

## Module/Course Description

### INTRODUCTION TO SOIL SCIENCE (TSL 202)

A. Module Identity		
1.	Name	Introduction to Soil Science
2.	Code	TSL 202
3.	Credit	3 (2-3)
4.	Semester	3
6.	Coordinator	Basuki Sumawinata
7.	Lecturers	
8.	Language	Indonesian
9.	Program(s) in which the course is offered	Internal department: - Other departments: Department of Soil Science and Land Resources Program
10.	Type of teaching	a. Traditional classroom: 100 % b. Blended system: Traditional classroom....%, Online....% c. e-Learning system: .....% d. Others: .....%

B. Workload of course components (total contact hours and credits per semester)								
Credit		Contact Hours				Self-Study	Other	Total
SKS *)	ECTS	Lecture	Exercise	Laboratory	Practice			
<b>3</b>		<b>28</b>			<b>42</b>	<b>56</b>		<b>126</b>

\*) Semester credit unit according to the Indonesian higher educational system

1 credit unit lecture = 2 hours/ week for lecture and 2 hours/ week for self-study within 14 weeks/ semester

1 credit unit class exercise or laboratory or field practice = 3 hours/week within 12-14 weeks/semester

\*\*\*) 1 hour for lecture= 50 minutes; 1 hour for class exercise or laboratory or field practice = 60 minutes

### C. Module Objective (Learning Outcomes)

The student having the ability to recognize the meaning of soil and land, as well as the functions, problems, and roles of soil science in agricultural development; to comprehend the processes and factors of soil formation, the characteristics and quality of soil associated with use for agriculture, and the method of land evaluation, land use planning and their management for sustainable agriculture

**D. Detailed Course Learning Outcomes (LO) in Relation to Learning Domains, Teaching Strategies, and Assignment Methods**

No.	LO in Learning Domains	Teaching Strategies	Assessment Methods
a.	<b>Knowledge</b>		
1.	Students are able <b>to know</b> the soil and land issues in Indonesia	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the class	Midterm exam, Practicum report
2.	Students are able <b>to recognize</b> the soil forming factors and functions of the soil for agriculture and the environment	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Midterm exam, Practicum report
3.	Students are able <b>to outline</b> the physical characteristics of the soil and the use of physical characteristics of the soil	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Midterm exam, Practicum report
4.	Students are able <b>to explain</b> the role of soil colloid in influencing the chemical properties of soil and mitigating soil acidity	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Midterm exam, Practicum report
5.	Students are able <b>to state</b> the meaning of essential nutrients, their behaviour in the soil and their role in plants, and how to evaluate soil fertility	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Midterm exam, Practicum report
6.	Students are able <b>to summarize</b> the importance of fertilizers and fertilization of soil and plants	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Midterm exam, Practicum report
7.	Students are able <b>to identify</b> the role of organisms in the	Explanations of theories through face-to-face lectures	Final exam, Practicum report

	soil and their effects on the surrounding environment	in class and debriefing sessions, followed by practicum on the field	
8.	Students are able <b>to describe</b> the process of soil formation, soil profile and know some classification systems used in Indonesia and their relationship with soil management	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report
9.	Students are able <b>to outline</b> the importance of soil and water conservation, as well as ways to prevent land degradation and rehabilitation	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report
10.	Students are able <b>to explain</b> the importance of land use planning for agricultural purposes	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report
11.	Students are able <b>to comprehend</b> the principles of land management and have an overview of land management procedures, as well as the potential and problems of land in Indonesia	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report
<b>b.</b>	<b>Skills</b>		
1.	Students are able <b>to demonstrate</b> the land survey procedures and understand the relationship between type, scale, and level of accuracy of land maps, and are able to utilize land maps correctly	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report

2.	Students are able <b>to conduct</b> the evaluation of land resources for agriculture	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by practicum on the field	Final exam, Practicum report
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### E. Module Content

List of Topic	Number of Weeks	Contact Hours
Introduction	1	2
Definition and Main Functions of Land	1	2
Soil Physical Properties	2	4
Soil Chemical Properties	1	2
Soil Fertility	1	2
Fertilizer and Fertilization	1	2
Organic Materials and Soil Organisms	1	2
Morphology and Soil Classification	1	2
Soil Surveying and Mapping	1	2
Land Resource Evaluation	1	2
Soil Conservation, Degradation and Rehabilitation	1	2
Land Use Planning	1	2
Problems and Solutions for Solving Agricultural Land in Indonesia	1	2

### F. Course Assessments

No.	Assessment Type *)	Schedule (Week Due)	Proportion of the Final Mark
1.	Mid-term examination	8 <sup>th</sup> week	40 %
2.	Final examination	16 <sup>th</sup> week	40 %
3.	Practicum report	Each of week	20%

\*) Example: mid-term examination, final examination, quiz, homework, project, etc.

### G. Media Employed

<ul style="list-style-type: none"> <li>- Classroom</li> <li>- Laptop</li> <li>- LCD</li> <li>- Microphone (loudspeaker)</li> <li>- Whiteboard</li> </ul>
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## H. Learning Resources

### h1. Textbooks:

1. Soepardi G. 1983. *Sifat dan Ciri Tanah*. Bogor (ID): Institut Pertanian Bogor
2. Hardjowigeno S. 2003. *Ilmu Tanah*. Jakarta (ID): Akademika Pressindo
3. Foth HD, Turk LM. 1972. *Fundamentals of Soil Science. Fifth Edition*. New York (US): John Willy & Sons.
4. Brady NC. 1990. *The Nature and Properties of Soil. Tenth Edition*. New York (US): Macmillan Publishing Company.
5. Singer MJ, Munns DN. 1987. *Soil an Introduction*. New York (US): Macmillan Publishing Company.
6. Arsyad S. 2006. *Konservasi Tanah dan Air*. Bogor (ID): IPB Press.
7. Haridjaja O. 2008. *Pentingnya Konservasi Sumberdaya Lahan*, dalam Arsyad S, Rustiadi E. 2008. *Penyelamatan Tanah, Air dan Lingkungan*. Jakarta (ID): Crestpent Press dan Yayasan Obor Indonesia.
8. Arsyad S, Rustiadi E. 2008. *Penyelamatan Tanah, Air, dan Lingkungan*. Jakarta (ID): Crestpent Press dan Yayasan Obor Indonesia.