	UNIVERSITAS PADJADJARAN FACULTY OF MATHEMATICS AND NATURAL SCIENCES MASTER PROGRAM IN CHEMISTRY	COURSE CODE: D20B.224

Module designation	Immunomodulators and Vaccine Development
Semester(s) in which the module is taught	2
Lecturers	1. Prof. Dr. Toto Subroto 2. Prof. Iman P. Maksum
Medium of instruction	English and Indonesian
Relation to curriculum	Mandatory Elective Courses Biomolecular Health and Food Sciences Master of Science in Chemistry
Teaching methods	Lecture and discussion
Workload	Total workload: 53.42 hours CLASS Lecture : 18.36 hours Tutorial : 3.35 hours Assignment : 1 hours Assesment : 5.01 hours Independent Study : 26.7 hours
Credit points	2 (2-0) 2 Credits = 3.62 ECTS

Required and recommended prerequisites for joining the module	1. Structure and Function of Biomolecules 2. Metabolism and Genetics Information

Module objectives/intended learning outcomes	1. The student is capable of explaining the fundamental principles of the immune system and the role of vaccines in the body's defense. (C3) 2. The student is capable of mapping and evaluating epitopes as vaccine components. (C4) 3. The student is capable of explaining the production of conventional vaccines, the development of recombinant vaccines, and their efficacy testing. (C4) 4. The student can explain the understanding and application of phage display, monoclonal antibodies, and antibody humanization. (C4)

Contents	This course discusses the fundamentals of the immune system, which includes aspects of the immune system mechanisms, immune system components, vaccine development, epitope mapping and evaluation strategies, recombinant vaccines, and methods for testing vaccine efficacy.

Examination forms	Test, Presentation, and Assignment
Study and examination requirements	Minimum attendance at lectures is 80%. Final score is evaluated based on quiz (10%), individual assignment (20%), mid semester exam (35%), and end semester exam (35%).
Reading lists	1. Abbas, A.K & Lichmants, A.H (2005). Cellular and Molecular Immunology(5 ed). Philadelphia: Elsivier Saunders 2. Sompayrac, L (2008) .How the Immune System Works (3 ed) Massahusetts,USA: Blackwell Publisihing 3. Hjelm, B (2011). Epitop Mapping of Antibodies Towards Human Protein Targets. Dessertation. Royal Institute of Technology School of Biotechnology.Printed by Universitetsservice US-AB. Stockholm - Sweden.