



USK
UNIVERSITAS
SYIAH KUALA

FACULTY OF AGRICULTURE
DEPARTMENT OF SOIL SCIENCE

UNDERGRADUATE PROGRAM

MODULE HANDBOOK

Module designation	Practicum of Soil Biotechnology (SSOL3054)
Semester(s) in which the module is taught	6 th semester
Person responsible for the module	Dr. Ir. Fikrinda, M.Si.
Language	Indonesian, English
Relation to curriculum	Compulsory module for Soil Science Department
Teaching methods	Practice, lecture, presentation
Workload (incl. contact hours, self-study hours)	✓ 170 minutes of practice per week (field/laboratory 50 minutes; structured learning 60 minutes; 60 minutes self-study)
Credit points	1 SKS = 1.6 ECTS
Required and recommended prerequisites for joining the module	SSOL1002
Module objectives/intended learning outcomes	<ul style="list-style-type: none">✓ Students are able to understand the concept and be skilled in using methods of isolation, cultivation, and observation of arbuscular mycorrhizal fungi colonization.✓ Students are able to possess basic skills in isolating and propagating microorganisms, as well as the ability to produce and apply biofertilizers and bio-compost.
Content	The Soil Biotechnology Practice course teaches techniques for producing biofertilizers and their use, starting from isolation to application in the field, such as mycorrhizae, phosphate-solubilizing microbes, nitrogen fixers, and the utilization of earthworms.
Exams and assessment formats	Case method, team based project, quiz, assignment, exam
Study and examination requirements	<ul style="list-style-type: none">✓ Case method: 15%✓ Team based project: 50%✓ Quiz: 5%✓ Assignment: 25%✓ Exam: 5%

Reading list	<ol style="list-style-type: none"> 1. Esser, K (Ed.). 2013. The Mycota. XI. Agricultural Applications. 2nd Edition. Springer. 2. Satyanarayana, T., B. Narain & J.A. Prakash (Eds.). 2012. Microorganisms in Sustainable Agriculture and Biotechnology. Springer. 3. Byrne, P. 2014. Genetically Modified (GM) Crops: Techniques and Applications. Colorado State University 4. Nath Yadav a Kour, D., Kaur, T., Devi, R., Yadav, A., Dikilitas, M., Abdel-Azeem, AM.Amrik , A., dan Saxena, A.K. 2013. 5. Noora Barzkar & Muhammad Sohail. 2020. An overview on marine cellulolytic enzymes and their potential applications. Applied Microbiology and Biotechnology Vol. 104: 6873-6892 6. Ezemagu I.G. , M.I. Ejimofor , M.C. Menkiti, & C. Diyoke. 2021. Biofertilizer production via composting of digestate obtained from anaerobic digestion of post biocoagulation sludge blended with saw dust: Physiochemical characterization and kinetic study. Environmental Challenges 5: 100288 7. Guo, X., L.Yuan, M. Shakeel,Y.Wan, Z. Song, & D.Wang. 2021. Isolation and identification of endophytic fungi with screening of promotion growth on mycorrhizal fungi in blueberry.Rhizosphere 19: 100389.
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