UNIVERSITAS NEGERI YOGYAKARTA

FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF BIOLOGY EDUCATION

Colombo Street 1 Yogyakarta 55281
Phone: (0274)565411 Ext. 217, (0274)565411(Administration Office),
fax (0274)548203
Website:fmipa.uny.ac.id, E-mail :humas_fmipa@uny.ac.id

Undergraduate Program in Biology **MODULE HANDBOOK**

Module name:	Immunology
Module level, if applicable:	Undergraduate
Code:	BIO6233
Sub-heading,if applicable:	-
Classes,if applicable:	-
Semester:	Even
Module coordinator:	Dr. Heru Nurcahyo
Lecturer(s):	Tri Harjana, M.P
Language:	Bahasa Indonesia
Classification within the curriculum:	Compulsory subject
Teaching format / class hours per week during the semester:	100 minutes lectures, 120 minutes structured activities, and 120 minutes individual studyper week
Work load:	Total workload is 91 hours per semester which consists of 100 minuteslectures, 120 minutes structured activities, and 120 minutes individual study per weekfor 16 weeks.
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	General Biology
Perogram Learning Outcomes:	4. Comprehensively mastering Biology (core biology) to solve problems in the field of Biology (problem-solving) and to underlie the concepts of related sciences 6. Being adaptive, creative, innovative in applying the concepts of Biology and other related fields 9. Being able to work and create jobs/being an entrepreneur in the field of Biology 11. Possessing scientific skills to support the ability to speak in local, national, and international forums
Course Outcomes	After taking this course, the students have ability to: CO1. Identify the concept of Immunology and understanding the Immune System how it works CO2.Understand the concept of the structure and function of the antigen CO3. Elaborate the recent development of System Immune issues CO4. Analyze the structure and function of Cell B dan Cell T CO5. Apply clonal selection theory on a biosynthesis antibody CO6. Elaborate molecular structure of Immunoglobulin (Ig) CO7. Explain the response Immune including natural and acquired immune response

<table>
<tr><td></td><td>CO8. Explain the concept, source and effect of recombinant vaccination
CO9. Apply the concept of antigen binding site (ABS) and its implication
CO10. Elaborate the concept of structure and function of molecule Immunoglobulin (Ig) and its implication
CO11. Describe the definition, stages and roles of auto immune disease analyses
CO12. Communicate the result of monoklonal antibody (MoAb) study</td></tr>
<tr><td>Content:</td><td>This course discusses the awareness of Immunology problems, interaction between biophysic environment and its function in sustainable development, wasteless technology, new paradigm on environment management and short term solution for environmental problems.</td></tr>
<tr><td>Study/examachievements:</td><td>The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td>CO1 to CO12</td><td>Observed attitudes , knolwedge, and skills</td><td>Survey, test, rubrics and manuals</td><td>100%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Forms of media:</td><td>Real objects, model, multimedia</td></tr>
<tr><td>References:</td><td>A. Brosnan, Deborah M. & Hopson Janet L.(1990). Essentials of Biology. New York: Mcgraw-Hill Publishing Company
B. Champbell, N.A. ,Reece, J.B.& Mitchell, L.G. (2000). Biologi Edisi kelima, jilid III (Terjemahan). Jakarta: Penerbit Erlangga. Buku asli diterbitkan tahun 1999.
C. Guyton, Arthur C. & Hall, John E. (1996). Fisiologi Kedokteran. (Terjemahan oleh Irawati Setiawan). Jakarta: Penerbit EGC. Buku asli diterbitkan tahun 1996.
D. Junqueira Luis C. & Carneiro Jose. (1980). Histologi Dasar Edisi 3. (Terjemahan oleh Adji Dharma). Jakarta: Penerbit EGC. Buku asli diterbitkan tahun 1980.
E. Miller, K. R. & Levine, J. (1993). Biology. United States of America: Prentice Hall.
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G. Stuart and Fax I. 2006. Human Physiology. New York: Mc – Hill.
H. I Kannan. 2015. Immunology. MJP Publisher.
I. David Male, Victoria Male, Ray Stokes Peebles. 2020. Immunology. Elsevier.
J. W.E. Paul. 2008. Fundamental Immunology. Walters Kluwer Healt</td></tr>
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
CO1				✓							
CO2				✓							
CO3				✓							
CO4				✓							
CO5				✓							
CO6				✓		✓					
CO7				✓		✓					
CO8				✓		✓					
CO9				✓		✓					
CO10				✓		✓					
CO11				✓		✓			✓		
CO12											✓