Module designation	*Microbe Isolation and Multiplication Techniques*
Semester(s) in which the module is taught	*7th*
Person responsible for the module	*Prof. Dr. Ir. Dermiyati, M.Sc*
Language	*Indonesian language*
Relation to curriculum	*Elective*
Teaching methods	*Lectures (100 minutes)* *Practicum sessions (170 minutes)*
Workload (incl. contact hours, self-study hours)	*Contact hours : 14 weeks x 100 minutes* *Structured learning: 14 weeks x 120 minutes* *Independent study: 14 weeks x 120 minutes* *Practicum sessions: 14 weeks x 170 minutes*
Credit points	*3 (2-1) CP or 4.76 (ECTS)* *((14 weeks x 100 minutes) + (14 weeks x 120 minutes) +* *(14 weeks x 120 minutes) + (14 weeks x 170 minutes)) :* *60 minutes/hour* *= 119 hours : 25 study hours/ECTS* *= 4.76 (ECTS)*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	- *Students are able to apply the basic concepts and principles of cultivation technology and the development of sustainable agriculture technology* - *Students are able to identify, formulate, solve problems, and apply plant science, plant protection, soil science, socio-economic agriculture, and plant production engineering principles that are oriented towards good agricultural practices (GAP)* - *Students are able to plan, design, implement, and develop plant production with the latest and environmentally friendly technology in creatively and innovatively*
Content	*The Microbe Isolation and Multiplication Techniques course is a 3 (2-1) credit course. This course contains studies on: development of microbiology for plant production, growth and isolation of microorganisms from natural sources, identification systems, microbial cells of microbes, characteristics of microbes that are often used in the field of plants, conservation and skinning potential, microbial metabolites, media formulation, introduction and application of processes in several fields of production plant.*
Examination forms	*oral presentation, essay*

Study and examination requirements	*Participants are evaluated based on their performance in class (lectures) (70%) and lab (practicum) (30%).* *Performance in theory (100%):* *Mid Exam (20%)* *Final Exam (20%)* *Assignments (40%)* *Class participation (10%)* *Individual quiz (10%)* *Performance in practicum (100%):* *Practicum exam (30%)* *Pre-test or post-test (10%)* *Experiment reports (60%)*
Reading list	1. *Subba Rao, N.S. 1977. Soil Microorganism and Plant Growth. Oxford & IBH Publishing Co. New Delhi.* 2. *Bombay. Metting, F.B. Jr. 1993. Structure and Physiological Ecology of Soil Microbial Communities. In F.B. Metting Jr. (Ed). Soil Microbial Ecology.. Pp 3-25. Marcel Dekker, Inc, New York.* 3. *Paul, E.A. and Clark. 2007. Soil Microbiology, Ecology, and Biochemistry, Academic Press is an imprint of Elsevier, AMSTERDAM.* 4. *Van Elsas, J.D. and J.T. Trevors. 1997. Modern Soil Microbiology. Marcel Dekker, New York, pp 375-439* 5. *Yusnaini, S. 2022. Pengelolaan Hara Fosfor Secara Biologis. AURA Press*