

Module/Course Description

Silviculture of Natural Forest (SVK323)

A. Module Identity		
1.	Name	Silviculture of Natural Forest
2.	Code	SVK426
3.	Credit	3 (2-3)
4.	Semester	7
5.	Pre-requisite	-
6.	Coordinator	Dr Ir Prijanto Pamoengkas, M.Sc.F.Trop
7.	Lecturers	1. Dr Ir Prijanto Pamoengkas, M.Sc.F.Trop 2. Dr Ir Supriyanto 3. Adisti Permatasari Putri Hartoyo, S.Hut, M.Si
8.	Language	Indonesian
9.	Program(s) in which the course is offered	Internal department: Forest Management Study Program Other departments: all study programs in IPB University as supporting course/ elective course
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	Class Exercise	Laboratory	Field Practice			
3		28	42			56		126

*) 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)
Students are able to analyze silvicultural systems based on growth factors and stand conditions in tropical forests, and rehabilitation methods at various levels of deforestation or forest degradation

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.	Knowledge		
1.	Students are able to explain the boundaries, scope and development of silvicultural systems in natural forest production in Indonesia	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 5%

2.	Students are able to explain the structure of stands and tree growth patterns in natural forests	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 2,5%
3.	Students are able to explain the concept of regeneration in natural forests	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 2,5%
4.	Students are able to explain the theoretical basis of polycyclic and monocyclic application systems.	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 7,5%
5.	Students are able to explain silvicultural systems of natural forests in several tropical countries	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 5%
6.	Students are able to explain the silvicultural system of natural forests in Indonesia.	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in mid test 17,5%
7.	Students are able to explain the planting enrichment system and some its methods	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in final test 10%
8.	Students are able to explain the efforts to rehabilitate degraded natural forests	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in final test 15%
9.	Students are able to explain rehabilitation efforts on wetlands	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in final test 7,5%
10.	Students are able to analyze the principles of sustainable forest development from a silvicultural perspective	Lectures, discussions, questions and answers; practicum	Completeness and correctness of explanation in final test 2,5%
b.	Skills		
1.	Students are able to explore the stand structure and composition of natural forest types	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 5%
2.	Students are able to explore the concepts of regeneration and density regulation	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%

3.	Students are able to explore selective and clear timber harvesting systems	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%
4.	Students are able to explore and practice silvicultural systems of natural forests in Indonesia	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 5%
5.	Students are able to explore timber stand improvement	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%
6.	Students are able to explore, give example and idea regarding rehabilitation efforts and strategies on dry land	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%
7.	Students are able to explore rehabilitation efforts and strategies in wetland natural forests (peat swamp forests and mangrove forests)	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%
8.	Students are able to analyze the principles of sustainable forest development from a silvicultural perspective	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Completeness and correctness of explanation, skills, analysis, and communication ability 2,5%
c.	Competences:		
1.	Students demonstrate a willingness to participate in the class activities	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Authentic assessment
2.	Students are able to complete all tasks and participate in class discussion	Lectures, small group discussions, team work, field practice; collaborative learning by preparing practicum reports and oral presentations in groups, questions and answers	Authentic assessment

E. Module Content		
List of Topic	Number of Weeks	Contact Hours
Learning contract and introduction	1	2
Stand structure and pattern of tree growth in natural forest	1	2
The concept of regeneration and biodiversity in natural forests	1	2
System of polycyclic and monocyclic	1	2
Silvicultural systems in several tropical countries	1	2
Silvicultural system of natural forests in Indonesia	2	4
Enrichment planting	2	4
Rehabilitation of degraded natural forests	2	4
Silviculture of natural forests in wetlands	2	4
Silvicultural / ecological aspects in ITTO / FSC guidelines for sustainable forest management	1	2

F. Course Assessments			
No.	Assessment Type *)	Schedule (Week Due)	Proportion of the Final Mark
1.	Mid-term examination	The 8 th week	35%
2.	Final examination	The 16 th week	35%
3.	Quiz	Minimal 6 times in a semester	2,5%
4.	Skill and participation	Every week	2,5%
5.	Practical test	Minimal 1 times in a semester	5%
6.	Practical report	Every week	7,5%
7.	Oral presentation	Minimal 1 times in a semester	7,5%
8.	Homework	Minimal 4 times in a semester	5%

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

G. Media Employed
Laptop, LCD, Microphone, White Board, Marker, Pointer

H. Learning Resources
<p>h1. Textbooks:</p> <ol style="list-style-type: none"> 1. Departemen Kehutanan. 1993. Pedoman dan Petunjuk Teknis TPTI pada Hutan Alam Daratan. Jakarta 2. Bruenig, E.F. 1996. Conservation and Management of Tropical Rainforests : An Integrated Approach to Sustainability. CAB Cambridge. 3. Bruijnzeel LA, Chritchley WRS. 1994. Environmental Impacts of Logging Moist Tropical Forests. Paris: UNESCO. 4. Duryea ML, Dougherty PM. 1991. Forest Regeneration Manual. Kluwer Academic Publishers. 5. Lamprecht H. 1989. Silviculture in the Tropics. Eschborn: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH. Technical Cooperation-Federal Republic of Germany. 6. Lamprecht H. 1993. Silviculture in the Tropical Natural Forests. Springer Verlag. Berlin 7. Mori T. 2001. Rehabilitation of Degraded Forests in Lowland Kutai, East Kalimantan, Indonesia. 8. Nyland RD. 1996. Silviculture : Concepts and Applications. McGraw-Hill. Singapore. <ol style="list-style-type: none"> a. PT. Sari Bumi Kusuma. 2000. Petunjuk Teknis Sistem Silvikultur TPTJ. Pontianak b. Smith DM, Larson BL, Kelty MJ, Ashton PMS. 1997. The Practice of Silviculture: Applied Forest Ecology. John Wiley and Sons. 9. Weidelt HJ. 1993. Tropical Silviculture. Provisional Lecture Notes Winter and Summer Semester. Gottingen 10. Manan S. 1995. Pelaksanaan Sistem Silvikultur Tebang Jalur Tanam Indonesia (TJTI). Badan penelitian dan Pengembangan Kehutanan. Jakarta: Departemen Kehutanan.

h2. Journal:

1. Bruenig EF. 1986. The Tropical Rainforest as Ecosystem. *Plant Research and Development* 24:15-30
2. Kobayashi S. 1994. Effect of Harvesting Impacts and Rehabilitation of Tropical Rainforest. *Journal of Plant Research* 107:99-106
3. Weidelt HJ. 1988. On the diversity of tree species in tropical rainforest ecosystems. *Plant Research and Development* 24: 15-30
4. Pamoengkas P. 2010. Potentialities of line planting technique in rehabilitation of logged over area referred to species diversity, growth and soil quality. *Biodiversitas*, 11: 34-39.
5. Pamoengkas P, Gandaseca S, Hardiansyah G, Priyanto, Jamaludin MR. 2014. Tree diameters and planting distance as the most important factors for the liberation of tree competitors in silvicultural systems of TPTJ. *Agriculture, Forestry and Fisheries*, 3 (5): 392-396.
6. Pamoengkas P, Gandaseca S, Wahyudi, Andini D. 2015. Determination of silvicultural system based on vegetation recovery process in logged-over area in Central Kalimantan, Indonesia. *Wulfenia journal*, 22 (5).