



**SRIWIJAYA UNIVERSITY  
FACULTY OF AGRICULTURE  
LAND DEPARTMENT  
SOIL SCIENCE STUDY PROGRAM**

**SEMESTER LEARNING PLAN**

**A. COURSE IDENTITY**

Subject	: Soil Biotechnology	Code: PTN 2210	5th semester	Credits : 3 (2-1)
Study material	: Soil Science and Technology: Soil engineering and biotechnology			
Course description	: Development of soil biotechnology; the basics of microorganism; microorganism engineering; biofertilization; bioremediation; composting technology			
CPL	<p>1: Able to make the right decisions in the context of solving problems in their area of expertise, based on the results of the analysis information and data; (KU-5)</p> <p>2: Able to be responsible for the achievement of group work results and supervise and evaluate the completion work assigned to workers under their responsibility; (KU-7)</p> <p>3: Mastering knowledge about the quality and sustainable use of land and land. (P-3)</p>			
Supporting lecturer	: Ir. Sabarudin, M.Sc., Ph.D Dr. Ir. A. Madjid R, MS	Responsible Lecturer	: Dr. Ir. A. Napoleon	

## B. LEARNING PROGRAM

Week	CPMK	Final Skills expected at each stage of learning (Sub-CPMK)	Subject	Learning method and time	Description of independent tasks and time	Indicator	Weight (%)	Reference
(1)		(2)	(3)	(5)	(6)	(7)	(8)	(9)
1	Able to make appropriate decisions in the context of solving problems in their area of expertise, based on the results of information and data analysis; (KU-5)	Understanding TIU and ICT Soil Biotechnology courses, objectives, content, teaching, assessment	Describe the objectives, content, instructors, regulations and competencies of this subject, objectives, course content, instructors, rules and competence of this subject.	Face-to-face lecture (2x50 minutes)	(3x60")	Accuracy in explaining	5%	Lynch. JM 1963. Soil Biotechnology. Blackwell Scientific Publications. Oxford London
2		Explain the development of world soil biotechnology	Development of soil biotechnology (Description of the habitat of microorganisms, development of world soil biotechnology and the role of soil biotechnology in increasing agricultural production	Face-to-face lecture (2 x 50 minutes)			5%	Lynch. JM 1963. Soil Biotechnology. Blackwell Scientific Publications. Oxford London
3	Able to be responsible for achieving the results of group work and	Students are familiar with the saprophyte microorganism, decomposition	Saprophytic microorganisms, decomposition processes and nutrient cycling in soil	Face-to-face lecture (2x 50 minutes)			5%	meeting. FB, Jr. 1992. Soil Microbial

	supervising and evaluating the completion work assigned to workers under their responsibility; (KU-7	processes and nutrient cycles in the soil						Ecology. Marcel Dekker, Inc. New York. DC Coleman, DA Crossley, Jr., and PF Hendrix. 2004. Fundamentals of soil ecology. Second edition. Elsevier
4			Saprophytic microorganisms, decomposition processes and nutrient cycles in soil	Group discussion (2 x 50 minutes)			5%	Meeting. FB, Jr. 1992. Soil Microbial Ecology. Marcel Dekker, Inc. New York. DC Coleman, DA Crossley, Jr., and PF Hendrix. 2004. Fundamentals of soil ecology. Second

								edition. Elsevier
5		Students recognize enzymes in soil and microorganism products that affect plant growth	Enzymes in the soil	Face-to-face lecture (2 x 50 minutes)			5%	meeting. FB, Jr. 1992. Soil Microbial Ecology. Marcel Dekker, Inc. New York. DC Coleman, DA Crossley, Jr., and PF Hendrix. 2004. Fundamentals of soil ecology. Second edition. Elsevier
6		Students recognize the symbiosis of microorganisms and plants	Symbiosis of Soil Microorganisms with Plants	Face-to-face lecture (2 x 50 minutes)			10%	Sylvia, DM., Hartel, PG., Fuhrmann, JJ., Zuberer, DA., 2005. Principles and

								Applications of Soil Microbiology. 2ND Edition. Pearson Prentice Hall. Upper Saddle River, New Jersey.
7			Symbiosis of Soil Microorganisms with Plants	Group discussion (2 x 50 minutes)			10%	Sylvia, DM., Hartel, PG., Fuhrmann, JJ., Zuberer, DA., 2005. Principles and Applications of Soil Microbiology. 2ND Edition. Pearson Prentice Hall. Upper Saddle River, New Jersey.

8	<b>Midterm exam</b> (60 minutes)							
9		Students know soil biodiversity (soil macroorganisms)	Soil Biodiversity (Soil Macroorganism)	Face-to-face lecture 92 x 50 minutes)			10%	meeting. FB, Jr. 1992. Soil Microbial Ecology. Marcel Dekker, Inc. New York. DC Coleman, DA Crossley, Jr., and PF Hendrix. 2004. Fundamentals of soil ecology. Second edition. Elsevier
10		Students know soil biodiversity (soil microorganisms)	Soil Biodiversity (Soil Macroorganism)	Group discussion (2 x 50 minutes)			10%	meeting. FB, Jr. 1992. Soil

								Microbial Ecology. Marcel Dekker, Inc. New York. DC Coleman, DA Crossley, Jr., and PF Hendrix. 2004. Fundamentals of soil ecology. Second edition. Elsevier
11	Mastering knowledge about the quality and use of land and land in a sustainable manner. (P-3)	Students recognize the role of soil microorganisms in agricultural systems	The role of soil microorganisms in the agricultural system	Face-to-face lecture (2 x 50 minutes)			10%	<a href="http://soils.usda.gov/sqi/concepts/soil_biology/biology.html">http://soils.usda.gov/sqi/concepts/soil_biology/biology.html</a> Hanafiah, KA., I Anas, A. Napoleon, N Gofar. 2005. Soil Biology. Rajawali Press, Jakarta.

12		Students know the effect of soil pollution on soil organisms	Pollution and its effects on soil organisms	Face-to-face lecture (2 x 50 minutes)			5%	<a href="http://soils.usda.gov/sqi/concepts/soil_biology/biology.html">http://soils.usda.gov/sqi/concepts/soil_biology/biology.html</a> Hanafiah, KA., I Anas, A. Napoleon, N Gofar. 2005. Soil Biology. Rajawali Press, Jakarta.
13			Pollution and its effects on soil organisms	Group discussion (2 x 50 minutes)			5%	<a href="http://soils.usda.gov/sqi/concepts/soil_biology/biology.html">http://soils.usda.gov/sqi/concepts/soil_biology/biology.html</a> Hanafiah, KA., I Anas, A. Napoleon, N Gofar. 2005. Soil Biology. Rajawali Press, Jakarta.



14		Students understand the role of organisms in soil bioremediation	Soil bioremediation	Face-to-face lecture (2 x 50 minutes)			10%	Hinchee, RE, Vogel, CM, Brockman F, J., 1995. Microbial Processes for Bioremediations. Battelle Press, Columbus, Richland
15		Students know how to manage soil organisms Explain the application of biology land in various fields (agriculture, forestry, fisheries, animal husbandry, environment)	Management of soil organisms	Face-to-face lecture (2 x 50 minutes)			5%	<a href="http://soils.usda.gov/sqi/concepts/soil_biology/biology.html">http://soils.usda.gov/sqi/concepts/soil_biology/biology.html</a> Hanafiah, KA., I Anas, A. Napoleon, N Gofar. 2005. Soil Biology. Rajawali Press, Jakarta.

16	<b>Final exams</b> (120 minutes)
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**Workload:** TM lectures 1200 minutes, practicum 720 minutes, group discussion 740 minutes, independent assignments 1860 minutes, exam 180 minutes = 4700 minutes = 78.33 hours = 3.13 ECTS

**Reference:**