1-ER-02 | Introduction to Human Nutrition (Podstawy Żywienia Człowieka)   | 15/4           | Exam               |
|               | Clinical Nutrition (Żywienie Kliniczne)   | 20/5           | Exam/raports       |
| 02-DT-1-ER-03 | General and Nutritional Biochemistry (Biochemia Ogólna i Żywności)  | 15/4           | Exam               |
| 02-DT-1-ER-01 | Sports Dietetics and Supplementation (Dietetyka Sportowa i Suplementacja)   | 20/5           | Exam               |
| 02-DT-1-ER-04 | Sports Nutrition (Żywienie w Sporcie)   | 15/4           | Pass               |
| 02-DT-1-ER-11 | Histology of the Digestive System (Histologia Układu Pokarmowego)   | 15/4           | Pass               |
| 02-DT-1-ER-10 | Food and Waterborne Parasitology (Parazytologia w Żywieniu)   | 15/4           | Pass               |
| 02-DT-1-ER-08 | Kids and Youth Sport – an introduction to the bio-banding concept based on the individualization of biological development and optimization of the training process (Sport dzieci i młodzieży, wprowadzenie do koncepcji bio-banding w oparciu o indywidualizację rozwoju biologicznego i optymalizację procesu treningowego) | 15/4           | Pass               |
| 02-DT-1-ER-09 | Vegetarian Food and Meals in the Prevention and Treatment of Diseases ( Potrawy i Posiłki Wegetariańskie w Profilaktyce i Leczeniu Chorób)  | 15/4           | Pass               |
|               | Nutrition in Extreme Sports, Qualified Tourism and Different Climatic Conditions (Żywienie w Sportach Ekstremalnych, Turystyce Kwalifikowanej i Różnych Warunkach Klimatycznych)  | 20/5           | Exam/raports       |
|               | Nutrition in the Life Cycle (Żywienie w Różnych Okresach Życia)   | 20/5           | Exam/raports       |

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|----------------------|---|-------------|---------------------|
|                      | <b>Contemporary Trends in the Science of Human Nutrition (Współczesne Trendy w Naukach o Żywieniu Człowieka)</b>                          | <b>20/5</b> | <b>Exam/raports</b> |
|                      | <b>Methodological and Ethical Aspects of Conducting Human Studies (Metodologiczne i Etyczne Zagadnienia w Badaniach z Udziałem Ludzi)</b> | <b>10/2</b> | <b>Project</b>      |
|                      | <b>Microbiology in Human Nutrition (Mikrobiologia w Żywieniu Człowieka)</b>   | <b>30/6</b> | <b>Exam/raports</b> |
|                      | <b>World Cuisines</b>   | <b>15/4</b> | <b>Pass</b>         |
|                      | <b>Food Technology With Consumer Service</b>  | <b>15/4</b> | <b>Pass</b>         |
|                      | <b>Allowed and Prohibited Methods of Performance Support In Sport (Dozwolone i Zabronione Metody Wspomagania Wysiłku w Sporcie)</b>       | <b>20/5</b> | <b>Exam/raports</b> |
|                      | <b>Nutritional Support for Fertility and Reproductive Health (Żywieniowe Wspomaganie Płodności i Zdrowia Prokreacyjnego)</b>              | <b>15/4</b> | <b>Exam/raports</b> |
| <b>01-WF-1-ER-10</b> | <b>General Physiology (Fizjologia Ogólna)</b>   | <b>15/4</b> | <b>Exam</b>         |
| <b>01-WF-1-ER-08</b> | <b>Exercise Physiology (Fizjologia Wysiłkowa)</b>   | <b>15/4</b> | <b>Exam</b>         |
| <b>01-WF-1-ER-26</b> | <b>Health Education (Wychowanie Zdrowotne)</b>  | <b>15/4</b> | <b>Exam</b>         |
| <b>01-T-1-ER-11</b>  | <b>Art Therapy Workshop (Elementy Arteterapii)</b>  | <b>15/4</b> | <b>Pass</b>         |
| <b>01-T-1-ER-12</b>  | <b>Dance Therapy Elements - introduction (Elementy Terapii Tańcem - wprowadzenie)</b>   | <b>15/4</b> | <b>Pass</b>         |
| <b>01-T-1-ER-13</b>  | <b>Yoga (Joga)</b>  | <b>15/4</b> | <b>Pass</b>         |
| <b>02-DT-1-ER-06</b> | <b>Theory of Sport (Teoria Sportu)</b>  | <b>15/4</b> | <b>Pass</b>         |
| <b>02-DT-1-ER-07</b> | <b>Genetics and Molecular Biology (Genetyka i Biologia Molekularna)</b>   | <b>15/4</b> | <b>Pass</b>         |

## OBLIGATIONS

### Classes for ERASMUS Incoming Students

All Incoming Students are obliged to respect the following rules:

1. **Students should establish/update** the list of classes/lectures to attend (learning agreements) as soon as possible (within one month of their arrival to Poznań). Student must not make changes in this document during the semester or shortly before the exams because it is the basis for preparation of an Exam Card.
2. Student must not stop attending **classes/lectures during the course. Institutional and Departmental Coordinator and teacher responsible for it should be informed earlier.**
3. Students should come to classes run by Polish teachers **on time.**
4. Within every chosen course an Erasmus Student has the maximum of 15 class-hours of **lectures** (in English) and, besides that, participates in some practical classes together with the Polish students. We offer **a module of subjects in English** with our academic teachers who are responsible for the subject and are obliged to do their best to help students. The module is based on proposals from incoming students (their Learning Agreements). Whether a course will be offered in English is subject to student demand (min. 50% of incoming students). For financial reasons **we can offer a MAXIMUM of 10 subjects per semester from each faculty and 5 subject for physiotherapy students (no more).**
5. In order to receive credits for the courses an Erasmus Student should see the teachers and present the **Exams Card** available from the Institutional Coordinator at the Erasmus+ Programme Office. This form is the basis for the preparation of the Transcript of Records which **will be sent directly to the coordinator at the partner institution not earlier than one month after the end of semester.**
6. In case of **any problems** an Erasmus Student should immediately contact his/her Polish partner-student, the Institutional or Departmental Coordinator.
7. According to the Bilateral Agreement signed with your university, the IRO will confirm the real time of your study only.

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|-------------------------------------|---|
| <b>Subject</b>                      | <b>DIETETYKA SPORTOWA I SUPLEMENTACJA</b><br><b>SPORTS DIETETICS AND SUPPLEMENTATION</b>  |
| <b>Unit of AWF</b>                  | <b>Department of Sports Dietetics /Zakład Dietetyki Sportowej</b>   |
| <b>Teacher's name</b>               | <b>Krzysztof Durkalec-Michalski, Ass. Prof.</b>   |
| <b>ECTS points</b>                  | <b>6</b>  |
| <b>Number of hours</b>              | <b>30</b>   |
| <b>Methods of estimation</b>        | <b>Exam</b>   |
| <b>Effects/results of education</b> | <p><i>This course provides students with the detailed knowledge and practical skills in the field of nutritional and supplementary support for exercise performance and physical capacity enhancement, body composition regulation:</i></p> <ol style="list-style-type: none"> <li><i>1. Understanding and applying the detailed aspects of sports dietetics and supplementation.</i></li> <li><i>2. Understanding the role of energy balance and availability, nutrients and fluids intake, and possibilities of their regulation in the diet of athletes in various sport disciplines.</i></li> <li><i>3. Recognizing and implementation of evidence-based nutritional strategies to support athletic training and exercise performance.</i></li> <li><i>4. Understanding of the practice and science background and when to refer out to other experts.</i></li> </ol> |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li><i>1. Diet planning, practical use of recommendation for nutrients intake, energy balance and RDA in sport practices.</i></li> <li><i>2. Diet management in strength sports.</i></li> <li><i>3. Diet management in endurance disciplines.</i></li> <li><i>4. Diet management in mixed sports disciplines.</i></li> <li><i>5. Supplementation in sport.</i></li> <li><i>6. Substances and methods which are permitted, prohibited or banned in sport.</i></li> </ol>  |
| <b>Recommended literature</b>       | <ol style="list-style-type: none"> <li><i>1. Burke L., Deakin V. Clinical Sports Nutrition 5th ed. McGraw-Hill 2015.</i></li> <li><i>2. Kerksick, C.M.; Wilborn, C.; Roberts, M.D.; et al. ISSN exercise and sports nutrition review update: Research and recommendations. J. Int. Soc. Sports Nutr. 2018, 15: 38.</i></li> <li><i>3. Kreider R.B. Essentials of Exercise &amp; Sport Nutrition: Science to Practice. Lulu Publishing Services 2019.</i></li> <li><i>4. Jeukendrup A.E. Sport Nutrition 3rd Edition. Human Kinetics Publishers 2018.</i></li> <li><i>5. Thomas D.T., Erdman K.A., Burke L.M. American College of Sports Medicine Joint Position Statement. Nutrition and Athletic</i></li> </ol>  |

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*Performance. Med Sci Sports Exerc. 2016, 48(3): 543-568.*

6. *Vitale K, Getzin A. Nutrition and Supplement Update for the Endurance Athlete: Review and Recommendations. Nutrients 2019, 11(6): 1289.*

7. *Spriet, L.L. Sports Nutrition for Optimal Athletic Performance and Health: Old, New and Future Perspectives. Sports Med. 2019, 49: 99–101.*

8. *Maughan RJ, Burke LM, Dvorak J, et al. IOC consensus statement: dietary supplements and the high-performance athlete. Br J Sports Med. 2018, 52(7): 439-455.*

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|-------------------------------------|--|
| <b>Subject</b>                      | <b>PODSTAWY ŻYWIENIA CZŁOWIEKA</b><br><b>INTRODUCTION TO HUMAN NUTRITION</b>   |
| <b>Unit of AWF</b>                  | <b>Department of Sports Dietetics /Zakład Dietetyki Sportowej</b>  |
| <b>Teacher's name</b>               | <b>Kinga Mruczyk, PhD</b>  |
| <b>ECTS points</b>                  | <b>6</b>   |
| <b>Number of hours</b>              | <b>30</b>  |
| <b>Methods of estimation</b>        | <b>Exam</b>  |
| <b>Effects/results of education</b> | <i>The aim of the course is to learn the basic concepts of human nutrition and the principles of rational nutrition, to learn about nutrients and non-nutrients found in food products, to learn about nutritional mistakes and the effects of improper nutrition.</i>   |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li>1. Introduction to Human Nutrition: A Global Perspective on Food and Nutrition</li> <li>2. Body Composition</li> <li>3. Energy Metabolism</li> <li>4. Nutrition and Metabolism of Proteins and Amino Acids</li> <li>5. Digestion and Metabolism of Carbohydrates</li> <li>6. Nutrition and Metabolism of Lipids</li> <li>7. Dietary Reference Standards</li> <li>8. The Vitamins</li> <li>9. Minerals and Trace Elements</li> <li>10. Measuring Food Intake</li> <li>11. Food Composition</li> <li>12. Food and Nutrition: Policy and Regulatory Issues</li> <li>13. Nutrition Research Methodology</li> <li>14. Food Safety: A Public Health Issue of Growing Importance</li> <li>15. Food and Nutrition-Related Diseases: The Global Challenge</li> </ol> |

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*Essentials of Human Nutrition, Jim Mann, Oxford University Press, 2017*  
*Human Nutrition, Catherine Geissler, Oxford University Press, 2017*

**Recommended  
literature**



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| <b>Subject</b>               | <b>BIOCHEMIA OGÓLNA I ŻYWNOŚCI</b><br><b>GENERAL AND NUTRITIONAL BIOCHEMISTRY</b> |
| <b>Unit of AWF</b>           | <b>Department of Physiology and Biochemistry/Zakład Fizjologii i Biochemii</b>    |
| <b>Teacher's name</b>        | <b>Tomasz Podgórski, PhD</b>  |
| <b>ECTS points</b>           | <b>4</b>  |
| <b>Number of hours</b>       | <b>15</b>   |
| <b>Methods of estimation</b> | <b>Exam</b>   |

**Effects/results of education**

*To familiarize the students knowledge of the biochemical aspects of the structure and function of cells.  
Mastering the students knowledge on essential metabolic processes in the human body.  
Teach the students a thorough look at the biochemical effects provided dietary nutrients, particularly with regard to the specific person, the nature of work and the possible interactions of nutrition.  
Acquaint the student with nutritional elements, particularly with sports supplements, which may affect on physical performance of athletes.*

**Topics of the classes**

*An introduction to the subject. Essential minerals in human body. Food sources of essential minerals. The pH scale and the pH values of biological fluids. Determination of some essential minerals in human blood. 3 hours  
Amino acids, proteins. Metabolism of amino acids in rest and during the exercise. Determination of albumin, total protein, ammonia concentrations in the blood. 3 hours  
Carbohydrates. Aerobic metabolism of glucose. The role of glycogen. The structure and food sources of carbohydrates. The taste of some of simple sugars and polysaccharides. 2 hours  
Anaerobic pathways to resynthesize ATP. The role of lactic acid/lactate in athlete's organism. Some eliminations methods of lactate after exercise. Determination of lactate concentration in the blood. 2 hours  
Lipids. Structure, types, food sources, influence on human health. Metabolism of lipids and cholesterol. Determination of total cholesterol concentrations in the blood. 2 hours  
Biochemical aspects of sports supplements.*

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*Demonstration of the most popular supplements in the market. 2 hours*

*Summary of General and Nutritional Biochemistry. A written test. 1 hour*

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**Literature**

*Mathews CK, van Holde KE, Ahern KG. Biochemistry. Addison Wesley Longman, Inc. 2000.*

*Maughan RJ, Gleeson M. The Biochemical Basis of Sports Performance. Oxford University Press. 2010.*

*MacLaren D. Nutrition and Sport. Elsevier. 2007.*

*Hargreaves M. Exercise Metabolism. Human Kinetics. 1995.*

*Other biochemistry textbooks and web pages about biochemistry, nutrition, sports exercise and athletes' supplementation.*

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|------------------------------|--|
| <b>Subject</b>               | <b>ŻYWIENIE W SPORCIE</b><br><b>SPORTS NUTRITION</b>               |
| <b>Unit of AWF</b>           | <b>Department of Food and Nutrition/Zakład Żywności i Żywienia</b> |
| <b>Teacher's name</b>        | <b>Joanna Karolkiewicz, Ass.Prof., Ewa Śliwicka, PhD.</b>          |
| <b>ECTS points</b>           | <b>4</b>   |
| <b>Number of hours</b>       | <b>15</b>  |
| <b>Methods of estimation</b> | <b>Pass</b>  |

**Effects/results of education**

*This course equips students with the comprehensive knowledge and skills which are essential in order to achieve sports nutritional and athletic performance goals:*

- 1. Understanding and applying the basic fundamentals of nutrition and sports nutrition.*
- 2. Identification and usage sound nutrition recommendations for macronutrient intakes among various athletes.*
- 3. Recognizing and implementation science based nutrition strategies to help athletes with their training and performance.*
- 4. Understanding of scope of practice and when to refer out to other experts.*

**Topics of the classes**

- 1. Energy balance and body composition in sports and exercise.*
- 2. Nutritional needs of endurance athletes*
- 3. Nutritional needs of strength/power athletes*
- 4. Hydration & fluid replacement for athletes*
- 5. An overview of sports supplements.*

**Recommended literature**

- 1. Jeukendrup A., Gleeson M. Sport Nutrition an introduction to Energy production and performance. 2nd. Ed. Human Kinetics, Inc., 2010.*
- 2. Burke L. Practical Sports Nutrition. Human Kinetics, Inc., 2007.*
- 3. Manore, M., Meyer, N., and Thompson, J. Sport Nutrition for Health and Performance, 2 nd edition, Human Kinetics, Inc., 2009.*
- 4. Thomas D.T., Erdman K.A., Burke L.M. American College of Sports Medicine Joint Position Statement. Nutrition and Athletic Performance. Med Sci Sports Exerc. 2016, 48(3): 543-568*

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|-------------------------------------|--|
| <b>Subject</b>                      | <b>FIZJOLOGIA OGÓLNA</b><br><b>GENERAL PHYSIOLOGY</b>  |
| <b>Unit of AWF</b>                  | <b>Department of Physiology and Biochemistry/Zakład Fizjologii i Biochemii</b>   |
| <b>Teacher's name</b>               | <b>Jakub Kryściak, PhD</b>   |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <b>Exam</b>  |
| <b>Effects/results of education</b> | <p><i>Students will learn the basics of human physiology. The theoretical part is supported with practical aspects of physiology e.g. blood groups, HR, SV, BP measurement, pulmonary function tests etc. Students are encouraged to train their analytical approach to learning and working in groups.</i></p>  |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li>1. <i>Blood</i> <ol style="list-style-type: none"> <li>a. <i>Blood constituents (plasma, cells)</i></li> <li>b. <i>Hemoglobin</i></li> <li>c. <i>Blood functions</i></li> <li>d. <i>Blood groups</i></li> </ol> </li> <li>2. <i>Cardiovascular system</i> <ol style="list-style-type: none"> <li>a. <i>Heart</i></li> <li>b. <i>Vascular system</i></li> <li>c. <i>Electrical conduction system of the heart</i></li> <li>d. <i>Heart and blood flow control</i></li> <li>e. <i>Main parameters: HR, SV, BP, CO</i></li> </ol> </li> <li>3. <i>Respiratory system</i> <ol style="list-style-type: none"> <li>a. <i>Stages of pulmonary ventilation</i></li> <li>b. <i>Breathing regulation</i></li> <li>c. <i>Vital Capacity, pulmonary volumes</i></li> <li>d. <i>Minute lung ventilation (<math>V_E</math>), breathing frequency</i></li> <li>e. <i>Pulmonary function tests</i></li> </ol> </li> <li>4. <i>Muscles</i> <ol style="list-style-type: none"> <li>a. <i>Structure of skeletal muscle</i></li> <li>b. <i>Sarcomere</i></li> <li>c. <i>Motor unit and muscle fibers types</i></li> <li>d. <i>Neuromuscular junction</i><br/><i>Sliding filament theory.</i></li> </ol> </li> </ol> |

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**Recommended  
literature**

1. *Human Physiology 13th International Edition*. Stuart Fox. 2012
2. *Human Anatomy and Physiology*. Katja Hoehn, Elaine N. Marieb. 2014
3. *Human Physiology*. Lauralee Sherwood. 2008.

|                                     |   |
|-------------------------------------|---|
| <b>Subject</b>                      | <b>TEORIA SPORTU</b><br><b>THEORY OF SPORT</b>  |
| <b>Unit of AWF</b>                  | <b>Department of the Theory of Sport / Zakład Teorii Sportu</b>   |
| <b>Teacher's name</b>               | <b>Jan M. Konarski, PhD, Ass.Prof., Jarosław Janowski, PhD</b>  |
| <b>ECTS points</b>                  | <b>4</b>  |
| <b>Number of hours</b>              | <b>15</b>   |
| <b>Methods of estimation</b>        | Credit on the base of short resuming test, presentation of own project about chosen subject and personal, positive activity during meetings and exercises   |
| <b>Effects/results of education</b> | <i>The aim of the course is to acquaint students with the mechanisms of measures required for effective human behavior and human teams in a high-performance athletes training and competition. Through lectures and practical exercises intended to prepare and implement a student to understand the similarities and differences in training in different groups of sports: use of measuring equipment in the process training: use of methods and techniques to improve the effectiveness of training: understanding the process of teaching and learning of sports skills: design and implementation of teaching techniques and tactics of sport: find the relationship between technology and loads of sport.</i>                                   |
| <b>Topics of the classes</b>        | <i>Factors determining physical performance and skills in sport. Growth, maturation and fitness. Energy systems in sport and exercise. Strength, speed, coordination and endurance training: characteristic, development, principles, methods of training, methods of control, periodization. Technique and tactics. Training loads. Periodization in sport. Planning in sport. Assessment and data analysis in sport. Chosen elements of nutrition and supplements of diet in sport. General problems of doping in sport – could we do it in other way?!</i>   |
| <b>Recommended literature</b>       | <i>Andrzejewski M., Konarski J., Pluta B., (2014) Changes in the activity profiles of soccer players over three-match training micro cycle. International Journal of Performance Analysis in Sport, 14 (3), 814-828.<br/>Bompa T. O. , Haff B. (2009) Periodization: theory and methodology of training. 5th ed. Human Kinetics.<br/>Foran B. (2001) High-performance sports conditioning. Modern training for ultimate athletic development. Champaign, IL: Human Kinetics<br/>Janseen P., (2001), Lactate Threshold Training. Human Kinetics<br/>Konarski J., Krzykała M., Podgórski T., Pawlak M., Strzelczyk R., Malina R.M. (2012) Variations in Functional and Morphological Characteristics of Elite Polish Field Hockey Players in a Complete</i> |

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*Macrocycle. International Journal of Sports Science & Coaching, 7 (3), 527-540.*

*Malina, RM, Bourchard, C, and Bar-Or, O. (2004) Growth, maturation, and physical activity. Champaign, IL: Human Kinetics.*

*Podgórski T., Kryściak J., Konarski J., Domaszewska K., Durkalec-Michalski K., Strzelczyk R., Pawlak M. (2015) Iron metabolism in field hockey players during an annual training cycle. Journal of Human Kinetics. 47, 127-135*

*Sharkey, B. & Gaskill, S. (2006). Sport physiology for coaches. Champaign, IL: Human Kinetics*

*Strzelczyk R., Janowski J., Unierzyski P., Karpowicz K., Konarski J., (2004). Monitoring of training load during year- round circle. W: The 10th ICHPER-SD Europe Congress & the TSSA 8th International Sports Science Congress, 17-20 November 2004, Antalya, Turkey*

*Weltman A. (1995) The blood lactate response to exercise. Human Kinetics*

*Wilmore JH., Costill DL. (1994) Physiology of sport and exercise. Champaign, IL: Human Kinetics.netics*

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|-------------------------------------|--|
| <b>Subject</b>                      | <b>GENETYKA I BIOLOGIA MOLEKULARNA</b><br><b>GENETICS AND MOLECULAR BIOLOGY</b>  |
| <b>Unit of AWF</b>                  | <b>Department of Biology and Anatomy/Zakład Biologii i Anatomii</b>  |
| <b>Teacher's name</b>               | <b>Wojciech Jarosz, PhD</b>  |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <i>Exam format: The test with some multiple choice and matching.</i>   |
| <b>Effects/results of education</b> | <p><i>The subject is an introduction to the principles of genetics, including topics from classical Mendelian concepts to the contemporary molecular biology of the gene.</i></p> <p><i>Prerequisites: knowledge of basic human biology</i></p> <p><i>Upon successful completion of this course, students should be able to demonstrate the following competencies:</i></p> <ol style="list-style-type: none"> <li><i>1) an ability to use the vocabulary that embodies the knowledge of genetics</i></li> <li><i>2) knowledge about the molecular and inheritance mechanisms discussed during classes</i></li> <li><i>3) good discernment in basic molecular biology methods knowing their application</i></li> </ol>   |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li><i>1. Fundamentals of genetics: DNA and RNA, genes and genomes. Different methods of DNA isolation. Gel electrophoresis of DNA. Laboratory work: DNA isolation of students' DNA.</i></li> <li><i>2. Polymerase chain reaction method and its types. Laboratory work: amplification of selected region of DNA. Gel electrophoresis of PCR products.</i></li> <li><i>3. Restriction enzymes. Methods used for mutation detection: PCR-RFLP (restriction fragments length polymorphism) and SSCP (single stranded conformation polymorphism). Genetic engineering: clones and cloning; GMOs. Laboratory work: DNA cleavage with restriction enzyme. Gel electrophoresis of restriction fragments.</i></li> <li><i>4. DNA sequencing methods. Bases of bioinformatics. Laboratory work: practical use of online databases and tools in NCBI (National Centre for Biotechnology Information): GenBank, BLAST, OMIM, PubMed.</i></li> <li><i>5. Principles of heredity, inheritance patterns. The genotype-phenotype relations – expression of parental traits</i></li> </ol> |



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**Recommended  
literature**

1. *Genomes, 2nd edition. Terence A Brown. Oxford: Wiley-Liss (free online access).*
  2. *Genetics and Molecular Biology. 2nd edition. Robert Schleif. The Johns Hopkins University Press Baltimore and London (free online access).*
  3. *BIOS Instant Notes in Genetics. Hugh Fletcher, Ivor Hickey. Routledge.*
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|-------------------------------------|---|
| <b>Subject</b>                      | <p><b>SPORT DZIECI I MŁODZIEŻY – WPROWADZENIE DO KONCEPCJI BIO-BANDING W OPARCIU O INDYWIDUALIZACJĘ ROZWOJU BIOLOGICZNEGO I OPTYMALIZACJĘ PROCESU TRENINGOWEGO.</b></p> <p><b>KIDS AND YOUTH SPORT – AN INTRODUCTION TO THE BIO-BANDING CONCEPT BASED ON THE INDIVIDUALIZATION OF BIOLOGICAL DEVELOPMENT AND OPTIMIZATION OF THE TRAINING PROCESS.</b></p>  |
| <b>Unit of AWF</b>                  | Department of the Theory of Sport / Zakład Teorii Sportu  |
| <b>Teacher's name</b>               | Jan M. Konarski, PhD, Ass. Prof., Mateusz Skrzypczak, MSc, PhD  |
| <b>ECTS points</b>                  | 4   |
| <b>Number of hours</b>              | 15  |
| <b>Methods of estimation</b>        | <i>Activity during meetings, Project</i>  |
| <b>Effects/results of education</b> | <p><i>Increase knowledge about growth and maturation of kids and youth in the context of psycho-physical-biological needs and taking into consideration specific demands of early, late and on-time developing athletes as well as using individual diversity during sport training preparation. Bio-banding concept as tools to optimize training (PE lessons) / competitive process to minimize risk of injuries and optimize development of youth in perspective for adult life.</i></p>   |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li>1. <i>Growth and maturation as milestones in human life</i></li> <li>2. <i>Functional development</i></li> <li>3. <i>Role of physical activity for youth and kids from recreation and fun to professional level</i></li> <li>4. <i>Periodization of training and supporting general and special development on the next stage of adolescence in the context of long term athlete development</i></li> <li>5. <i>Bio-banding and other tools to design training (PE's lessons) process and specific, individual loads</i></li> <li>6. <i>Control and assessment of aims realization as information about appropriate decisions' making and direction of development.</i></li> <li>7. <i>Practical solutions.</i></li> </ol> |
| <b>Recommended literature</b>       | <ol style="list-style-type: none"> <li>1. <i>Malina, RM, Bourchard, C, and Bar-Or, O. (2004) Growth, maturation, and physical activity. Champaign, IL: Human Kinetics.</i></li> <li>2. <i>Bompa T., Carrerra M. (2015) Conditioning young athletes. Champaign, IL: Human Kinetics.</i></li> </ol>   |

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3. Sharkey, B. and Gaskill, S. (2006). *Sport physiology for coaches*. Champaign, IL: Human Kinetics
  4. Bompa T. O. , Haff B. (2009) *Periodization: theory and methodology of training*. 5th ed. Human Kinetics.
  5. Balyi I., Way R., Higgs C. (2013) *Long-term athlete development*. Champaign, IL: Human Kinetics.
  6. Faigenbaum A.V., Westcott W. (2009) *Youth strength training*. Champaign, IL: Human Kinetics.
  7. Malina, R. M., Cumming, S. P., Rogol, A. D., Coelho-e-Silva, M. J., Figueiredo, A. J., Konarski, J. M., & Kozieł, S. M. (2019). Bio-banding in youth sports: background, concept, and application. *Sports Medicine*, 49(11), 1671-1685.
  8. Cumming, S. P., Lloyd, R. S., Oliver, J. L., Eisenmann, J. C., & Malina, R. M. (2017). Bio-banding in sport: applications to competition, talent identification, and strength and conditioning of youth athletes. *Strength & Conditioning Journal*, 39(2), 34-47.
  9. Cumming, S. P., Brown, D. J., Mitchell, S., Bunce, J., Hunt, D., Hedges, C & Malina, R. M. (2018). Premier League academy soccer players' experiences of competing in a tournament bio-banded for biological maturation. *Journal of sports sciences*, 36(7), 757-765.
  10. Konarski, J. M., Konarska, A., Strzelczyk, R., Skrzypczak, M., & Malina, R. M. (2019). Internal and External Loads During Hockey 5's Competitions Among U16 Players. *Journal of strength and conditioning research*.
  11. Konarski, J., Krzykała, M., Skrzypczak, M., Nowakowska, M., Coelho-e-Silva, M., Cumming, S., & Malina, R. (2020). Characteristics of select and non-select U15 male soccer players. *Biology of Sport*, 38(4), 535-544.
  12. Figueiredo, A. J., Gonçalves, C. E., Coelho e Silva, M. J., & Malina, R. M. (2009). Characteristics of youth soccer players who drop out, persist or move up. *Journal of sports sciences*, 27(9), 883-891.

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| <b>Subject</b>                      | <b>POTRAWY I POSIŁKI WEGETARIAŃSKIE W PROFILAKTYCE I LECZENIU CHOROÓB</b><br><b>VEGETARIAN FOOD AND MEALS IN THE PREVENTION AND TREATMENT OF DISEASES</b>  |
| <b>Unit of AWF</b>                  | <b>Department of Dietetics / Zakład Dietetyki</b>  |
| <b>Teacher's name</b>               | <b>Małgorzata Mizgier, PhD</b>   |
| <b>ECTS points</b>                  | <b>3</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <i>Activity during meetings</i>  |
| <b>Effects/results of education</b> | <p><i>The aim of the course is to familiarize students with the following topics:</i></p> <ul style="list-style-type: none"> <li><i>-vegetarian diet in prevention and treatment of diseases</i></li> <li><i>-the use of a variety of healthy plant based foods in preparing vegetarian dishes</i></li> <li><i>-the benefits and the risks of using a vegetarian diet</i></li> </ul>   |
| <b>Topics of the classes</b>        | <p>Vegetarianism and a variety of a plant-based diet</p> <p>Vegetarian diet and disease prevention</p> <p>Non-meat sources of nutrients</p> <p>Vegetarian dishes and recipes</p> <p>Food preparation techniques</p> <p>Planning a healthy vegetarian diet</p>  |
| <b>Recommended literature</b>       | <p>1. Ruth A, Torh MS. Nutrition and Diet Therapy. 10<sup>th</sup> Edition Delmar, Cengage Learning 2011, 2007, 2003</p> <p>2. <a href="https://nutritionstudies.org/top-10-plant-based-news-stories-and-articles-of-2020/">https://nutritionstudies.org/top-10-plant-based-news-stories-and-articles-of-2020/</a>. Accessed 31.03.2021</p> <p>3. <a href="https://nutritionstudies.org/solving-food-pyramid-mysteries/">https://nutritionstudies.org/solving-food-pyramid-mysteries/</a>. Accessed 31.03.2021</p> <p><a href="https://www.ncpro.org/pub/file.cfm?item_type=xm_file&amp;id=541304">https://www.ncpro.org/pub/file.cfm?item_type=xm_file&amp;id=541304</a>. Accessed 31.03.2021</p> |

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| <b>Subject</b>                             | <b>FIZJOLOGIA OGÓLNA</b><br><b>GENERAL PHYSIOLOGY</b>   |
| <b>Unit of AWF</b>                         | <b>Department of Athletics, Strength and Conditioning/<br/>Zakład Lekkiej Atletyki i Przygotowania Motorycznego</b>   |
| <b>Teacher's name</b>                      | <b>Barbara Pospieszna, PhD</b>  |
| <b>ECTS points</b>                         | <b>4</b>  |
| <b>Number of hours</b>                     | <b>15</b>   |
| <b>Basic information about the subject</b> | <p><i>Students will learn the basis of human physiology. Theoretical part is supported with practical aspects of physiology e.g. blood groups, HR, SV, BP measurement, pulmonary function tests etc.</i></p> <p><i>Students are encouraged to train their analytical approach to learning and working in groups.</i></p>  |
| <b>Topics of the classes</b>               | <ol style="list-style-type: none"> <li>1. <i>Blood</i> <ol style="list-style-type: none"> <li>a. <i>Blood constituents (plasma, cells)</i></li> <li>b. <i>Hemoglobin</i></li> <li>c. <i>Blood functions</i></li> <li>d. <i>Blood groups</i></li> </ol> </li> <li>2. <i>Cardiovascular system</i> <ol style="list-style-type: none"> <li>a. <i>Heart</i></li> <li>b. <i>Vascular system</i></li> <li>c. <i>Electrical conduction system of the heart</i></li> <li>d. <i>Heart and blood flow control</i></li> <li>e. <i>Main parameters: HR, SV, BP, CO</i></li> </ol> </li> <li>3. <i>Respiratory system</i> <ol style="list-style-type: none"> <li>a. <i>Stages of pulmonary ventilation</i></li> <li>b. <i>Breathing regulation</i></li> <li>c. <i>Vital Capacity, pulmonary volumes</i></li> <li>d. <i>Minute lung ventilation (<math>V_E</math>), breathing frequency</i></li> <li>e. <i>Pulmonary function tests</i></li> </ol> </li> <li>4. <i>Muscles</i> <ol style="list-style-type: none"> <li>a. <i>Structure of skeletal muscle</i></li> <li>b. <i>Sarcomere</i></li> <li>c. <i>Motor unit and muscle fibers types</i></li> <li>d. <i>Neuromuscular junction</i></li> <li>a. <i>Sliding filament theory</i></li> </ol> </li> </ol> |

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*Human Physiology 13th International Edition. Stuart Fox. 2012*  
*Human Anatomy and Physiology. Katja Hoehn, Elaine N. Marieb. 2014*  
*Human Physiology. Lauralee Sherwood. 2008.*

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| <b>Subject</b>                      | <b>FIZIOLOGIA WYSIŁKOWA</b><br><b>EXERCISE PHYSIOLOGY</b>  |
| <b>Unit of AWF</b>                  | <b>Department of Athletics, Strength and Conditioning/<br/>Zakład Lekkiej Atletyki i Przygotowania Motorycznego</b>  |
| <b>Teacher's name</b>               | <b>Barbara Pospieszna, PhD</b>   |
| <b>ECTS</b>                         | <b>4</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <i>active participation in classes, exam</i>   |
| <b>Effects/results of education</b> | <p><i>Students will learn:</i></p> <ul style="list-style-type: none"> <li>- <i>how human body functions under different exercise stimulation</i></li> <li>- <i>what underlies the efficient training strategy</i></li> <li>- <i>about the health benefits of exercise</i></li> <li>- <i>how to estimate physical tolerance and physical capacity at different age and physical level</i></li> </ul>  |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li>1. <i>Main systems functioning under exercise conditions:</i> <ul style="list-style-type: none"> <li>- <i>blood and acid-base balance</i></li> <li>- <i>cardiovascular system</i></li> <li>- <i>respiratory system</i></li> </ul> </li> <li>2. <i>The health benefits of exercise, exercise prescription</i></li> <li>3. <i>Direct and indirect methods of estimating physical tolerance and physical capacity (aerobic, anaerobic)</i></li> </ol>  |
| <b>Recommended literature</b>       | <p><i>Bouchard C., Blair S.N., Haskell W.: Physical Activity and Health. Human kinetics 2012.</i></p> <p><i>Hargreaves M., Spriet L. Exercise Metabolism. Human kinetics 2006.</i></p> <p><i>Hoffman J. Physiological Aspects of Sport Training and Performance. Human kinetics 2014.</i></p> <p><i>Kenney W.L., Wilmore J., Costill D. 6E.: Physiology of Sport and Exercise. Human kinetics 2015.</i></p> <p><i>Richardson S., Andersen M., Morris T. Overtraining Athletes. Human kinetics 2008.</i></p> <p><i>Taylor A., Johnson M. Physiology of Exercise and Healthy Aging. Human kinetics 2008.</i></p> |

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| <b>Subject</b>                             | <b>EDUKACJA ZDROWOTNA</b><br><b>HEALTH EDUCATION</b>   |
| <b>Unit of AWF</b>                         | <b>Department of Physical Activity Sciences and Health Promotion/ Zakład Nauk o Aktywności Fizycznej i Promocji Zdrowia</b>  |
| <b>Teacher's name</b>                      | <b>Ida Laudańska-Krzemińska, Ass. Professor</b>  |
| <b>ECTS points</b>                         | <b>4</b>   |
| <b>Number of hours</b>                     | <b>15</b>  |
| <b>Methods of estimation</b>               | assessment   |
| <b>Basic information about the subject</b> | <p><i>The course's objective includes following issues: ways of understanding and defining the health; holistic concept of health as an alternative to the biomedical model; models and methods of health education and its adoption in physical education classes (eg. experiential learning); basics of health didactics in context of physical educator's/ coach's work.</i></p>  |
| <b>Topics of the classes</b>               | <ol style="list-style-type: none"> <li>1. <i>Theoretical foundation and aspects of application of health promotion and health education (biopsychosocial model of health and sickness, setting theory, health promotion models, health education models)</i></li> <li>2. <i>Health education and physical education – associations and dependences, terminology, basic, concepts, models</i></li> <li>3. <i>Health behavior</i> <ol style="list-style-type: none"> <li>a. <i>Concepts and definitions, models for changing (Health Belief Model, HAPA, Transtheoretical Model), application for school</i></li> <li>b. <i>Characteristic of the main important behavior: physical activity, nutrition, smoking cigarettes, drinking alcohol, self-control</i></li> </ol> </li> <li>4. <i>Interactive teaching and learning of attitude (relation) for body and health in physical education</i> <ol style="list-style-type: none"> <li>a. <i>Active learning – principle and model, constructivism as theoretical basis</i></li> <li>b. <i>Experiencing teaching – principle, Kolb' cycle</i></li> <li>c. <i>Workshop as a methodical procedure in health and</i></li> </ol> </li> </ol> |



- d. *Examples techniques and methods of active learning using in health and physical education – methods of integrate, diagnostic, planning, developing creative reflection, discussion, creative solving of problem*
5. *Employment of interactive teaching in physical education teacher work– elaboration outline (draft) and conducting of the health education lesson with pupils in primary or secondary school*

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**Recommended literature**

1. *Puza R.F. Health education. Ideas and activites. Human Kinetics. 2008*
2. *Page R.M, Page T.S. Promoting health and emotional well-being in your classroom. Jones and Barlett Learning 2015*
3. *Physical education and health education – common didactic goals and interdependencies. Eds. Bronikowski M., Krawański A., Osiński W. AWF Poznań, 2011*
4. *A guide for incorporating health & wellness into school improvement plans. CDC, 2016*
5. *MORSE L.L., ALLENSWORTH, F.D Placing Students at the Center: The Whole School, Whole Community, Whole Child Model. Journal of School Health, November2015, Vol.85,No.11p. 785*
6. *Laudańska-Krzemińska I. Health education as a challenge for physical education teachers - a Polish perspective. [W:] Fachdl.ktik "Bewegung und Sport" im Kontext (pod red.) Kleiner K. Purkersdorf: Verlag Brüder Hollinek, 2012, 237-247*
7. *Krawański A. Intellectual challenges of physical education Studies in Physical Culture and Tourism 2009 t. 16 nr 3 s. 281-290*
8. *Krawański A. Pedagogical challenges of physical education Studies in Physical Culture and Tourism 2009 t. 16 nr 4 s. 401-412*
9. **JOURNALS:**
  - a. *European Journal of Physical and Health Education*
  - b. *Education for Health: Change in Training & Practice*
  - c. *Health Education Research*
  - d. *Physical & Health Education Journal*
  - e. *Global Health Promotion*
  - f. *Health Promotion International*
10. *Health behavior and health education: theory, research, and practice / Karen Glanz, Barbara K. Rimer, Frances Marcus Lewis, editors ; foreword by Noreen M. Clark.*
11. *Health Promotion Planning. An Educational and Enviromental Approach/ LW Green, MW Kreuter*

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| <b>Subject</b>                      | <b>ELEMENTY ARTETERAPII</b><br><b>ART THERAPY WORKSHOP</b>   |
| <b>Unit of AWF</b>                  | <b>Zakład Tańca / Department of Dance</b>  |
| <b>Teacher's name</b>               | <b>Paulina Wycichowska, MA</b>   |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <i>The knowledge is presented in a form of workshops: practical experiments involving individual and group work.</i>   |
| <b>Effects/results of education</b> | <i>Art Therapy Workshop is designed to provide a student with basic experience of various techniques of art therapy.<br/>The aim of the subject is to prepare a student for creative and collaborative work through experience of music and visual arts.</i>   |
| <b>Topics of the classes</b>        | <p><i>Main topics of study:</i></p> <ul style="list-style-type: none"> <li>- <i>Introduction to art therapy: art as a means of maintaining wellbeing.</i></li> <li>- <i>Concept of creativity, its measurement and development.</i></li> <li>- <i>Strategies of stress management.</i></li> <li>- <i>Introduction to creative writing.</i></li> <li>- <i>Introduction to music therapy.</i></li> <li>- <i>Introduction to drawing, painting &amp; collage therapy.</i></li> <li>- <i>Introduction to photography therapy.</i></li> </ul> <p><i>Exercises:</i></p> <ul style="list-style-type: none"> <li>- <i>Reflection on concepts: "Art" and "Artist".</i></li> <li>- <i>Training creativity: associations, metaphors, convergent and divergent thinking, lateral thinking.</i></li> <li>- <i>Creating works involving music, drawing, painting, collage and photography.</i></li> <li>- <i>Reflection on the works.</i></li> </ul> |
| <b>Recommended literature</b>       | <i>Rubin Judith A., Introduction to Art Therapy: Sources and Resources, Routledge 2010.<br/>Malchiodi Cathy A., Handbook of Art Therapy, Guilford Press 2003.</i>  |

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| <b>Subject</b>                      | <b>ELEMENTY TERAPII TAŃCEM - WPROWADZENIE</b>  |
|                                     | <b>DANCE THERAPY ELEMENTS - INTRODUCTION</b>   |
| <b>Unit of AWF</b>                  | <b>Zakład Tańca / Department of Dance</b>  |
| <b>Teacher's name</b>               | <b>Paulina Wycichowska, MA, Justyna Torłop-Bajew, MA</b>   |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>15</b>  |
| <b>Methods of estimation</b>        | <i>The knowledge is presented in a form of workshop of practical experiments involving individual and group work.</i>  |
| <b>Effects/results of education</b> | <i>Dance Therapy Elements subject is designed to provide a student with basic experience of various techniques of dance therapy. The aim of the subject is to prepare a student for creative and collaborative work through experience of dance therapy elements in workshop.</i>  |
| <b>Topics of the classes</b>        | <p><i>Main topics of study:</i></p> <ul style="list-style-type: none"> <li>- <i>Introduction to dance therapy: concept of "dance".</i></li> <li>- <i>Potential effects of dance therapy.</i></li> <li>- <i>The healing and developmental assets of dance therapy.</i></li> <li>- <i>Introduction to dance therapy LMA – Laban Movement Analysis System.</i></li> <li>- <i>Introduction to dance therapy - important influences: Irmgard Bartenieff, Mary Chace, Anna Halprin.</i></li> </ul> <p><i>Exercises:</i></p> <ul style="list-style-type: none"> <li>- <i>Laban - Bartenieff Movement Fundamentals.</i></li> <li>- <i>Exploring body, shape, space and dynamics movement structures.-</i></li> <li>- <i>Mirroring and synchronised movement.</i></li> <li>- <i>Reflection on the processes.</i></li> </ul> |
| <b>Recommended literature</b>       | <p><i>Bartenieff Irmgard, Body Movement – Coping With Environment, Routledge 1980.</i></p> <p><i>Dance Movement Therapy: Theory and Practice, edited by Helen Payne, Routledge 1992.</i></p>   |

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| <b>Subject</b>                      | <b>JOGA</b>   |
|                                     | <b>THE BREATH IN CONNECTION WITH PERFORMED ASANAS</b>   |
| <b>Unit of AWF</b>                  | <b>Zakład Tańca / Department of Dance</b>   |
| <b>Teacher's name</b>               | <b>Andrzej Adamczak</b>   |
| <b>ECTS points</b>                  | <b>4</b>  |
| <b>Number of hours</b>              | <b>15</b>   |
| <b>Methods of estimation</b>        | <ol style="list-style-type: none"> <li>1. <i>Introduction to yoga,</i></li> <li>2. <i>Concentration on the breath in connection with performed asanas.</i></li> <li>3. <i>How to use muscles in yoga positions.</i></li> </ol>  |
| <b>Effects/results of education</b> | <ol style="list-style-type: none"> <li>1. <i>Student knows the basics of yoga's asana.</i></li> <li>2. <i>Student knows how to use the breath when correctly performing asanas.</i></li> <li>3. <i>Student can perform strengthening and stretching exercises.</i></li> </ol> |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li>1. <i>Teaching selected asanas.</i></li> <li>2. <i>Using the breath correctly.</i></li> <li>3. <i>Teaching the exact exercise of individual asanas.</i></li> </ol>   |
| <b>Recommended literature</b>       |   |

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| <b>Subject</b>                      | <b>PARAZYTOLOGIA W ŻYWIENIU</b><br><b>FOOD AND WATERBORNE PARASITOLOGY</b>   |
| <b>Unit of AWF</b>                  | <b>Department of Biology and Anatomy/Zakład Biologii i Anatomii</b>  |
| <b>Teacher's name</b>               | <b>Wojciech Jarosz, PhD</b>  |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>20</b>  |
| <b>Methods of estimation</b>        | <b>Pass</b> (The test with some multiple choice, and matching)   |
| <b>Effects/results of education</b> | <p><i>This course provides students with the detailed knowledge in the field of parasitology with focus on food and waterborne parasites. At the end of the course student will be able to:</i></p> <ol style="list-style-type: none"> <li><i>1. Describe the taxonomy, morphology, life cycle and symptomatology of water, soil and plant food transmitted parasites.</i></li> <li><i>2. Describe the taxonomy, morphology, life cycle and symptomatology of meat transmitted parasites.</i></li> <li><i>3. Describe most commonly used diagnostics procedures in parasitology.</i></li> <li><i>4. Recognize parasites on microscopic slides.</i></li> </ol>  |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li><i>1. Introduction to Parasitology. Definition. Effects of the parasite on the host. Host reaction against the parasite.</i></li> <li><i>2. Main parasites transmitted by water, soil and plants. Relationship between fecal contamination, water and plant food. Species of parasites: Entamoeba histolytica, Giardia intestinalis, Cryptosporidium sp, Fasciola hepatica, Echinococcus sp, Enterobius vermicularis, Ascaris lumbricoides. Taxonomy. Morphology. Life cycle. Clinics. Epidemiology. Routes of contamination of food. Prevention and control..</i></li> <li><i>3. Main parasites transmitted by meat and fish. Toxoplasma gondii, Taenia sp., Trichinella spiralis, Anisakis sp. Life cycle. Clinics. Epidemiology. Routes of contamination of food. Prevention and control.</i></li> <li><i>4. Zoonoses and zoonotic parasites of public concern. Toxocara canis and Toxocara cati. Taxonomy. Morphology. Life cycle. Clinics.</i></li> <li><i>5. Diagnostics in parasitology – practice class in laboratory.</i></li> </ol> |
| <b>Recommended literature</b>       | <ol style="list-style-type: none"> <li><i>1. Parasitic Diseases, Despommier, DD, Griffin, DO, Gwadz, RW, Hotez, PJ, and Knirsch, CA. Parasites Without Borders, 2017.</i></li> </ol>   |



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| <b>Subject</b>                      | <b>HISTOLOGIA UKŁADU POKARMOWEGO</b><br><b>HISTOLOGY OF THE DIGESTIVE SYSTEM</b>   |
| <b>Unit of AWF</b>                  | <b>Department of Biology and Anatomy/Zakład Biologii i Anatomii</b>  |
| <b>Teacher's name</b>               | <b>Wojciech Jarosz, PhD</b>  |
| <b>ECTS points</b>                  | <b>4</b>   |
| <b>Number of hours</b>              | <b>20</b>  |
| <b>Methods of estimation</b>        | <b>Pass</b> (The test with some multiple choice, and matching)   |
| <b>Effects/results of education</b> | <p><i>This course provides students with the detailed knowledge in the field of human histology focused on the digestive system. At the end of the course student will be able to:</i></p> <ol style="list-style-type: none"> <li><i>1. Describe the microscopic structure of human tissues –their morphological differentiation in relation to the function and location.</i></li> <li><i>2. Describe the possibility of regeneration of individual tissues.</i></li> <li><i>3. Describe the role of different types of tissues in structural and functional integrity of human body especially in relation to the role of digestive system.</i></li> </ol>   |
| <b>Topics of the classes</b>        | <ol style="list-style-type: none"> <li><i>1. Introduction to histology, methods used in histology.</i></li> <li><i>2. Microscopy – practical operations on light microscope.</i></li> <li><i>3. The structure, functions and regeneration of different types of epithelial tissues. Types of intercellular connections.</i></li> <li><i>4. The structure, functions and regeneration of different types of connective tissues, specific structure and role of adipose tissue.</i></li> <li><i>5. Blood and lymph: characteristic of plasma and morphological elements: number and structure of erythrocytes – the role of hemoglobin in transport of oxygen, number and structure and functions of leucocytes (lymphocytes, monocytes and granulocytes), immunological role of lymphocytes, number structure and functions thrombocytes. The role of blood and lymph.</i></li> <li><i>6. The structure, functions and regeneration smooth, striated muscle, myocardial fibre</i></li> <li><i>7. The structure, functions and regeneration of nerves tissue in different part of nervous system; reflexes – conditioned and unconditioned, bisynaptic reflex arc.</i></li> <li><i>8. Detailed histology of selected parts of digestive system. During individual work with microscope in lab students will analyze the structure of selected human tissues and organ</i></li> </ol> |

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**Recommended  
literature**

1. *Netter's Essential Histology. Ovalle WK and Nahirney PC. Saunders, Elsevier.*
2. *Inderbir Singh's Textbook of Human Histology With Colour Atlas and Practical Guide. Neelam Vasudeva , Sabita Mishra. Jaypee B.M.P. New Delhi.*