# **Module Description/Course Syllabi**



Study Programme: Magister of Soil Science
Department of Soil Science and Land Resources

Faculty of Agriculture Universitas Andalas

#### 1.Course number and name

MIT 82110 Land Evaluation and Suitability

# 2.Credits and contact hours/Number of ECTS credits allocated

3 scs (3-0) / 5,739

#### 3.Instructors and course coordinator

- 1. Prof. Dr. Ir. Dian Fiantis, MSc;
- 2. Prof. Dr. Ir. Azwar Rasyidin, M Agr Sc;
- 3. Dr. Juniarti, SP, MP

#### 4. Text book, title, outhor, and year

- 1. Verheye, W. H., Koohafkan, P., Nactergaele, F. <u>The Fao Guideline for Land Evaluation</u>. UNESCO-EOLSS.
- 2. Alan Wild · 1993. Soils and the Environment
- 3. Constantini, E. A. C. 2009. <u>Manual of Methods for Soil and Land Evaluation</u>. Science Publishers. 570 p.
- 4. Deckers, J., O. Spaargaren, S. Dondeyne. 2005. <u>Soil</u> <u>Survey as a BasisforLand Evaluation</u>. Encylopedia of Life Support System (EOLSS).
- 5. de la Rosa D., Van Diepen, C. A. 2002. <u>Qualitative and Quantitative Land Evaluation.</u>
- 6. Verdoodt, A., Van Ranst, E., Van Averbeke, W. 2003. <u>Modelling crop production potentials for yield cap analysis under semiarid conditions in Guquka, South Africa</u>. Soil Use and Management 19. 372-380.
- 7. Willy H. Verheye. 2009. <u>Encyclopedia of Land Use, Land Cover and Soil Sciences</u>. EOLSSPublications, 1322 pSys, C.,
- 8. Van Ranst, E., J. Dibaveye. 1991. Land Evaluation Part I, II and III.Agricultural Publications No. 7. General Administration for Development Cooperation. Brussels Belgium. 733 p.
- 9. Van Ranst, E., A. Verdoot. 2005. Land Evaluation, Part I, II and III. International Centre for Physical Land Resources Universiteit Gent, Gent Belgium. 550 p.

#### 5. Specific course information

## A. Brief description of the content of the course (catalog description)

This course discusses the importance of land survey and mapping in relation to land use planning; explanation of soil characteristics and the differences due to the influence of soil formation factors; methods of land survey; interpretation of survey data for land

suitability, capability, and for irrigation, as well as for non- agricultural use; use of computer

in creating land survey and suitability as well as agricultural production potential modeling.

#### B. Course Content

- 1 Definition and role of Evaluation of Land Suitability Influencing factors, Evaluation of Land Suitability, History of Evaluation of Land Suitability
- 2 Land use planning: project identification, phases and tages of land use planning,
- 3 Land resources, climate, vegetation, hydrology and water, landform, soil
- 4 Evaluation of climate suitability according to Papadakis, USDA, parametric system
- 5 Evaluation of land characteristics and land quality: limited approach and parametricapproach
- 6 Plant production, minimum climate data, photosynthesis and plant adaptation, plantgrowth models (FAO and Wageningen)
- 7 Rainfall (predicted rain, effective rain), evapotranspiration, maximum plantevapotranspiration, actual evapotranspiration, water use efficiency
- 8 Determination of planting start and period, crop coefficient, harvest response factor, crop water requirement for maximum yield
- 9 The potential for crop production based on solar radiation, water-stress conditions, land productivity potential
- 10 Land evaluation method based on specific plant needs, FAO land suitability classification
- 11 Land evaluation method for irrigated land.
- 12 Classification of land capability for the tropics, approaches, land properties and characteristics, landcapability index, parametric approach
- 13 Plant growth agro-ecological zone

Land evaluation application based on visual basic, web and android

#### C. Semester when the course unit is delivered

**Even Semester** 

#### D. Mode of delivery (face-to-face, distance learning)

Face to face

#### **6.Intended Learning Outcomes (CPL)**

- **ILO 2**: An ability to classify soil, to evaluate land capability and suitability, as well as todetermine the alternative utilization for sustainable agriculture and environment
- **PI 2** : Anability to evaluate soil capability
- **PI 3**: An ability to determine suitable land use management
- **ILO 3**: An ability to use technology in identifying and solving problems of soil, land resource, environment problems independently, eligibly, and accurately
- PI 2 : Anability to work independently in determining soil properties
- 7. Course Learning Outcomes (CPMK) ex. The student will be able to explainthesignificance of current research about a particular topic.
- A. Students will be able to use soil data to evaluate soil capability and land suitability

- B. Students will be able to determine suitable land management to reach sustainableagriculture and environment
- C. Students will be able to analyze soil independently either at laboratory or at field site

# 8.Learning and teaching methods

Cooperative and Case Base Method

# 9. Language of instruction

Indonesia and English (English Class)

# 10. Assessment methods and criteria

## Summative Assessment:

1. Tasks : 5% 2. Quiz : 5 %

3. Mid Semester: 25%4. Final Semester: 25%5. Practicum: 30%

Formative Assessment:

6. Attendance: 5%

1. Minutes paper