Module/Course Description
Forest Management Cost Analysis (MNH 434)

A. Module Identity		
1.	Name	Forest Management Cost Analysis
2.	Code	MNH 434
3.	Credit	3 (2-3)
4.	Semester	7
5.	Pre-requisite	EKO 100
6.	Coordinator	Dr. Gunawan Santosa
7.	Lecturers	1. Dr. Gunawan Santosa 2. Prof. Juang Matangaran 3. Dr. Ahmad Budiaman
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 election 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 and calculate the costs of various forest harvesting activities, optimize and analyze various alternative harvesting to determine effective and efficient way

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 definition of costs, costs grouping and optimization concept in forest harvesting	• Presentation • Discussion (questions and answers)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%
2.	Students are able to explain the time effect of forest harvesting towards production costs	• Presentation • Discussion (questions and answers) • Solve the example	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%

		case/question (tutorial)	
3.	Students are able to explain the same costs concept in forest harvesting for determining the level of production, prices, and alternative activities	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%
4.	Students are able to analyze the combination of skid tools for skidding in flat forest	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
5.	Students are able to analyze the combination of skid tools for skidding in sloped forest	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
6.	Students are able to analyze the determination of optimal road standards inside and outside the forest	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
7.	Students are able to explain and identify the costs for making forest roads	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%
8.	Students are able to explain the importance of forest road maintenance, and explain and identify the costs of forest road maintenance	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%
9.	Students are able to analyze about maintaining old equipment and buying new equipment, identifying problems of heavy equipment replacement, reasons of heavy equipment replacement for forest harvesting.	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
10.	Students are able to analyze and make decision for replacing forest harvesting equipment, identify supply of spare parts for forest harvesting equipment, and analyze the heavy equipment spare parts supplying	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
b.	**Skills**		
1.	Students are able to calculate and determine fixed costs, variable costs, machine costs and business costs	• Presentation • Discussion (questions and answers) • Solve the example	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 5%

		case/question (tutorial)	
2.	Students are able to calculate the cost of one-way and two-way skid mode and determine an alternative skid mode for efficient way	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
3.	Students are able to determine and plan the optimal road standards inside and outside the forest	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis
4.	Students are able to estimate the costs for making forest roads in tropical natural forest business, calculate the optimal density and spacing of roads, and determine alternative choices of road networks based on cost calculations	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis 10%
5.	Students are able to calculate the cost of forest roads maintaining in the tropical natural forests business.	• Presentation • Discussion (questions and answers) • Solve the example case/question (tutorial)	Authentic assessment of the completeness and correctness in explanation, understanding, and analysis
c.	**Competences:**		
1.	Students demonstrate a willingness to participate in the class activities	• Lecturer's explanation • Discussion	Authentic assessment
2.	Students are able to complete all tasks and participate in class discussion	• Lecturer's explanation • Discussion • Homework/ Assignment	Authentic assessment

E. Module Content		
List of Topic	**Number of Weeks**	**Contact Hours**
Costs and optimization concepts in Forest harvesting	1	2
Calculation of Costs in Forest Management	1	2
Activity Time and Production Costs	1	2
The concept of same cost	1	2
Costs of one-way and two-way skid mode and criteria of skid mode selection	1	2
Skidding in flat land forest	1	2
Skidding in slopped forest	1	2
Standards of optimal road inside and outside the forest	1	2
Establishement the forest roads based on cost calculation	3	6
Maintenance of forest roads and its costs	1	2
Replacement of heavy equipment	1	2
Replacement of forest harvesting equipment and the supply of heavy equipment spare parts and forest harvesters	1	2

F. Course Assessments			
No.	**Assessment Type *)**	**Schedule (Week Due)**	**Proportion of the Final Mark**
1.	Mid-Term Examination	The 8th Week	35%
2.	Final Examination	The 16th Week	35%
3.	Exercise Report/ Homework	Minimal 7 times in a semester	30%

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

G. Media Employed

Laptop, LCD, Microphone, White Board, Marker, Pointer

H. Learning Resources

h1. Textbooks:

1. Macklin RR. 1982. *The Logging Business Management Handbook*. San Francisco (US): Miller Freeman Publications, Inc.
2. Matthews DM. 1942. *Costs Control in the Logging Industry*. New York (ID): McGraw-Hill Book Company, Inc.
3. Nugroho B. 2002. *Analisis Biaya Proyek Kehutanan*. Bogor (ID): Yayasan Penerbit Fakultas Kehutanan IPB.
4. Nugroho B. 2005. Diktat Kuliah : Analisis Ekonomi Keteknikan: Analisis Finansial Investasi Kehutanan & Pertanian. Fakultas Kehutanan IPB. Tidak diterbitkan
5. Riggs JL. 1970. *Production Systems: Planning, Analysis and Control*. New York (US): John Wiley and Sons, Inc.
6. Wiradinata S. 1985. Diktat Kuliah (Jilid 1) : Analisis Biaya Pembalakan. Fahutan IPB. Tidak diterbitkan.
7. Wiradinata S. 1985. Diktat Kuliah (Jilid 2) : Analisis Biaya Pembalakan. Fahutan IPB. Tidak diterbitkan.
8. Au T, Au TP. 1992. *Engineering Economics for Capital Investment Analysis*. Second Edition. New Jersey (US): Prentice-Hall International, Inc.
9. Bowlin OD, Martin JD, Scott DF. 1985. *Guide to Financial Analysis*. Grolier Incorporated. USA.
10. De Garmo EP, Sullivan WG, Bontadelli JA, Wicks EM. 1997. *Engineering Economy*. New York (US): Prentice-Hall International, Inc.
11. Gittenger JP. 1986. *Analisa Ekonomi Proyek-proyek Pertanian*. Penerjemah: Sutomo S, Mangiri K. Jakarta (ID): Universitas Indonesia. Jakarta.
12. Newnan DG. 1991. *Engineering Economic Analysis. San Jose*. California (US): Engineering Press, Inc.