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Module designation	Basic Immunology
Module level, if applicable	Undergraduate
Code, if applicable	NBIOUM6340
Subtitle, if applicable	-
Courses, if applicable	-
Semester(s) in which the module is taught	Odd semester
Person responsible for the module	Hendra Susanto, S.Pd, M.Biomed, Ph.D
Lecturer	Dr. Sri Rahayu Lestari, M.Si Nur'aini Kartikasari, S.Si., M.Sc. Wira Eka Putra S.Si, M.Med.Sc
Language	Bilingual (Bahasa Indonesia and English)
Relation to curriculum	Undergraduate degree program, compulsory, 5th semester.
Type of teaching, contact hours	Undergraduate degree program: cooperative learning, presentation, laboratory work, 2 x 50 = 100 minutes and 1 x 170 minutes
Workload	1. Lectures: 2 x 50 = 100 minutes (1.67 hours) per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Laboratory work: 1 x 170 minutes (2.83 hours) per week. 4. Private study: 2 x 60 = 160 minutes (2 hours) per week.
Credit points	3 credit points (~5 ECTS-eq)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.
Recommended prerequisites	NBIOUM6107 Biochemistry NBIOUM6111 Cell Biology NBIOUM6116 Animal/Human Physiology
Module objectives/intended learning outcomes	Students are able to: (LO4) Apply the concepts, principles and procedures of the biological basis for designing the investigation in an effort to solve problems in the areas of health, food and the environment by using technological applications.
Course learning outcomes	1. Mastering the basic concepts of immunology that are

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<tr><td></td><td colspan="2">integrated with cell biology, animal structure, biochemistry and human animal physiology carefully, critically and systematically.
2. Designing investigations independently, creatively and innovatively by finding, analyzing, and solving problems in the field of immunology
3. Applying basic immunology technology to produce accurate and accountable data for the purposes of prognosis, diagnosis and problem solving in the field of immunology through a research-based approach</td></tr>
<tr><td>Content</td><td colspan="2">This course covers the following main topics:
● The basic concept of natural immunity in the defense mechanism of host cells against infection
● The concept of cells, tissues and organs in the immune system; the concept of non-specific (innate) and specific (adaptive) immune responses
● The concept of antigen presentation to T lymphocytes and the role of MHC class I and II
● The concept of antigen recognition in a specific (adaptive) immune response
● Concept of cellular immune response mechanisms
● Concept of humoral immune response mechanisms.</td></tr>
<tr><td rowspan="13">Learning activity</td><td>Week 1:</td><td>Introduction: course orientation and regulations</td></tr>
<tr><td>Week 2:</td><td>Classroom discussion: Immunology (Overview)</td></tr>
<tr><td>Week 3:</td><td>Classroom discussion: Natural Immunity (the early protection against infection)</td></tr>
<tr><td>Week 4:</td><td>Classroom discussion: immune cells in the immune system</td></tr>
<tr><td>Week 5:</td><td>Classroom discussion: antigen capture and presentation</td></tr>
<tr><td>Week 6:</td><td>Classroom discussion: antigen presentation in the immune system (adaptive immune response)</td></tr>
<tr><td>Week 7:</td><td>Classroom discussion: cellular immunity (T lymphocytes activation)</td></tr>
<tr><td>Week 8:</td><td>Classroom discussion: effector mechanism of cellular immune response</td></tr>
<tr><td>Week 9:</td><td>MIDTERM EXAMINATION</td></tr>
<tr><td>Week 10:</td><td>Classroom discussion: humoral immune response</td></tr>
<tr><td>Week 11:</td><td>Student Project: Designing a project for antigen injection in animal model (in vivo approach)</td></tr>
<tr><td>Week 12:</td><td>Student Project:: Designing a project for macrophage isolation and microscopic profiling</td></tr>
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	Week 13:	Student Project: phagocytic profile of macrophages
	Week 14:	Student Project: Bone marrow lymphocytes isolation
	Week 15:	Student Project: lymphocytes microscopic analysis
	Week 16:	FINAL EXAMINATION
Study and examination requirements and forms of examination	Assignment (25%) : student project and paper report Quiz (10%) : paper test Performance (25%) : student project report and paper presentation) Midterm examination (20%) : paper test Final examination (20%) : paper test and final project report)	
Media employed	LCD, Whiteboard, Sipejar	
Reading list	1. Abul K Abbas**,** Andrew H Lichtman**,** Shiv Pillai**,** 2016. Basic Immunology, functions and disorders of the Immune Systems 5th Edition. Elsevier 2. Abul K Abbas**,** Andrew H Lichtman**,** Shiv Pillai**,** 2016. Immunology, Molecular Cellular Mechanism, 5th Edition. Elsevier 3. Other relevant references	
Date of Class Amendment Made	January, 2022	