| | Universitas Negeri Surabaya<br>Faculty of Mathematics and Natural Sciences<br>Biology Undergraduate Study Program | Document Code |
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# SEMESTER LEARNING PLAN

| Courses | CODE | Course Family | Credit Weight | | | SEMESTER | Compilation Date |
|---|---|---|---|---|---|---|---|
| **Immunology*** | 4620102094 | | T=2 | P=0 | ECTS=3.18 | 7 | July 17, 2024 |

| AUTHORIZATION | SP Developer | Course Cluster Coordinator | Study Program Coordinator |
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| | ..... | ..... | Dr. H. Sunu Kuntjoro, S.Si., M.Si. |

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| **Learning model** | **Project Based Learning** | |
| **Program Learning Outcomes (PLO)** | **PLO study program that is charged to the course** | |
| | **PLO-7** | Able to work independently and collaboratively, as well as responsibly, in completing various tasks in class, in the laboratory and in the field. |
| | **PLO-11** | Able to apply transferable skills in biology to develop ecopreneurship (eco-innovation, eco-opportunity, eco-commitment) |
| | **PLO-13** | Able to demonstrate basic knowledge of cell and molecular biology, organismal biology, ecology and evolution to analyze current biological issues |
| | **Program Objectives (PO)** | |
| | **PLO-PO Matrix** | |

| P.O | PLO-7 | PLO-11 | PLO-13 |
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**PO Matrix at the end of each learning stage (Sub-PO)**

| P.O | Week | | | | | | | | | | | | | | | |
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| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

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| **Short Course Description** | This course discusses the immune system and its components, leukocyte circulation and migration, immune response, antigens and antibodies, lymphoid tissue and immunocompetent cell maturation, immunoglobulin structure and function, immunoglobulin synthesis, Major Histocompatibility Complex (MHC), complement, immunomodulatory and cytokines, monoclonal antibodies, immunity against tropical diseases, viruses, cancer, immunity in the reproductive system, immunodeficiency, autoimmunity, and hypersensitivity reactions. This course is presented through lectures, discussions, and structured assignments. | |
| **References** | **Main :** | |


1. Abbas, A.K., Lichtman, A.H., and Pillai, S. 2020. BASIC IMMUNOLOGY: Functions and Disorders of the Immune System, 6 th Edition. Missouri: Elsevier
2. Abbas, A.K., Lichtman, A.H., and Pillai, S. 2018. CELLULAR AND MOLECULAR IMMUNOLOGY, 9th Edition. Philadelphia: Elsevier
3. Delves, P.J., Martin, S.J., Burton, D.R., and Roitt, I.M. 2017. ROITT'S ESSENTIAL IMMUNOLOGY, 13th Edition. London: Wiley Blackwell


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| **Supporters:** | |
| **Supporting lecturer** | Dr. Nur Kuswanti, M.Sc.St.<br>Nur Qomariyah, S.Pd., M.Sc.<br>Erlix Rakhmad Purnama, S.Si., M.Si. |

| Week- | Final abilities of each learning stage (Sub-PO) | Evaluation | | Help Learning, Learning methods, Student Assignments, [ Estimated time] | | Learning materials [ References ] | Assessment Weight (%) |
|---|---|---|---|---|---|---|---|
| | | Indicator | Criteria & Form | Offline ( *offline* ) | Online ( *online* ) | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |

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| **1** | Identifying The Basic Concepts of Immune System | 1. Explaining the history of immunology<br>2. Identifying the position of immunology in other sciences<br>3. Explaining the concept of the body's defense system<br>4. Connecting recent research about immunological concepts | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Participatory Activities | Oration method via Zoom meeting or Google Classroom<br>2 X 50 | | | 5% |
| **2** | Describing Immune System and Immune Response | 1. Explaining the humoral immune system and its components<br>2. Explaining the cellular immune system and its components<br>3. Explaining initiation of immune response<br>4. Explaining innate and adaptive immune responses | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Discussion and Assignment via Google Classroom<br>2 X 50 | | | 5% |
| **3** | Explaining Lymphoid Tissue and Maturation of Immunocompetent Cells | 1. Identifying types of lymphoid tissue and immunocompetent cells<br>2. Explaining Maturation of immunocompetent cells | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 5% |
| **4** | Comparing structure, Function and Synthesis of Immunoglobulins | 1. Identifying structure of the various classes of immunoglobulins<br>2. Identifying structure of the various functions of immunoglobulins<br>3. Explaining immunoglobulins synthesis | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration via Google Meet or discussion via Google Classroom<br>2 X 50 | | | 5% |
| **5** | Describing Antigens and Antibodies Reaction Process | 1. Identifying meanings of antigens and antibodies<br>2. Describing general structure of antibodies<br>3. Explaining the bond between antibodies and antigens. | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Meet or Classroom<br>2 X 50 | | | 5% |
| **6** | Describing Mechanisms of Circulation and Migration of Leukocytes | 1. Describing interaction of leukocytes and endothelial tissue<br>2. Identifying the way of migration of neutrophils and monocytes to the infected site<br>3. Explaining the migration and recirculation pattern of T lymphocytes | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom<br>2 X 50 | | | 5% |

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| **7** | Comparing Structure and Function of the Various Classes of Major Histocompatibility Complex (MHC) | 1. Describing meanings of MHC<br>2. Identifying all kinds of MHC<br>3. Explaining the role of MHC regarding immune system concepts | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration or discussion via Zoom or Google Classroom<br>Immunology Module implementation<br>2 X 50 | | | 5% |
| **8** | Middle Exam | Meetings 1-7 | **Criteria:**<br>Based on each indicator<br><br>**Forms of Assessment** :<br>Participatory Activities, Project Results Assessment / Product Assessment | -<br>2 X 50 | | | 15% |
| **9** | Explaining the Meaning and Role of Cytokines and Immune System Complement | 1. Explaining definitions of cytokines and complement<br>2. Mentioning the biological function of cytokines and complement | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration or discussion via Zoom or Google Classroom<br>Immunology Module implementation<br>2 X 50 | | | 5% |
| **10** | Describing Monoclonal Antibody and Immunomodulatory | 1. Describing definition of monoclonal antibodies<br>2. Identifying process of making monoclonal antibodies<br>3. Explaining the role of monoclonal antibodies as diagnostic and therapeutic<br>4. Explaining definition of immunomodulator<br>5. Identifying the role of immunomodulatory substances in the body | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom<br>2 X 50 | | | 5% |
| **11** | Analyzing Process of Immunity of Tropical Diseases | 1. Explaining definition of tropical diseases<br>2. Comparing immune system function on the pathogens (bacteria, fungi, and parasites) | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 5% |
| **12** | Describing Immunity of Viruses and Cancer | 1. Explaining immune system role of viruses and cancer<br>2. Explaining immune response mechanisms of viruses and cancer<br>3. Browsing various information on immune therapy of cancer | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** :<br>Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 0% |

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| **13** | Describing Immunology of the Reproductive System | 1. Explaining immunity on male and female reproduction system<br>2. Explaining immunity in fertilization and pregnancy | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** : Project Results Assessment / Product Assessment | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 5% |
| **14** | Explaining The Concept of Immunodeficiency and Autoimmune | 1. Explaining primary and secondary immunodeficiency<br>2. Explaining HIV and AIDS<br>3. Explaining definition of autoimmune and types of autoimmune | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** : Participatory Activities | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 10% |
| **15** | Explaining Concept Hypersensitivity Reaction | 1. Explaining the causes of hypersensitivity<br>2. Explaining mechanism and classification of hypersensitivity reactions<br>3. Explaining the diseases caused by antibodies and T lymphocytes | **Criteria:**<br>Assignment 30%Mid-Exam 20%Attendance and Participation 20%Final Exam 30%<br><br>**Form of Assessment** : Participatory Activities | Oration and discussion via Google Classroom or Meet<br>2 X 50 | | | 10% |
| **16** | | | **Form of Assessment** : Participatory Activities | | | | 10% |

**Evaluation Percentage Recap: Project Based Learning**

| No | Evaluation | Percentage |
|---|---|---|
| 1. | Participatory Activities | 42.5% |
| 2. | Project Results Assessment / Product Assessment | 57.5% |
| | | 100% |

**Notes**

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.