

**A COURSE SYLLABUS – DOCTORAL SCHOOL**  
REGARDING THE QUALIFICATION CYCLE FROM 2020 TO 2024

| <b>GENERAL INFORMATION ABOUT COURSE</b>  |   |  |   |   |
|--|---|--|---|---|
| Course title   | <b>Immunomodulating nutrition</b>   |  |   |   |
| Name of the unit running the course  | Doctoral School at University of Rzeszów  |  |   |   |
| Type of course ( <i>obligatory, optional</i> )   | Optional  |  |   |   |
| Year and semester of studies   | II, sem. IV   |  |   |   |
| Discipline   | Health sciences   |  |   |   |
| Language of Course   | Polish  |  |   |   |
| Name of Course coordinator   | Dr Sara Jarmakiewicz-Czaja  |  |   |   |
| Name of Course lecturer  | Dr Sara Jarmakiewicz-Czaja  |  |   |   |
| Prerequisites  | Knowledge of human nutrition.<br>Knowledge of immunology.   |  |   |   |
| <b>BRIEF DESCRIPTION OF COURSE</b><br>(100-200 words)  |   |  |   |   |
| <p>Immunomodulating nutrition, or immune nutrition, is by definition a diet that affects the functioning of the immune system, therefore the main goal of this subject is to show the relationship between food and the functioning of the human immune system. Specific goals of this course include a thorough overview of both pro-inflammatory and anti-inflammatory nutrients and food products. Immunonutrition is important in preventing or treating many inflammatory diseases. An additional aim of the course is to discuss the general functioning of the immune system as well as to identify the essential nutrients necessary for its proper functioning and building proper immunity.</p> <p>Nowadays, when the number of people suffering from obesity is growing year by year, immunomodulating nutrition can be used as part of the diet therapy of patients with obesity in whom low-grade inflammation is a factor that significantly affects the quality of their life and their health. Low-grade inflammation in obesity can lead to insulin resistance, type 2 diabetes and heart disease. Elements of immune nutrition are also used in patients with inflammatory bowel disease (Crohn's disease and ulcerative colitis).</p> |   |  |   |   |
| <b>COURSE LEARNING OUTCOMES AND METHODS OF EVALUATING LEARNING OUTCOMES</b>  |   |  |   |   |
| Learning outcome   | The description of the learning outcome defined for the course  | Relation to the degree programme outcomes (symbol) | Learning Format (Lectures, classes,...) | Method of assessment of learning outcomes (e.g. test, oral exam, written exam, project,...) |
| <b>Knowledge (no.)</b>   |   |  |   |   |
| 1.   | To the extent enabling the revision of the existing paradigms - a global achievement, covering theoretical foundations as well as general issues and selected specific issues of health sciences. | <b>P8S-WG/1</b>                                    | Lectures                                | Essay   |
| 2.   | Main development trends in health sciences.   | <b>P8S-WG/2</b>                                    | Lectures                                | Essay   |
| 3.   | Knows the methodology of scientific research in the   | <b>P8S-WG/3</b>                                    | Lectures                                | Essay   |

|  |  |                      |             |   |        |      |
|--|--|----------------------|-------------|---|--------|------|
|  | discipline of health sciences  |                      |             |   |        |      |
| <b>Skills (no.)</b>  |  |                      |             |   |        |      |
| 1.   | To use knowledge from various fields of science to identify and innovatively solve complex problems in the range of immunonutrition. | P8S-UW/1             | Classes     | Project                                 |        |      |
| 2.   | Can critically analyze and evaluate the results of research in the range of immunutrition  | P8S-UW/2             | Classes     | Project                                 |        |      |
| 3.   | Can communicate on specialist topics and initiate debate   | P8S-UK/1<br>P8S-UK/3 | Classes     | Observation during classes, self-esteem |        |      |
| 4.   | Can disseminate the results of scientific works, also in popular forms   | P8S-UK/2             | Classes     | Observation during classes, self-esteem |        |      |
| 5.   | To participate in the scientific discourse.  | P8S-UK/4             | Classes     | Observation during classes, self-esteem |        |      |
| <b>Social competence (no.)</b>   |  |                      |             |   |        |      |
| 1.   | To recognize of the importance of knowledge in solving cognitive and practical problems.   | P8S-KK/3             | Classes     | Observation during classes, self-esteem |        |      |
| 2.   | Is ready to critically evaluate the achievements within the health science discipline  | P8S-KK/2             | Classes     | Observation during classes, self-esteem |        |      |
| 3.   | Is ready to act for the public interest  | P8S-KO/2             | Classes     | Observation during classes, self-esteem |        |      |
| <b>LEARNING FORMAT – NUMBER OF HOURS</b>   |  |                      |             |   |        |      |
| Semester (no.)   | Lectures   | Seminars             | Lab classes | Internships                             | others | ECTS |
| IV   | 5  | -                    | -           | -                                       | 10     | 0    |
| <b>METHODS OF INSTRUCTION</b>  |  |                      |             |   |        |      |
| <i>LECTURE/OTHERS: A SUPPORTED BY A MULTIMEDIA PRESENTATION, TEXT ANALYSIS AND DISCUSSION, PROJECT WORK (PRACTICAL PROJECT), GROUP WORK (PROBLEM SOLVING, CASE STUDY, DISCUSSION) - IN THE CASE OF EPIDEMIC RESTRICTIONS: BY REMOTE METHOD</i> |  |                      |             |   |        |      |
| <b>COURSE CONTENT</b>  |  |                      |             |   |        |      |
| <b>Lectures/ Seminars:</b>   |  |                      |             |   |        |      |

Introduction to immunomodulatory nutrition.  
 Characteristics of immunomodulatory nutrition.

**Seminars / Lab classes/ others:**

Characteristics and application of immunomodulating nutrition in various phases of life.  
 Characteristics and application of immunomodulating nutrition in selected disease entities.

**COURSE ASSESSMENT CRITERIA**

1. Full participation and evaluation of student activity during classes.
2. Assessment of preparation for classes.
3. Discussion during exercises.
4. Project method.
5. Test.

**Grading:**

A\* 100- 95%  
 A= 94- 90%  
 B\* = 89- 85%  
 B= 84- 80%  
 C\* = 79- 75%  
 C= 74- 70%  
 D\* = 69- 65%  
 D= 64- 60%  
 F > 60%

**TOTAL PhD STUDENT WORKLOAD REQUIRED TO ACHIEVE THE INTENDED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS**

| Activity  | Number of hours |
|---|-----------------|
| Scheduled course contact hours  | 15              |
| Other contact hours involving the teacher (consultation hours, examinations)                    | -               |
| Non-contact hours – student`s own work (preparation for classes or examinations, project, etc.) | -               |
| <b>Total number of hours</b>  | 15              |
| <b>Total number of ECTS credits</b>   | 0               |

**INSTRUCTIONAL MATERIALS**

|                           |  |
|---------------------------|--|
| Compulsory literature:    | <ol style="list-style-type: none"> <li>1. Marian Grzymisławski (red.). Dietetyka kliniczna. PZWL Wydawnictwo Lekarskie, Warszawa 2019.</li> <li>2. Andrzej Szczeklik. Interna Szczeklika 2018/19 : mały podręcznik. Kraków: Medycyna Praktyczna. 2018</li> <li>3. Current scientific publications on immune nutrition discussed in class.</li> </ol> |
| Complementary literature: | <ol style="list-style-type: none"> <li>1. Immunonutrition. Interactions of Diet, Genetics, and Inflammation. Aggarwal Bharat B. 2014 by CRC Press.</li> <li>2. Nutrition and immunology. M.E. Gershwin, J.B. German. Humana Press, 2010</li> </ol>   |