Module/Course Description

PLAN SURVEYING AND AREA MAPPING (MNH 211)

A. Module Identity		
1.	Name	Plan Surveying and Area Mapping
2.	Code	MNH 211
3.	Credit	3 (2-3)
4.	Semester	3
5.	Pre-requisite	Foundations of Mathematics
6.	Coordinator	Dr. Nining Puspaningsih, M.Si.
7.	Lecturers	Dr. Nining Puspaningsih, M.Si. Priyanto, S.Hut, M.Si.
8.	Language	Indonesian
9.	Program(s) in which the course is offered	Internal department: Forest Management Study Program Other departments: ……..
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**		**15**	**24**	**56**		**123**

**) 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 have a basic knowledge and theoretical and practical skills of plan surveying techniques on the field as well as a basic knowledge of mapping techniques as a basic knowledge of forest resource management activities.

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 comprehend** the meaning, importance and scope of the basics of plan surveying and mapping activities in conjunction with other disciplines in forest management activities	Lecturer's explanations through face-to-face lectures in class and debriefing sessions.	Written test (Midterm Exam) 10%
2.	Students are able **to explain** the field arguments and theories of surveying errors on the field	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments.	Written test (Midterm Exam) 10%
3.	Students are able **to define** the field argument surveying	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments.	Written test (Midterm Exam) 10%
4.	Students are able **to distinguishes** the method of determining coordinates/positions of points on the field and map	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments.	Written test (Midterm Exam) 15%
5.	Students are able **to comprehend** various maps and correct mapping norms and minimize defaults in the communication process of	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written Test (Final Exam) 10%

	area mapping and are able to assess the appearance of a map.		
b.	**Skills**		
1.	Students are able **to demonstrate** how to survey the height of a point using various ways, both in theory and practice on the field	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written test (Midterm Exam) 10%
2.	Students are able **to operate** how to survey, both in simple and tachymetric ways for mapping purposes	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written Test (Final Exam) 15%
3.	Students are able **to apply** how to make curves on the field and the factors needed to be considered when making curves	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written Test (Final Exam) 5%
4.	Students are able **to show** how to make correct maps using existing equipment, present relief of the earth and multiply maps efficiently	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written Test (Final Exam) 5%
6.	Students are able **to apply** mapping techniques using GPS and able to present GPS data in the form of maps	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory experiments and on the field.	Written Test (Final Exam) 5%
c.	**Competences:**		
1.	Students are able **to analyse** the data/information presented on maps and mapping cost requirements in order to support forestry field survey activities	Explanations of theories through face-to-face lectures in class and debriefing sessions, followed by laboratory responses	Written Test (Final Exam) 5%

E. Module Content		
List of Topic	**Number of Weeks**	**Contact Hours**
Introduction	**1**	**2**
Basic Knowledge of Plan Surveying	**1**	**2**
Surveying Basics	**1**	**2**
Determination of Point Sites	**2**	**4**
Height Surveying	**1**	**2**
Surveying for Mapping	**2**	**4**
Making Curves on The Field	**1**	**2**
Concept of Area Mapping	**2**	**4**
Area Mapping Techniques	**1**	**2**
Introduction to Mapping Techniques Using GPS	**1**	**2**
Map Data Analysis and Mapping Cost	**1**	**2**

F. Course Assessments			
No.	**Assessment Type *)**	**Schedule (Week Due)**	**Proportion of the Final Mark**
1.	**Mid-term examination**	**8th week**	**55 %**
2.	**Final examination**	**16th week**	**45 %**

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

G. Media Employed

- Classroom
- Laptop
- LCD
- Microphone (loudspeaker)
- Practical tools

H. Learning Resources

1. Azis Lukman T. 1984. *Pengantar Kartografi*. Bandung (ID): Jurusan Teknik Geodesi. ITB.
2. Brinker C, Russell and Paul R. Wolf. 1986. *Dasar-dasar Pengukuran Tanah*. Jilid I dan II. Ed. 7. Interpreted by Joko Walijatun. Jakarta (ID): Penerbit Erlangga.
3. Davis RE. and FS. 1953. *Surveying Theory and Practice*. New York (US): McGraw-Hill Book Company, Inc.
4. Forbers RD. 1961. *Forestry Handbook*. New York (US): The Ronald Press Company.

5. Herman SK. 1985. *Pemetaan Situasi.* Bandung (ID): Jurusan Teknik Geodesi. FTSP. ITB.
6. Hofmann. 1970. *Gelandeunahme-Gelandedarstellung*. Brunschwieg: George Westermann Verlag.
7. Kasim, Iskandar. 1977. *Pengukuran Jarak Secara Elektromagnetis*. Bandung (ID): Dep. Geodesi, Fakultas Teknik Sipil dan Perencanaan ITB. Bandung.
8. Keates JS. 1976. *Cartographic Methode*. London (UK): Ethuen Co. Ltd.
9. Oxtoby PJ, Brown A. 1976. *Cartographic Techniques*. Enschede (NL): International Institute for Aerial Survey and Earth Sciences.
10. Purwarahardjo, Umaryono U. 1986. *Ilmu Ukur Tanah. Seri A, B, C.* Bandung (ID): Jurusan Teknologi Geodesi Fakultas Teknik Sipil dan Perencanaan ITB.
11. Robinson AH, Sale RD. 1969. *Elements of Cartography 3rd ed*. New York (US): John Wiley & Sons Inc.
12. Russell C, Wolf PRP. 1986. *Dasar-dasar Pengukuran Tanah. Jilid I dan II. Ed. 7*. Alih Bahasa oleh Joko Walijatun. Jakarta (ID): Penerbit Erlangga.
13. Searber JW, Ormeling FJ, Oxtoby PJ. 1975. *Cartographic Semiology*. Enschede (NL): International Institute for Aerial Survey and Earth Sciences.
14. Simons K, Oxtoby PJ. 1977. *Map Projections*. Enschede (NL): International Institute for Aerial Survey and Earth Sciences.
15. Sutarahardja S.1977. *Geodesi dan Kartografi*. Bogor (ID): Proyek Peningkatan dan Pengembangan Perguruan Tinggi IPB.
16. Suparman DS. 1979. *Dasar-dasar Pengukuran Wilayah dan Penataan Hutan.* Bogor (ID) Dep. Hasil Hutan Fak. Kehutanan IPB.
17. Tracy JC. 1955. *Surveying: Theory and Practice.* New York (US): John Wiley & Sons. Inc.
18. Wongsotjitro S. 1964. *Ilmu Ukur Tanah.* Jakarta (ID): Stada.
19. Zuylen LV, Oxtoby PJ, Alders HJGI. 1975. *Elementary Survey and Photogrammetry*. Enschede (NL): International Institute for Aerial Survey and Earth Sciences.