	UNIVERSITAS PADJADJARAN **FACULTY OF MATHEMATICS AND NATURAL SCIENCES** **MASTER OF SCIENCE IN BIOLOGY**	**COURSE CODE: D10D1203**

Module designation	**Applied Microbiology and Biotechnology**
Semester(s) in which the module is taught	1
Person(s) responsible for the module	Dr. Mia Miranti Rustama, M.P. Dr. Sri Rejeki Rahayuningsih, M.Si. Dr. Keukeu Kaniawati Rosada, M.Si. Febri Doni, S.Si., M.Sc., Ph.D
Medium of instruction	English and Indonesian
Relation to curriculum	Compulsory Master of Science in Biology
Teaching methods	Lecture, Discussion, Cooperative Learning and Problem Based Learning
Workload	Total workload: 8160 minutes (136 hours) **CLASS** Lecture, Discussion, Cooperative Learning and Problem Based Learning : 3 x 50'x 16 weeks = 2400 minutes (40 hours) Exercise : 3 x 60'x 16 weeks = 2880 minutes (48 hours) Private study : 3 x 60'x 16 weeks = 2880 minutes (48 hours)
Credit points	3.00 (5.43 ECTS)

Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	1. Able to know the potential of microorganisms including knowledge about the physiology, characteristics and improvement of microorganisms for industry. 2. Study metabolic pathways, yield of primary and secondary metabolites, improve products and by traditional fermentation and genetic engineering and apply microorganisms on a small or home or large industrial scale 3. Able to apply microorganisms for waste management and pollution control.
Contents	This course studies the understanding, exploration and application of microorganisms that play a role in the food, non-food, health and environmental industries commercially. Mirobiology industry includes the use of microorganisms in producing a product such as enzymes, food, beverages, food additives, fuels, biofuels and drugs (pharmachemicals). Environmental microbiology includes the utilization of microorganisms for waste management and pollution control.

Examination forms	Essay and written examination
Study and examination requirements	Minimum attendance at lectures is 80%. Final score is evaluated based on assignment and group case study reports (20%), Assignment (20%), mid semester exam (30%), and end semester exam (30%).
Reading lists	1. Michael T. Madigan, John Martinko, Thomas Brock, Paul Dunlap, David P. Clark, 2009. Brock Biology of Microorganisms. Pearson/Benjamin Cummings. 1061 halaman. 2. David B. Wilson, Hermann Sahm, Klaus-Peter Stahmann, Mattheos Koffas. 2020. Industrial Microbiology. Wiley publishing. 424 halaman. 3. Albert G. Moat, John W. Foster, Michael P. Spector. 2002. Microbial Physiology, Fourth Edition. Wiley-Liss, Inc. 714 halaman.