SOIL SCIENCE COURSE SYLLABI

Soil Science and Land Resources
Faculty of Agriculture
Andalas University

SEMESTER 1

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN611 01 Biology

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

3 credits (2 classes, 1 practice)

3. *Instructors and course coordinator*

Dr. Armansyah, SP. MP.
Ir. Martinius, MS.
Dr. Lily Syukriani, SP. MP.
Dr. Dini Hervani SP, MSi
Dr. Haliatur Rahma SSi. MP
Obel, SP. MP.
Dr. Ir. Nalwida Rozen MP.
Dr. Yulmira Yanti SS.i, MP.

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

5. *Specific course information*

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

This course discusses the role of plants in agriculture, living creatures and the origin of life, understanding cells, cell theory and plant cell structure, meiosis and mitosis, plant morphology (cytology, histology of stems, roots and leaves), understanding plant taxonomy, classification/description of plants and microorganisms that disturb the agricultural sector.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1 : Explain agricultural sciences related to soil science.
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science.
8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN611 02 Fundamental of agronomy

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

3 credits (2 meeting, 1 practice)

3. *Instructors and course coordinator*

1. Prof. Dr. Ir. Auzar Syarif, MS
2. Dr. Ir. Indra Dwipa, MS
3. Firsta Ninda Rosadi SP. MSi.
4. Prof. Dr. Ir. Irfan Suliansyah, MS
5. Nila Kristina, SP. MSc
6. Aries Kusumawati SP. MSi
7. Nugraha Ramadhan SP. MP

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

5. *Specific course information*

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

Understanding agronomy; agronomic business; Aspects and scope of agronomy; Plant classification; Climate, soil, land preparation and selection, land processing, plant propagation, technical plant culture, plant protection, farming systems, plant cultivation strategies, and post-harvest

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P)
PI 1.1 : Explain the science of agriculture related to soil science.

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS Internship **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

KIM 611 05 Chemistry

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

3 credits (2 classes, 1 practice)

3. Instructors and course coordinator

Dr. Tio Putra Wendari
Norman Ferdinal MSi
Emil Salim, MSi.

4. Text book, title, outhor, and year

5. Specific course information

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

This course studies chemical calculations, reaction coefficients, solutions and concentrations, atomic theory, redox and E.M.F., chemical bonds and chemical balance, acids and bases, collogative properties, chemical kinetics and radioactivity. Organic chemistry.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P)
PI 1 : Explain agricultural sciences related to soil science.

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Explain agricultural sciences related to soil science.

8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PAB611 01 Fundamentals of Management

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

2 credits

3. Instructors and course coordinator

Lora Triaa SP. MM
Rina Sari SP. MSi
Prof. Dr. Ir Melinda Noer MSc
Cipta Budiman SSi. MM.

4. Text book, title, outhor, and year

5. Specific course information

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

Understanding management as a science, management as a factor of production, management functions (planning, organizing, departmenting, implementation and supervision), management communication, decision making, leadership, motivation and management applications.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P)
PI .3 : Apply basic sciences and soil science in solving land and environmental problems for agricultural development

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

MWU601 03 Civic Education

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

2 credits

3. Instructors and course coordinator

Dra. Mira Elfina,M.Si
Dr.Khairani, S.H.,M.H
Dr. Desna Aromatica,S.AP.,M.AP

4. Text book, title, outhor, and year

1. Direktorat Jenderal Pembelajaran dan kemahasiswaan Kementerian riset, Teknologi dan Pendidikan Tinggi RI. 2016. Pendidikan kewarganegaraan untuk Perguruan Tinggi.

2. Pendidikan Kewarganegaraan Oleh Dr. Abd. Wahib, Mpdi , Universitas Islam Negeri Kiai Haji Achmad Siddiq Jember 2021

3. Kogoya, Wilius. 2013. Buku Ajar Pendidikan Kewarganegaraan bagi mahasiswa (suatu kompilasi). Widina: Yogyakarta

4. Sulaiman. 2016. Pendidikan Kewarganegaraan untuk Perguruan Tinggi. Yayasan Pena Banda Aceh : Banda Aceh

6. Specific course information

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

Fostering values, attitudes and behavior that are based on Pancasila and the 1945 Constitution of the Republic of Indonesia, the Unitary State of the Republic of Indonesia and Bhinneka Tunggal Ika to shape students into citizens who have a sense of nationality and love for their homeland. Understanding and appreciation of national insight, national policies and strategies, especially in the fields of national defense and security and the universal people's defense and security system to

strengthen the fighting spirit in maintaining the survival of the nation.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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 7: Ability to communicate with audiences of different backgrounds/levels PI 3 : Applying the values of Pancasila and diversity
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Applying the values of Pancasila and diversity
8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

AGT611 02 Mathematic

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

3 credits

3. Instructors and course coordinator

Dra.Netti Herawati, M.Sc

5. Text book, title, outhor, and year

1. Purcell, E.J., *Kalkulus dan Geometri Analitis Jilid 1,* (terjemahan), Erlangga, Jakarta

2. H.M.Hasyim Baisuni, *Kalkulus*, UI-Press, Jakarta

3. Rauh, *Kalkulus*

4. Leighthold, *Calculus and Anali)tical Geometry*

5. Shockley, James E. The Brieft, *Calculus*

6.Kastroud, *Matematika Untuk Teknik*, (terjemahan)

7. Specific course information

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

The Basic Mathematics course discusses basic knowledge of Mathematics which is closely related to its application to the Field of Applied Sciences, including Agricultural Science.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 7: Able to apply basic agricultural sciences broadly in overcoming agricultural problems for sustainable agricultural development (P) PI 3 : Applying basic sciences and soil science in solving land and environmental problems for agricultural development
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Applying basic sciences and soil science in solving land and environmental problems for agricultural development
8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

MWU601 04 Indonesian

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

2 credits

3. Instructors and course coordinator

Dr. Sri Wahyuni
Dr. Fajri Usman

4. Text book, title, outhor, and year

5. Specific course information

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

This course is basically about how to use spoken and written language for scientific communication purposes in the form of presentations and scientific writing..

Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

E. Semester when the course unit is delivered

Even Semester

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

Face to face

6. Intended Learning Outcomes (CPL)

ILO 7: Ability to communicate with audiences of different backgrounds/levels
PI 3 : Applying the values of Pancasila and diversity

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

3. Applying the values of Pancasila and diversity

8. Learning and teaching methods
LCD and Projector
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN611 04 Introduction to Agricultural Science

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

2 credits

3. Instructors and course coordinator

Prof.Dr.Ir. Hermansah, MS. MSc
Prof.Dr.Ir. Yulnafatmawita, MSc
Prof.Dr.Ir. Aprisal, MP
Prof.Dr.Ir. Azwar Rashidin, MSc
Dr. Gusmini, SP. MP
Prof.Dr.Ir. Herviyanti, MS
Dr.Ir. Teguh Budi Prasetyo, MS
Dr.Ir. Agustian

4. Text book, title, outhor, and year

1. Asparno Marjuki (1990) Introduction to Agricultural Science;

2. Sutriono, Anik Suwardan, and Rijanto (2006) Introduction to Agricultural Science

5. Specific course information

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

This course discusses the scope of agriculture (food agriculture, plantations, forestry, animal husbandry, fisheries, agricultural product processing, and agribusiness), the role of agriculture in human life and development, factors that affect agricultural business (soil, plants, climate, disturbing organisms, and cultivation techniques), the concept of sustainable and environmentally sound agriculture (integrated agriculture, organic agriculture, and agroforestry), agricultural mechanization, harvesting and post-harvest, socio-economic agriculture and agricultural development (agribusiness, agricultural extension and institutions, marketing and trade, and modern agricultural development).

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1 : Explain agricultural sciences related to soil science.
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
2. Explain agricultural sciences related to soil science.
8. Learning and teaching methods
Cooperative Learning and Self Direct Larning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Tasks : 5% Quiz : 5 % Mid Semester : 25% Final Semester : 25% Practikum :30% Attendance : 5% **Formative Assessment**: Thumb up and thumb down Minutes paper

SEMESTER 2

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

MWU601 02 Pancasila education

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

2 credits

3. *Instructors and course coordinator*

Henny Andriani, SH., MH

Mhd Fajri, S.IP., MA

Delfina Gusman, SH., MH

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

Amran, Ali, 2016, *Pendidikan Pancasila di Perguruan Tinggi*, Rajagrafindo, Depok

Asshidiqqie, Jimly, 2020, *Pancasila ; Identitas Konstitusi Berbangsa dan Bernegara*, Rajagrafindo ; Depok

Charda, Ujang, 2019, *Pendidikan Pancasila : Untuk Pendidikan Tinggi* Rajagrafindo, Depok

Kaelan, 2010. Pendidikan Pancasila edisi Kesembilan Tahun, Paradigma ; Yogyakarta

Nurwardani, Paristiyanti, 2016.Pendidikan Pancasila untuk Perguruan Tinggi, Jakarta : Dirjen Pembelajaran dan Kemahasiswaan, Kemenristek DIKTI

5. *Specific course information*

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

Education to provide students with an understanding and appreciation of the ideology of the Indonesian nation. Fostering values, attitudes and behavior that are based on Pancasila as the basis of the state.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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)*
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS Internship **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

MWU601 01 Religious education

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

2 credits

3. *Instructors and course coordinator*

Dr. Lara Agnesta Putri, M.Pd.I,
Dr. Izharman, MA,
Dra. Julifni, MA,
Dr. Syaflin Halim,.MA

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

Al-Qur'an dan terjelamahannya. Yayasan Penterjemah dan Penafsir al-Qur'an, Lajnah Pentashih Mushaf al-Qur'an Departemen Agama RI. J-ART, Jakarta, 2018.

Hadis Shahih Bukhari / Shahih Muslim dan Terjemahannya (Salah Satu)

Izharman, Dr. M.Ag. *Pendidikan Agama Islam, Pembentukan Karakter Bangsa,* Unand Press, Padang, 2018.

Buku-buku yang relevan dengan Pokok Bahasan dan Sub Pokok Bahasan, dapat ditambahkan sebagai buku wajib oleh Dosen Pengampu mata Kuliah PAI

5. *Specific course information*

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

Increased understanding of religion to shape students into human beings who believe in and are devoted to God Almighty and have noble morals. As well as personal development of students as members of the family, community, nation and state based on religious values.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 7: Able to communicate with audiences of different backgrounds/levels PI 3 : Applying the values of Pancasila and diversity
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Applying the values of Pancasila and diversity
8. Learning and teaching methods
LCD, & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN621 02 Fundamental of Plant Protection

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Dr. Haliatur Rahma, SSi. MP.
Dr. Ir. Arneti MS.
Ir. Winarto, MS
Dr. Ir. Munzir Busniah MSi.
Dr. Jumsu Trisno, SP. MSi.
Ir. Yunisman MP.
Dr. Ir. Eri Sulyati MSc.

4. Text book, title, outhor, and year

5. Specific course information

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

This course provides a basic understanding of plant protection within the scope of agriculture, taxonomy, morphology, bioecology of pests, pathogens and weeds (plant pest organisms), as well as various basics and ways of dealing with them.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences broadly in overcoming agricultural problems for sustainable agricultural development (P)
PI 2 : Analyze agricultural problems using a soil science approach and agricultural sciences in general

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
2. Analyze agricultural problems using a soil science approach and agricultural sciences in general
8. Learning and teaching methods
LCD, & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN621 04 Physics

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Dra.Netti Herawati, M.Sc

4. Text book, title, outhor, and year

Tipler, P.A., *Fisika untuk Sains dan Teknik*: Jilid 1; Edisi Ketiga, Penerbit Erlangga, Jakarta, 1998.

Giancoli, D.C., Fisika: Jilid 1, Edisi Kelima, Penerbit Erlangga, Jakarta, 2001.

Halliday, D. dan R. Resnik, *Fisika, JilidI*, Edisi Ketiga , Terjemahan P.Silaban dan E. Sucipto, Penerbit Erlangga, Jakarta, 1988.

5. Specific course information

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

This course studies units in physical quantities and vector analysis, balance of movement and work, collision and rotation, harmonious movement and sound, liquid objects, heat, and thermodynamics. Electricity and magnetism. Light and optical devices, Core physics. Application of physics in agriculture.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences broadly in overcoming agricultural problems for sustainable agricultural development (P) PI 1 : Explain agricultural sciences related to soil science.
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science.
8. Learning and teaching methods
LCD, & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

AGT621 01 Fundamental of Plant Physiology

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Prof. Dr. Ir. Irfan Suliansyah, MS.
Firsta Ninda Rosadi, SP. MSi
Ir. Sutoyo MS.
Prof. Dr. Ir. Warnita MP.
Aries Kusumawati SP. MSi
Fika Ekawati SP. MP.
Prof. Dr. Ir. Auzar Syarif MS.
Dr. Yusniwati SP. MP.
Shalati Febjislami, SP, MSi.

4. Text book, title, outhor, and year

5. Specific course information

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

Concepts of life and plant physiology, plant cells, solutions, diffusion, osmosis, imbibition, transpiration, absorption and translocation. Sugar translocation, function of essential mineral elements and symptoms of mineral deficiency, enzymes, pigments and structure of the photosynthetic apparatus, light and dark reactions of photosynthesis, factors that influence the rate of photosynthesis and respiration.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences broadly in overcoming agricultural problems for sustainable agricultural development (P) PI 2 : Analyze agricultural problems using a soil science approach and agricultural sciences in general
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
2. Analyze agricultural problems using a soil science approach and agricultural sciences in general
8. Learning and teaching methods
LCD, & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN621 01 Fundamentals of Soil Science

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Zuldadan Naspendra, , SP. MSi
Prof.Dr.Ir., Yulnafatmawita,, MSc,
Dr.Ir., Agustian
Dr.rer.nat.Ir., Syafrimen Yasin, MS. MSc,
And., Octane Emalinda, MP
Prof.Dr.Ir., Herviyanti, MS,
Dr.Ir., Adrinal, MS,
Ir., Junaidi, MP,
Dr.Ir., Darmawan, MSc
Dr., Juniarti, SP. MP
Dr., Gusmini, SP. MP
Prof.Dr.Ir., Yulnafatmawita, MSc,
Prof.Dr.Ir. Azwar Rashidin, MSc
Dr.Ir., Teguh Budi Prasetyo, MS,
Ir., Irwan Darfis, MP
Prof.Dr.Ir., Dian Fiantis, MSc,
Dr.Ir., Gusnidar,MP
Dr Mimien Harianti, SP.MP

4. Text book, title, outhor, and year

Sarwono Hardjowigeno. (1989). Soil Science. Fundamentals of Soil Science. Survel and Land Evaluation. (perbaharui buku yg digunakan)

5. Specific course information

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

In this course, students learn about the Basics of Soil Science. Students learn the formation processes and factors forming the soil, soil morphology and classification, land survey and evaluation. The principles and basic knowledge that become the basis when conducting thesis research or final project research. Students learn the basics of soil science, formulate soil fertility problems, physical, chemical and biological properties of soil, students learn soil survey activities and land evaluation, can make maps.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1.1 : Explain the science of agriculture related to soil science.
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 2.1: Characterizing soil fertility (physics, chemistry, soil biology)
ILO 3: Able to use various methods for soil and crop analysis appropriately in land resource management PI 3.1 : Using laboratory equipment for soil analysis and milk crops with SOP PI 3.2 : Able to analyze soil and plants precisely, meticulously using the latest methods
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
2. Explain agricultural sciences related to soil science
3. Characterizing soil fertility (physics, chemistry, soil biology)
4. Using laboratory equipment for soil analysis and milk crops with SOPs
5. Able to analyze soil and plants precisely, meticulously using the latest methods
8. Learning and teaching methods

Cooperative Learning and Self Direct Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PIT621 01 Agroklimatologi

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

3 credits (2 classes, 1 Practicum)

3. Instructors and course coordinator

Dr.Ir. Gusnidar, MP
Dr. Juniarti, SP. MP
Prof.Dr.Ir. Herviyanti, MS
Prof.Dr.Ir. Azwar Rasyidin, MSc
Zuldadan Naspendra, SP. MSi
Is. Lusi Maira, MAgrSc

4. Text book, title, outhor, and year

1. Training Guidebook for Western Indonesian State University Lecturers in the Field of Agroclimatology, 1987 Biotropics, IPB and BKS B
2. Joyce Martha W and Wenny Adidarma (1984) Know the Basic Basis of Hydrology. Penernbit Nova. Bandung
3. Katam for SLI Padang, March 22, 2016, 2016,BPTP West Sumatra,
4. SLI Material 2016 - BMKG Siring Staklim
5. BMKG Modules and Journals
6. Oteng Haridjaja, Kukuh Muktilaksono, Sudarmo, Train Mahir Rahman (1990) Agricultural Hydrology. Department of Soil, Faculty of Agriculture, IPB Bogor.
7. Richard Lee (1988) Forest Hydrology. Translation from Forest Hydrology by Ir Sentot Subagio and Prof.Dr.Prawirohatmodjo. Gadjah Mada University Press
8. Socyono, Soesrodarsono and Kensaku Takeda (1977) Hydrology for Irrigation. Assosiation fipr Technical Promotion. Tokyo, Japan
9. Sowarnso (1991) Hydrology (measurement and processing of Nova River flow data. Bandung. Publications in research journals related to the subject / subsubject

5. Specific course information

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

Introduction which includes Understanding of Basic Agroclimatology, Factors affecting Climate, History of Basic Agroclimatology; Usefulness of Climate data; Climate Factors that affect Soil and plant growth such as Solar radiation, Rainfall, Wind, Evaporation and Transpiration, Air Humidity. In the Basic Agroclimatology course, the impact of climate deviations and anticipation carried out are also taught, Air Quality, Preparation of Planting Patterns based on Climate data, Calculation of Plant Water Needs
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development P1.1. Explain agricultural sciences related to soil science. P1.3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science
3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
8. Learning and teaching methods
Cooperative Learning, Case Method Learning, and Problem Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS

4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN621 03 English For Agriculture

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

3 credits

3. *Instructors and course coordinator*

1. Prof. Ir. Yulnafatmawita, MSc
2. Dr. Juniarti, MP

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

1. Yulnafatmawita. 2011. English for Agriculture. Program Studi
2. Agroecotechnology, Faculty of Agriculture, Andalas University, PADANG. 181 p 2. Rose, L.W. Understanding English Grammar,
3. Reid, J.M. 1988. The Process of Composition. 2nd Edition Prentice Hall, New Jersey
4. R. Murphy and R. Altman. 1989. Grammar in Use: Reference and Practice for Intermediate Student of English. Cambridge University Press.
5. Scientific Article in Agriculture in International Journal
6. General articles in newspapers or general journals

5. *Specific course information*

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

The study of this course includes understanding technical terms (technical vocabulary) in English in agriculture, such as technical terms in Soil Science, Agronomy, and in Plant Protection science, and popular science in agriculture. Besides that, it is repeated again in general, structure, and grammar. In practicum, strategies to improve student TOEFL are discussed. .

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-7: Able to communicate with audiences with different backgrounds/levels PI 7.1: Presenting assignments in groups in front of lecturers and students.
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
6. Presenting assignments in groups in front of lecturers and students.
8. Learning and teaching methods
Cooperative Learning and Self Direct Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

SEMESTER 3

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN 611 05 Statistics

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

3 credits

3. Instructors and course coordinator

Dr. P.K Dewi Hyati SP. M.Si
Ir. Sutoyo MS
Dr. Ir. Benni Satria MP
Rahmad Hersi Martinsyah SP. MSi
Dr. Hasmiandy Hamid SP. MSi

4. Text book, title, outhor, and year

5. Specific course information

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

This course provides knowledge and understanding of the use of statistics as a tool for drawing conclusions in scientific research. Coverage of the material. Understanding and use of statistics, data collection and simplification, presentation of measures of centrality symptoms, measures of location symptoms, measures of dispersion, normal distribution and standard normal, hypothesis, Z distribution and Z test, t distribution and t test, Chi square distribution and Chi square test, F distribution and F test, simple linear regression and multiple linear regression coefficient and coefficient of determination.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 3 : Applying basic sciences and soil science in solving land and environmental problems for agricultural development.
ILO-3: Able to use various methods for appropriate soil and plant analysis in land resource management PI 2 : Able to analyze soil and plants accurately, thoroughly using the latest methods
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Applying basic sciences and soil science in solving land and environmental problems for agricultural development.
2. Able to analyze soil and plants accurately, thoroughly using the latest methods
7. Using laboratory equipment for soil analysis and milk crops with SOPs
8. Able to analyze soil and plants precisely, meticulously using the latest methods
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 5. Assignment 6. UTS 7. UAS 8. Internship **Formative Assessment**: 3. Thumb up and thumb down 4. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PAB 611 05 introduction to economics

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

2 credits

3. Instructors and course coordinator

Lora Triana SP. MP.
Dr. Muhammad Hendri
Yusmarni SP MSc.
Dr. Ir. Faidil Tanjung MSi

4. Text book, title, outhor, and year

5. Specific course information

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

Pricing system. Demand: household behavior theory, divergence curve theory. Supply: background to supply theory. Production theory: How costs vary with output. Market prices and elasticity. Price formation in a competitive market. Monopoly theory. Elements of dynamics. Economic analysis and policy. Price controls, tax exemptions, and some problems in agriculture. Macroeconomics: the economy as a whole. The essence of environmental flows, balance in environmental flows, balance in the circle of income. Determining income and multipliers for several forecasters based on simple theory

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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: Able to identify, analyze and solve land problems in increasing productivity

and quality of agricultural products for sustainable agricultural development PI 3. Measuring the level of soil fertility and its relationship to crop production and the
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Measuring the level of soil fertility and its relationship to crop production and the
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 9. Assignment 10. UTS 11. UAS 12. Internship **Formative Assessment**: 5. Thumb up and thumb down 6. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PPT611 01 AGRICULTURAL MICROBIOLOGY

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Dr. Zurai Resti P. MP
Ir. Reflin MP.
Dr. Ir. Darnetty M.Sc
Dr. Ir. Ujang Khairul MP.

4. Text book, title, outhor, and year

5. Specific course information

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

Discusses the position of microorganisms, the role of microorganisms in agriculture (soil, food and plant diseases), introduction to types of microorganisms (viruses, bacteria, fungi, algae, protozoa and nematodes), nutrition, development and growth, metabolism of microorganisms (energy utilization, enzymes, fermentation, biosynthesis, element cycles), basic genetics of microorganisms, management, control and utilization of microorganisms.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural

problems for sustainable agricultural development (P)
PI 2 : Analyze agricultural problems using a soil science approach and agricultural sciences in general.

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

2 : Analyze agricultural problems using a soil science approach and agricultural sciences in general.

8. Learning and teaching methods

LCD & Projector

9. Language of instruction

Indonesian

10. Assessment methods and criteria

Summative Assessment :

13. Assignment
14. UTS
15. UAS
16. Internship

Formative Assessment:

7. Thumb up and thumb down
8. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

AB611 06 Sociology and Agriculture

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

2 credits

3. *Instructors and course coordinator*

Ir. Dwi Evaliza MSi
Ir. M. Refdinal MSi
Prof. Ir. Rudi Febriamansyah MS
Rika Hariance SP. MSi

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

5. *Specific course information*

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

The scope of sociology and agricultural sociology. Concepts of social interaction and social processes, portraits of villages and agricultural communities, moral economics of farmers, social institutions of society and agriculture, agricultural structures, forms of agricultural organization, social problems of agriculture, land resources, and social changes in agricultural communities.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 7: Able to communicate with audiences of different backgrounds/levels
PI 2: Express opinions and answer responses
PI 3 : Applying the values of Pancasila and diversity

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

PI 2: Express opinions and answer responses
PI 3 : Applying the values of Pancasila and diversity

8. Learning and teaching methods

LCD and Projector

9. Language of instruction

Indonesian

10. Assessment methods and criteria

Summative Assessment :

Assignment
UTS
UAS

Formative Assessment:

Thumb up and thumb down
Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN611 03 Introduction to Ecology

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

2 credits

3. Instructors and course coordinator

Prof. Dr. Ir. Hermansah, MS. MSc,
Prof. Dr. Ir. Herviyanti, MS
Ir. Octane Emalinda, MP,
Is. Lusi Maira, MAgrSc
Dr. Mimien Harianti, SP. MP
Dr.Ir. Agustian
Dr.rer.nat. Ir. Syafrimen Yasin, MS.MSc

4. Text book, title, outhor, and year

5. Specific course information

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

- Students understand CPMk, assessment indicators, learning materials, *colaborative* learning methods, project assessment and assessment of learning outcomes, and references.
- Able to mention concepts and explain the scope of pmamalogy.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P)
PI 3: Applying basic sciences and soil science in solving land and environmental problems for agricultural development

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
8. Learning and teaching methods
Cooperative Learning and Problem Based Leaning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT611 01 Agrogeologi

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Prof.Dr.Ir. Dian Fiantis, MSc
Prof.Dr.Ir. Azwar Rashidin, MSc,
Zuldadan Naspendra, SP. MSi
Dr. Juniarti, SP. MP

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

1. Roberts, J. L. 1991. Geological Structures. The Macmillan Press. London. 260 hal.
2. Hamblin, W. K. 1978. The Earth's Dynamic System. Burgess Publishing Company. Minneapolis. 459 hal.
3. McGeary, D., C. C. Plummer, and D. H. Carlson. 2002. Physical Geology. McGraw Hill Higher Education. 574 hal.
4. Katili, J.A and P. Marks () National Jakarta
5. Munir, M. 1996. Geology and Soil Mineragy. Jaya Library. Jakarta. 290 p.
6. Suharyadi. 2004. Introduction to Engineering Geology. Publishing Bureau of Civil Engineering Department UGM. Jogyakarta. 134 p.
7. Perkins, D. 1998. Mineralogy. Prentice Hall.484 hal.
8. Klein, C. 2004. The 22nd edition of the Manual of Mineral Science. John Wiley & Sons, Inc. 641 hal.

5. *Specific course information*

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

This learning aims to make students understand and have a basis in earth science, about the forces that work inside and outside the earth, about plate movement, about geological cycles, about minerals as a constituent of rocks and understand about primary and secondary minerals. Students can also understand the history of the earth and the history of rocks, so that general knowledge about geology in Indonesia can equip students with the danger of landslides or the danger of tectonic movements.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1 : Explain agricultural sciences related to soil science.
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 1 : Evaluate the properties and characteristics of the soil
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
3. Explain agricultural sciences related to soil science.
4. Assessing soil properties and features
8. Learning and teaching methods
Cooperative Learning, Cese Method Learning, and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN612 01 Applied Agroclimatology

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Dr. Ir. Gusnidar, MP.
Dr. Juniarti, SP. MP
Is. Lusi Maira, MAgrSc
Prof.Dr.Ir. Herviyanti, MS

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

1. Agus, F. (ed). 2019. Methods for assessing adaptation and inventory of greenhouse gases in the agricultural sector. Agricultural Research and Development Agency. Jakarta.

2. Susilawati, L. S., Dariah, A., Agus, F (ed). 2020. Calculation Method for Mitigation and Absorption of Greenhouse Gases in the Agricultural Sector Agricultural Research and Development Agency. Jakarta.

3. Joyce Martha W and Wenny Adidarma (1984) Getting to know the basics of Hydrology, Nova Bandung Publishers.

4. Oteng Haridjaja, Kukuk Muktilaksono, Sudarmo, Train Proficient Rahman (1990). Agricultural Hydrology. J. Land F. Agriculture IPB. Bogor.

5. Richard Lee (1988) Forest Hydrology. Translation of "Forest Hydrology" Sentot Subagio and Prawirohatmodjo. Gama University Press.

6. Soewarso (1991) Hydrology (measurement and processing of river flow data). Nova Bandung Publishers.

7. Soeyono Soesrodarsono and Kensaku Takeda (19.77) Hydrology for irrigation. Assosiation for technical Promotion. Toyota. Japan

8. APIKI Bulletins according to their respective topics

9. Climate Journal, seminar materials, (domestic and foreign) and relevant materials.
5. *Specific course information*
A. Brief description of the content of the course (catalog description)
Students are able toexplain and use the knowledge and analytical techniques obtained to assess the climate of an area and are able to overcome climate suitability problems and are able to calculate plant water needs and design a planting pattern
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 2 : Analyzing agricultural problems with a soil science approach and agricultural sciences in general
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 3: Measures soil fertility and its relationship to crop production and the environment.
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 3 : Determining alternative solutions to land problems PI 4: Using regulatory concepts and principles in land utilization and arrangement
ILO 5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies PI 1 : Review the literature and novelty of technological knowledge about soil and environmental science PI 2: Using software technology, lab and field equipment for accurate data analysis.
ILO 7 : Able to communicate with audiences of different backgrounds/levels PI 1: Presenting assignments in groups in front of lecturers and students
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Analyze agricultural problems with a soil science approach and agricultural sciences in general
2. Measures soil fertility levels and their relationship to crop production and the environment.
3. Determine alternative solutions to land problems
4. Using regulatory concepts and principles in land utilization and structuring
5. Review the literature and the novelty of technological knowledge about soil and environmental science
6. Use software technology, lab and field equipment for accurate data analysis.
7. Presenting assignments in groups in front of lecturers and students

8. Learning and teaching methods

Cooperative Learning, Case Method Learning,and Problem Based Learning

9. Language of instruction

English

10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN612 02 Advanced English

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

3 credits

3. *Instructors and course coordinator*

Prof. Dr. Ir. Yulnafatmawita, MSc

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

1. Levine D.R. and Adelman, M.B. Beyond Language. Prentice Hall Inc., Englewood Cliffs. 222 pp
2. Azar, B.S. 1981. Understanding and Using English Grammar. Prentice Hall Inc., Englewood Cliffs. 400 pp 3.
3. The British Council. 1979. Reading and thinking in English. Oxford Univ. Press. 123 pp 4.
4. Boning, R.A. 1982. Getting the main idea. The 3rd Edition. Barnell Loft, LTD, Baldwin,
5. Boning, R.A. 1982. Using the context. The 3rd Edition. Barnell Loft, Baldwin LTD.
6. Reid, J.M. 1988. The process of composition. 2nd edition. Prentice Hall, Englewood Cliffs, New Jersey. 236 pp.
7. Barron's. 2005. TOEFL Book.
8. Cliff's. TOEFL Book.

Specific course information

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

Purpose;

. Able to get a high TOEFL score (>400)

a. Able to write paragraphs in English.

Result:

After fulfilling the learning objectives of this course, students are expected to have the ability to communicate in English both oral and written.

B. Level of course unit (according to EQF: first cycle Bachelor, second

cycle Master)
First Cycle Bachelor
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 7 : Able to communicate with audiences of different backgrounds/levels PI 1: Presenting assignments in groups in front of lecturers and students
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
8. Presenting assignments in groups in front of lecturers and students
8. Learning and teaching methods
Cooperative Learning and Self Direct Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT611 02 Soil Physics

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Dr.Ir. Adrinal, MS,
Prof. Dr. Ir. Yulnafatmawita, MSc,
Ir. Irwan Darfis, MP
Ir. Junaidi,, MP

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

1. Aliusius, D. 1988. Basics and guidance of soil physics practicum. Department of Fak Land. Agriculture Univ. Andalas, Padang. 70 p.
2. Brady, N. 1984. Soils, an Introduction to soils and plant growth.
3. Dept. of Agriculture, Univ. of Queensland, 1999, Practical Manual: Soil physics. Departemen of Agriculture University of Queensland, Australia. 44 hal.
4. Hillel, D. 1980. Principle of Soil Physics, Academic Press.
5. Koorevaar, P., Menelik, G., and Dirksen, C. 1983. Elements of soil physics, Elsevier Sci. Publishers B.V. Amsterdam, 228 hal.
6. Luki, U. Diktat. Department of Soil Science, Faculty of Agriculture, Andalas University, Padang, 31 p.
7. LPT, Bogor. 1979. Guide to soil physics analysis. Dept. of Agriculture Balitbangtan, LPT Bogor.47 p.
8. Marshal, TJ., Holmes, J.W., and Rose, C.W. 1996. Soil Physics. 3rd edition, Cambridge univ. press. 453 pp.
9. Methods of Soil Analysis Part 1 - Physical and mineralogical methods. 1986. 2nd ed. Edited by A. Klute. No.9 ASA, SSSA Publication. 1188 pp.
10. McLaren, R.G. and Cameron, K.C. (1996). Soil science, sustainable production and environmental protection. New Ed. Oxford Univ. Press, Inc., Auckland, 304.
11. So, H.B., Kircchof, G., and Bennet, B. B. 1994. Soil physics laboratory manual. Dept. of Agric. Univ. of Queensland. Brisbane, 97 hal.
12. SSSA Special Publication # 21. 1997. Soil testing, sampling, correlation, calibration, and interpretation. Edited by J.R. Brown. SSSA Inc. Madison, 144 pp.

13. SSSA Special Publication # 25. 1990. Scaling in soil physics. Edited by D. Hillel and D.E.Elrick. SSSA Inc., Madison, 122 pp.
5. *Specific course information*
A. Brief description of the content of the course (catalog description)
a. Able to explain the role of soil physics in determining the level of soil fertility in agriculture b. Able to calculate soil physical data c. Able to evaluate and maintain the physical fertility of the soil.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 1 : Characterizing soil fertility (physics, chemistry, soil biology)
ILO 3: Able to use various methods for soil and crop analysis appropriately in land resource management PI 1 : Using laboratory equipment for soil analysis and follow-up plants with SOP PI 2: Able to analyze soil and plants precisely, meticulously using the latest methods
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 1 : Evaluate the properties and characteristics of the soil
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Characterizing soil fertility (physics, chemistry, soil biology)
2. Using laboratory equipment for soil analysis and milk crops with SOPs
3. Able to analyze soil and plants precisely, meticulously using the latest methods
4. Assessing soil properties and features
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction

English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1.Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT611 03 Soil Fertility

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Ir. Octane Emalinda, MP
Ir. Irwan Darfis, MP
Dr.Ir. Gusnidar, MP,
Dr. Gusmini, SP. MP
Prof.Dr.Ir. Hermansah, MS. MSc,
Is. Lusi Maira, MAgrSc
Dr.rer.nat. Ir. Syafriment Yasin, . MS.MSc
Dr.Ir. Teguh Budi Prasetyo, MS,
Prof.Dr.Ir. Herviyanti, MS,
Nofrita Sandi, SP. MP
Dr.Ir. Agustian,
Dr. Mimien Harianti, SP. MP

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

1.Tisdale & Nelson. 1985. Soil Fertility & Fertilizers.
2. Yusuf Nyakfa et al. 1986. Soil Fertility
3. Adams & Pearson. 1967. Soil Acidity & Liming.
4. The Annunciation. 1980. Nuclide Tracer.
5. Publications in research journals related to the subject / subsubject.

5. *Specific course information*

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

Students are able to explain and use the knowledge and analytical techniques obtained to assess the fertility of a soil and are able to overcome soil acidity problems by liming and are able to carry out laboratory and field tests in determining the amount of fertilizer needed to meet plant needs through efficient fertilization.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor
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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 2: Analyzing agricultural problems with a soil science approach and agricultural sciences in general PI 3: Applying basic sciences and soil science in solving land and environmental problems for agricultural development
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 3: Measures soil fertility and its relationship to crop production and the environment.
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 3 : Determining alternative solutions to land problems
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Analyze agricultural problems with a soil science approach and agricultural sciences in general
2. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
3. Measures soil fertility levels and their relationship to crop production and the environment.
4. Determine alternative solutions to land problems
8. Learning and teaching methods
Cooperative Learning, Case Method Learning, and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment

2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT611 04 Soil and Water Conservation

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Ir. Irwan Darfis,, MP,
Prof.Dr.Ir. Aprisal, MP,
Zuldadan Naspendra, SP. MSi
Ir. Junaidi, MP,
Nofrita Sandi, SP. MP
Dr.Ir. Adrinal, MS

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

1. Arsyad, S. 2000. Soil and water conservation. IPB Press. Bogor
2. Barrow. C. J. 1991. Land degradation. Departement and breakdown of terrestrial environments. Cambridge University Press. Cambridge
3. Rusman B. 2004. Soil and Water Conservation. Unand Press.
4. Morgan, R. P. C. 1979. Soil Erosion. Longman Group Ltd., New York.
5. Singht, Vijay.P. 1992. Elementary Hidrology. Department of Civil Engineering. Lousiana State University. New Jesey.

5. *Specific course information*

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

Able to know for the basic understanding of soil and water conservation, Able to know the methods, soil and water conservation, Able to explain the main functions of the soil, Able to explain land degradation, Able to know global climate change and its effects on soil and water, Able to know the process of soil erosion, Able to know soil and water conservation problems, Able to know and predict erosion, Able to know and calculate surface flow, Able to calculate erosion using erosion estimation models, Able to know conservation methods, Able to know about conservation planning and able to compile conservation planning, Able to know the influence of development on soil and water conservation

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1 : Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 2: Analyzing agricultural problems with a soil science approach and agricultural sciences in general
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 4: Determining the rate of soil degradation and its causative factors
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 3 : Determining alternative solutions to land problems PI 4: Using regulatory concepts and principles in land utilization and arrangement PI 5 : Preparing regional development planning
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Analyze agricultural problems with a soil science approach and agricultural sciences in general
2. Determining the degree of soil degradation and its causative factors
3. Determine alternative solutions to land problems
4. Using regulatory concepts and principles in land utilization and structuring
5. Preparing regional development planning
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship

Formative Assessment: 1. Thumb up and thumb down 2. Minutes paper

	Module Description/Course Syllabi Study Program : S1 Undergraduate Program Faculty of Agriculture University of Andalas
1. *Course number and name*	
PIT611 05 Soil Morphology and Classification	

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Prof.Dr.Ir.Azwar Rasyidin M.Sc.
Prof.Dr.Ir. Dian Fiantis M.Sc.
Dr. Juniarti, SP. MP
Ir. Junaidi, MP

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

1. Buol, Soil Genesis and Classification
2. ISSS Working Group RB. 1998. World Reference Base for Soil Resources: Introduction (J. A. Deckers, F. O. Nachtergaele and O. C. Spaargaren, Eds.). First Edition. ISSS, ISRIC and FAO of United Nation. Acco. Leuven.
3. IUSS Working Group WRB. 2007. World Reference Base for Soil Resources 2006, first update 2007. World Soil Resources Reports No. 103. FAO, Rome.
4. Olson G. W. 1983. Soil and the Environment. Chapman and Hall. New York. London. 178 p.
5. Mohr, Van Barren 1972. Tropical Soil
6. Soil Survey Staff. 1975. Soil Taxonomy, A Basic System of Soil Classification for Making and Interpreting Soil Surveys. USDA handbook No. 436. 754 p.
7. Soil Survey Staff. 1990. Keys to Soil Taxonomy. 4th ed. AID, USDA, SMSS Technical Monograph, No. 19. Blacksburg, Virginia. 280 p.
8. Soil Survey Staff. 1992. Keys to Soil Taxonomy. 5th ed. AID, USDA, SMSS Technical Monograph, No. 19. Blacksburg, Virginia. 541 p.
9. Soil Survey Staff. 1996. Keys to Soil Taxonomy. 7th ed. AID, USDA, SMSS Technical Monograph, No. 19. Blacksburg, Virginia. 643 p.
10. Soil Survey Staff. 1998. Keys to Soil Taxonomy. 8th ed. USDA, NRCS. Washington. 326 p.
11. Soil Survey Staff. 1999. Soil Taxonomy, A Basic System of Soil Classification for Making and Interpreting Soil Surveys. USDA handbook No. 436. 861 p.
12. Soil Survey Staff. 2010. Keys to Soil Taxonomy. 11th ed. USDA, NRCS. Washington. 338 p
13. Wisaksono Wirdjodihardjo, M, 1952, Soil Body Science
14. USDA-SCS. 1974. Definitian and Abreviation for soil description. WTSC. Portland. Oregon

5. *Specific course information*
A. Brief description of the content of the course (catalog description)
Students will be able to explain soil morphology found in the field, soil properties and characteristics from the analysis of physical, chemical and mineralogy properties of soil in the laboratory so that on the basis of soil morphology and the influence of external factors such as climate, landform, vegetation, soil can be grouped based on the existing soil classification system ranging from the highest to the lowest hierarchy.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 2 : Classifying soil types
ILO 3: Able to use various methods for soil and crop analysis appropriately in land resource management PI 1 : Using laboratory equipment for soil analysis and follow-up plants with SOP
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 1 : Evaluate the properties and characteristics of the soil
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
2. Classifying soil types
3. Using laboratory equipment for soil analysis and milk crops with SOPs
4. Assessing soil properties and features
8. Learning and teaching methods
Cooperative Learning, Cas Method Learning, and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT611 06 Communication and Presentation Techniques

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

2 credits

3. *Instructors and course coordinator*

Dr. Gusmini, SP.MP
Prof. Dr. Ir. Herviyanti, MS

Is. Lusi Maira, M.Agr. Sc Dr. Ir. Agustian
4. *Text book, title, outhor, and year*
1. Helena Olii. 2010. Public Speaking. Jakarta: PT Index. 2. State Administration Institute. 2007. Effective communication and presentation techniques.
5. *Specific course information*
A. Brief description of the content of the course (catalog description)
Can explain the nature of communication, presentation, and aspects related to presentation techniques by answering essay questions independently. Given a specific theme, students are able to make presentations within 10 minutes.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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 7: Able to communicate with audiences of different backgrounds/levels PI 1: Presenting assignments in groups in front of lecturers and students PI 2 : Submit an opinion and respond
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
5. Presenting assignments in groups in front of lecturers and students
6. Express opinions and answer responses
8. Learning and teaching methods
Cooperative Learning, Case Mehod Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment

2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

SEMESTER 4

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

AGT621 07 Estate Crop Production

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Dr. Ir. Indra Dwipa, MS.
Dr. Ir. Benni MP.
Meisilva Erona S. SP. MSi.

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

5. *Specific course information*

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

Origin and botany of important plantation crop commodities. The technology for cultivating the main plantation crops, such as oil palm, coconut and rubber, includes ecology, climate, soil and land suitability, land preparation, maintenance, harvest and post-harvest and management. Marketing and future development prospects regionally and nationally.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply professional responsibility to make decisions in land and environmental management
P4.3. Determine alternative solutions to land problems
P. 4.5 ; Prepare regional development plans

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
4.3 Determine alternative solutions to land problems
4.5 : Prepare regional development plans
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

AGT621 06 Food Crop Production

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Dr. Ir. Nalwida Rozen MP.
Aries Kusumawati, SP. MSi.
Sanna Paija Hasibuan SP. MP.

4. Text book, title, outhor, and year

5. Specific course information

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

Origin of main food crops, economic significance, growing conditions, botany, morphology, environment that influences growth (soil and climate), various stages of growth, technical culture (tillage, seeding, planting, fertilizing, irrigation, and pest control and disease and harvesting and post-harvest handling) covering rice, corn, sorghum, green beans, soybeans and cassava.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply professional responsibility to make decisions in land and environmental management
P4.3. Determine alternative solutions to land problems
P 4.4 : Using regulatory concepts and principles in land use and management
P. 4.5 : Prepare regional development plans

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
4.3 Determine alternative solutions to land problems
4.4 : Using regulatory concepts and principles in land use and management
4.5 : Prepare regional development plans
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 5. Assignment 6. UTS 7. UAS 8. Internship **Formative Assessment**: 3. Thumb up and thumb down 4. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

AGT621 05 Horticulture Crop Production

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

Prof. Dr. Ir. Zulfady Syarif, MP.
Nilla Kristina SP. MSc.
Elara Resigia, SP. MP.

4. Text book, title, outhor, and year

5. Specific course information

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

The meaning and meaning of the objectives of studying Horticultural Plant Production Technology, the growing environment for horticultural plants. Vegetable cultivation technology: garden cultivation, commercial vegetable cultivation, agribusiness cultivation, processed and agro-industrial vegetable cultivation, greenhouse cultivation. Nutritional value, soil and tillage, planting vegetable seeds, controlling plant pests and diseases (pesticides, insecticides, fungicides, types of pests and diseases of horticultural plants). Some vegetable commodities, leaves, stems, fruit vegetables, tuber vegetables). Ornamental Plant Production Technology. Horticultural Production Storage.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply professional responsibility to make decisions in land and

environmental management
P4.3. Determine alternative solutions to land problems
P. 4.5 : Prepare regional development plans

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

4.3 Determine alternative solutions to land problems

4.5 : Prepare regional development plans

8. Learning and teaching methods

LCD & Projector

9. Language of instruction

Indonesian

10. Assessment methods and criteria

Summative Assessment :

9. Assignment
10. UTS
11. UAS
12. Internship

Formative Assessment:

5. Thumb up and thumb down
6. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PIT621 02 Soil Biology

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

3 credits (2 classes, 1 practicum)

3. Instructors and course coordinator

1. Dr. Ir. Agustian
2. Is. Lusi Maira, MAgrSc
3. Ir. Octane Emalinda, MP

4. Text book, title, outhor, and year

1. Sylvia, DM et.al. 1998. Principles and Applications of Soil Microbiology
2. Metting. F.B. Jr. 1993. Soil Microbial Ecology. Applications in Agricultural and Environmental Management
3. Paul, E.A and F.E Clark. 1996. Soil Microbiology and Biochemistry.
4. Waksman, A.S. 1967. Soil Microbiology
5. Martin. A.. 1980. Introduction of Soil Microbiology
6. Teja Imes, et al. 1990. Soil Microbiology
7. Publications in research journals related to related topics.

5. Specific course information

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

After completing this course, students are expected to be able to explain: the role of soil biota in nutrient transformation that can increase nutrient availability and plant growth and yield

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) P1.1. Explain agricultural sciences related to soil science P1.2 Analyze agricultural problems with a soil science approach and agricultural sciences in general
ILO-2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development P2.1. Characterizing soil fertility (physics, chemistry, soil biology)
ILO-3: Able to use various methods for soil and crop analysis appropriately in land resource management P3.1 Using laboratory equipment for soil analysis and follow-up crops with SOPs P3.2 Able to analyze soil and plants precisely, meticulously using the latest methods
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management 4.1 Assessing soil properties and features
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science
2. Analyze agricultural problems with a soil science approach and agricultural sciences in general
3. Characterizing soil fertility (physics, chemistry, soil biology)
4. Using laboratory equipment for soil analysis and compiling plants with SOPs
5. Able to analyze soil and plants precisely, meticulously using the latest methods
6. Assess soil properties and characteristics
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 13. Assignment 14. UTS 15. UAS 16. Internship **Formative Assessment**: 7. Thumb up and thumb down

8. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT621 03 Agricultural Hydrology

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Prof.Dr.Ir., Aprisal,MP,
2. Prof.Dr.Ir., Yulnafatmawita, MSc
3. Dr.Ir., Gusnidar, MP
4. Dr.Ir., Teguh Budi Prasetyo, MS
5. Prof.Dr.Ir., Hermansah, MS. MSc
6. Dr.Ir., Adrinal, MS,
7. Prof.Dr.Ir., Azwar Rashidin, MSc

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

1. Chay Asdak. 1995. Hydrology and Watershed Management. Gadjah Mada Univ. Press. Yogyakarta.

2. Suyono Sosrosudarsono and Kensaku Takeda. 1999. Hydrology for irrigation. PT. Pradnya Paramita. Jakarta.

3. Handoko. 1993. Basic Climatology: Foundations of understanding the physics of the atmosphere and climatic elements. Department of Geography and Meteorology FMIPA-IPB. Bogor.

4. Handoko. 1994. Basic Preparation and Application of Computer Simulation Models for Agriculture. Department of Geography and Meteorology FMIPA-IPB. Bogor.

5. Robiyanto H.S. and Rahmad H.P. 1998. Hydrology and Control of Water Amounts. Hydrology and Water Quantity Control (Martin P.W). Water and Land Management Research Center. Unsri. Palembang.

6. Soewarno. 2000. Operational Hydrology. Volume one. PT Citra Aditya Bakti Bandung

7. International Institute for land Reclamation and Improvement. 1974. Drainage Principles and Applications: Survey and investigations (vol. III). Wageningen. Netherlands.

8. Abujamin A.N and Sobri E. 1999. Water Balance Analysis and Cropping Patterns. FMIPA-IPB. Bogor

5. *Specific course information*

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

After completing this course, students are expected to be able to know the understanding, processes that occur and factors that affect the components of the hydrological cycle and students are able to calculate / analyze these components. And students know water source conservation techniques and water management at the farm level.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P)
P1.3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Apply basic sciences and soil science in solving land and environmental problems for agricultural development

8. Learning and teaching methods

Cooperative Learning and Problem Based Learning

9. Language of instruction

Indonesian

10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT621 04 Soil Measurement and Cartography

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Ir., Junaidi, MP,
2. Zuldadan Naspendra , SP. MSi
3. Ir. Irwan Darfis, MP
4. Dr. Ir Juniarti, SP. MP

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

1. Basic Cartographic Soil Measurement Science (Sariyono and Nursa'ban, 2010)
2. Survey and Mapping Techniques
3. Literature Online other than wikipedia:
4. Bulletins, Journals, Seminar proceedings, latest leaflets, etc. (many authors)
5. Arc GIS 10.00 instructions for use.

5. *Specific course information*

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

Students are able to understand the understanding and concepts of Soil Measurement and Cartography, practice and make maps manually and digitally using Arc GIS 10.00 software. Students are also able to zoom in and out of the scale of the map.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-3: Able to use various methods for soil and crop analysis appropriately in land resource management P3.2 Able to analyze soil and plants precisely, meticulously using the latest methods
ILO-5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies P5.2 Using software technology, lab and field equipment for accurate data analysis.
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Able to analyze soil and plants precisely, meticulously using the latest methods
2. Using software technology, lab and field equipment for accurate data analysis.
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT621 05 Soil Chemistry

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Prof.Dr.Ir., Herviyanti,, MS
2. Nofrita Sandi, , SP. MP
3. Prof.Dr.Ir., Hermansah,, MS. MSc,
4. Dr.rer.nat.Ir., Syafrimen Yasin,, MS. MSc
5. Dr.Ir., Teguh Budi Prasetyo, MS,
6. Dr., Gusmini SP. MP
7. Dr., Mimien Harianti, SP. MP

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

1. Bohn, N.B.L. and G.A.O Connor. 1985. Soil chemistry. John Wiley and Sons, New York
2. Tan K.H. 1988. Principle of Soil Chemistry, ed. III, Marcel Dekker, N.Y
3. Tan,K.H. 2001. Environmental Soil Science, ed. II, Marcel Dekker, N.Y, Basel

5. *Specific course information*

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

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural

problems for sustainable agricultural development (P) P1.1. Explain agricultural sciences related to soil science P1.2 Analyze agricultural problems with a soil science approach and agricultural sciences in general P1.3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
ILO-2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development P2.1. Characterizing soil fertility (physics, chemistry, soil biology)
ILO-3: Able to use various methods for soil and crop analysis appropriately in land resource management P3.1 Using laboratory equipment for soil analysis and follow-up crops with SOPs P3.2 Able to analyze soil and plants precisely, meticulously using the latest methods
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Explain agricultural sciences related to soil science
2. Analyze agricultural problems with a soil science approach and agricultural sciences in general
3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
4. Characterize soil fertility (physics, chemistry, soil biology)
5. Using laboratory equipment for soil analysis and follow-up plants with SOPs
6. Able to analyze soil and plants precisely, meticulously using the latest methods
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT622 01 Remote Sensing

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Prof. Dr. Ir. Dian Fiantis, M.Sc
2. Dr. Ir Juniarti, SP. MP

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

1. Howard, J.A. 1996. Remote sensing for forest resources.
2. Sutanto. 1979. Basic Knowledge of Image Interpretation.
3. Sutanto. 1987. Remote Sensing.
4. Pzine, D.P. 1992. Aerial Photography. e. Wiradisastra, U.S. 1999. Geomorphology and Landscape Analysis.

5. *Specific course information*

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

Students are able to explain and use the knowledge and analytical techniques obtained to assess, explain and understand remote sensing, and interpret the main objects of the earth on images of various wavelengths and present them in the form of thematic maps, manually, and calculate the accuracy of interpretation (statistical, descriptive).

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-3: Able to use various methods for soil and crop analysis appropriately in

land resource management P3.2 Able to analyze soil and plants precisely, meticulously using the latest methods.
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.2 Interpreting soil properties and characteristics
ILO-5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies P5.2 Using software technology, lab and field equipment for accurate data analysis.
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
9. Able to analyze soil and plants precisely, meticulously using the latest methods
2. Interpreting soil properties and characteristics
3. Using software technology, lab and field equipment for accurate data analysis
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIN621 05 Experiment Design

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

3 credits

3. *Instructors and course coordinator*

1. Dr. Ir. Gusnidar, MP
2. Dr. Ir. Agustian
3. Prof. Dr. Ir. Herviyanti, MS
4. Prof. Yulnafatmawita M.Sc

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

1. Steel and Torric. 1980. Principles and Procedures of Statistics. Biometrical Approach 2 Ed Tosho print Co.Ltd. Tokyo, Japan.
2. Sutjihno, 1986. Introduction to the design of agricultural research experiments. Balitbang Pertanian
3. Syahni, R. 1992. Experiment Design. Diktat, Unand Research Center. Pading
4. Gaspersz, V. 1994. Experimental Design Method. Armico, Bandung 5. Gomez, K. A. And A. A.
5. Gomez. 1995. Statistical procedures for agricultural research. Translation by Syamsuddin, E. and J. S. Baharsyah. UI Press. Jakarta, 698 pages.
6. Stad 8 software, and other software that supports.

5. *Specific course information*

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

The Experiment Design course aims to provide students with the ability to design an experiment in carrying out a research, especially in completing the final project and being able to interpret the data obtained so as to make it easier to draw conclusions from the research that has been carried out, especially in writing the final project.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) 1.3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
ILO-5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies Q5.1 Review the literature and the novelty of technological knowledge on soil and environmental science
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
2. Review the literature and the novelty of technological knowledge about soil and environmental science
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN61106 Geomorphology and Landscape Analysis

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

2 credits

3. *Instructors and course coordinator*

1. Prof. Dr. Ir Azwar Rasyidin, MSc
2. Prof.Dr.Ir., Dian Fiantis, MSc,
3. Prof. Dr. Ir Hermansyah, MSc

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

1. Desaunnetes (1997) Cataloque of Landform for Indonesia. Soil Research Institute. Bogor Indonesia
2. Jamaluddin M.D. Jahi (1989) Introduction to Geomorphology. Language and Library Council. Ministry of Education Malaysia
3. William D Thornbury (1965) Principles of Geomorphology. John Wiley & Son, Inc. New York
4. Victor K Monnet dan Howard E Brown (1950) The Principles of Physical Geologi. Ginn and Company Boston.

5. *Specific course information*

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

After completing this course, students will be able to explain about various forms ofland in Sumatra

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) P1.3. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management 4.1 Assessing soil properties and features
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
2. Assess soil properties and characteristics
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT62108 Fertilizer and Fertilization Technology

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Dr., Gusmini, SP. MP
1. Dr.Ir., Teguh Budi Prasetyo, MS,
2. Prof.Dr.Ir., Herviyanti, MS,
3. Dr.Ir., Gusnidar, MP
4. Dr.rer.nat.Ir. Syafrimen Yasin, MS. MSc
5. Prof.Dr.Ir., Hermansah, MS. MSc,
6. Nofrita Sandi, , SP. MP
7. Dr., Mimien Harianti, SP. MP

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

1. Comersial Fertilizers (Colling, 1956)
2. Soil fertility and fertilizers (Tisdale and Nelson, 1975)
3. Fertilizing for Maximum Yield (Cook)
4. Diktat of Fertilizer and Fertilization (Nurhajati Hakim et al)
5. Bulletins, Journals, leaflets, etc

5. *Specific course information*

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

The general purpose of this Fertilizer and Fertilization Technology course is for students to know about how important fertilization is to maintain and increase agricultural production in a sustainable manner, and for that they must know the properties and characteristics of various types of fertilizers that can be used, and be able to determine fertilizer doses and carry out fertilization for various agricultural crops in particular and plants in general.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development Q2.3 Measure soil fertility and its relationship to crop production and the environment.
ILO-5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies P5.2 Using software technology, lab and field equipment for accurate data analysis.
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Measure soil fertility levels and their relationship to crop production and the environment
2. Using software technology, lab and field equipment for accurate data analysis
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT621 09 Land Suitability Survey and Evaluation

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Dr. Juniarti, SP.,MP
2. Ir. Junaidi, MP
3. Zuldadan Naspendra, , SP. MSi
4. Prof. Dr. Ir. Dian Fiantis, MSc

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

1. Hardjowigeno, S and Widiatmaka (2001) Land Suitability and Land Use Planning. Bogor Agricultural Institute. Bogor.
2. Sitorus, SRP (1985) Land suitability evaluation. Buana Library. Bandung.
3. Van Ranst (1992) Modelling Land Production Potenstials- A New Wave in Land Suitability Assesment. Laboratary for Soil Science, Departement of Geology and Soil Science, University of Gent, Gent. Belgium.
4. Center for Soil and Agroclimate Research (1992) Technical Guidelines for Land Evaluation for
5. Plant. Center for Soil and Agroclimate Research. Bogor. CSR/FAO Staff (1983) Reconnaissance Land Resource Surveys 1:250,000 Scale. Atlas
6. Format Procedures. Ministry of Agriculture Government of Indonesia and United Nations Development Programme and Food and Agriculture Organization. Bogor. Indonesia..

5. *Specific course information*

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

After completing this course, students will be able to explain soil mapping and determine its suitability with certain types of plants according to the quality of the land they display so as to achieve sustainable, optimal land use. harmonious and balanced and sustainable.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for development P2.1. Characterizing soil fertility (physics, chemistry, soil biology) P2.2.Classifying soil types
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.2 Interpreting soil properties and characteristics P4.3 Determine alternative solutions to land problems
ILO-5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies P5.2 Using software technology, lab and field equipment for accurate data analysis
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Characterize soil fertility (physics, chemistry, soil biology)
2. Classify soil types
3. Interpret soil properties and characteristics
4. Determine alternative solutions to land problems
5. Using software technology, lab and field equipment for accurate data analysis
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

SEMESTER 5

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 03 Agroforestry

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

2 credits

3. *Instructors and course coordinator*

Dr. rer.nat. Ir. Syafrimen Yasin, MS. MSc
Prof. Dr. Ir. Aprisal, MP
Dr. Mimien Harianti, SP. MP

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

3. World Agroforestry Center (ICRAF). 2003. Agroforestry teaching materials I –IX. Bogor, Indonesia.
4. F. A . O., 1989., Land Evaluation and Farming System Analysis for Land Use Planning., FAO Guidelines Second Edition., Departemen of Land Resources Surveysand Rural Development., F.A.O, Rome.
5. Santun R.P Sitorus., 1985., Evaluation of Land Resources,. Tarsito,. Bandung
6. Pedro A. Sanchez,. 1976., Properties and Management of Soils in the Tropics.,John Wiley & Sons,. New York
7. World Bank. 1994. Indonesia Environment and Development: Challenges for theFuture. For official use only. Washington, D.C. 292p
8. Nair, PKR. 1993. An Introduction to Agroforestry. Kluwer Academic Publisher in cooperation with ICRAF. Dordrecht, the Netherland.
9. Publications in research journals related to related topics.

5. *Specific course information*

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

Students are able to understand the understanding and concept of agroforestry, agroforestry practices and systems, agroforestry species, productivity and soil protection in agroforestry systems, design and evaluation of agroforestry systems

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 5 : Preparing regional development planning
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
7. Preparing regional development planning
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 04 Soil and Plant Analysis

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Dr. Mimien Harianti, SP. MP
Dr.Ir. Adrinal, MS,
Ir. Octane Emalinda, MP,
Ir. Irwan Darfis, MP
Dr.Ir. Teguh Budi Prasetyo, MS
Dr. Gusmini, SP. MP,
Dr. Ir. Agustian
Zuldadan Naspendra, SP. MSi

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

1. Jones,T.B.JR. 1984. Laboratory Guide of Exercises in Conducting Soil Test and Plant Analyses
2 1984. Plant Analyses Handbook for Georgia,
3. Tan, K.H. 1996. Soil Sampling, Preparation, and Analysis.
4. Westwerman, R.L., J.V. Baird, P.E. Fixen, D.A. Whitney. 1990. Soi Testing and Plant Analysis. Madison, Wisconsin, USA.

5. *Specific course information*

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

Soil and Plant Analysis is very useful to obtain correct soil and crop analysis data in the purposes of assessing soil fertility levels. Soil and plant analysis provides scientifically justifiable clues that include how to take representative soil and plant samples, preparation of correct soil and plant samples. In addition, choose the appropriate soil analysis procedure and name and recommend fertilizers that are added appropriately

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 3: Applying basic sciences and soil science in solving land and environmental problems for agricultural development
ILO 3: Able to use various methods for soil and crop analysis appropriately in land resource management PI 1 : Using laboratory equipment for soil analysis and follow-up plants with SOP PI 2: Able to analyze soil and plants precisely, meticulously using the latest methods
ILO 4: Able to apply their professional responsibilities to make decisions in land and environmental management PI 1 : Evaluate the properties and characteristics of the soil
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
8. Apply basic sciences and soil science in solving land and environmental problems for agricultural development
9. Using laboratory equipment for soil analysis and milk crops with SOPs
10. Able to analyze soil and plants precisely, meticulously using the latest methods
11. Assessing soil properties and features
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 05 Irrigation and Drainage

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Prof. Dr. Ir. Azwar Rasyidin, M. Agr Sc
Prof. Dr. Ir. Aprisal, MP
Nofrita Sandi, SP. MP

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

1. Hansen, V.E., Israelsen, O.W., Stringham, G.E. 1979. Irrigation Principles and Practices, John Willey and Sons
2. Smedema, L.K., Rycroft, D.W. 1983. Land Drainage; Planning and Design of Agricultural drainage Systems
3. Basford Academic and Educational Ltd, London
4. FAO Soil Bulletin no 42, 1979. Soil Survey Investigations for Irrigation

5. *Specific course information*

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

Students know the problem of plant water needs and can evaluate the relationship between climatic conditions, especially rainfall with the design of irrigation or drainage needs in an area, especially in determining water needs for rice field planting. Students understand the role of institutions in the sustainability of an irrigation system.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 4: Able to apply their professional responsibilities to make decisions in land and environmental management

PI 5 : Preparing regional development planning

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Preparing regional development planning

8. Learning and teaching methods

Cooperative Learning and Problem Based Learning

9. Language of instruction

English

10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 06 Wetland Management

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

2 credits

3. *Instructors and course coordinator*

Dr. Ir. Teguh Budi Prasetyo, MS
Dr. Mimien Harianti, SP. MP
Prof.Dr.Ir. Herviyanti, MS

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

1. Brady NC and Weil RR 2002: The Nature and Properties of Soils, 10th ed, Macmillan New York., pp. 960.
2. Kawaguchi K and Kyuma K 1977: Paddy soil in tropical Asia. Their material, nature and fertility. The Univ. Press of Hawaii, Honolulu, pp. 258.
3. Kyuma K 2004: Paddy Soils Science. Kyoto University Press and Trans Pacific Press. Melbourne, pp. 280.
4. Ma JF and Takahashi E 2002: Soil, Fertilizer, and Plant Silicon Research in Japan. Elsevier Science. Amsterdam. pp, 281.
5. Indonesian Peatland Association. 1993. Proceedings of the National Peatland Seminar II. Jakarta. 405 pages.
6. Kyuma, K., P. Vijamsorn and A. Zakaria. 1992. Coastal lowland Ecosystem In Southern Thailand and Malaysia. Kyoto. 416 pp.
7. Noor, M. 2001. Peatland Agriculture. Canisius. Yogyakarta. 174 pages.
8. Setiadi, B. 1996. Problems and Prospects for Peat Utilization. BPPT-HSF. Jakarta. 114 pages.

5. *Specific course information*

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

Students will be able to conduct peatland analysis correctly based on soil properties so that they can determine peatland management appropriately and sustainably.

B. Level of course unit (according to EQF: first cycle Bachelor, second

cycle Master)
First Cycle Bachelor
C. Semester when the course unit is delivered
Even Semester
D. Mode of delivery (face-to-face, distance learning)
Face to face
6. *ntended Learning Outcomes (CPL)*
ILO 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1: Analyzing agricultural problems with a soil science approach and agricultural sciences in general
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 4: Determining the rate of soil degradation and its causative factors
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Analyze agricultural problems with a soil science approach and agricultural sciences in general
2. Determining the degree of soil degradation and its causative factors
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 07 Dryland Management

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

2 credits

3. *Instructors and course coordinator*

Dr.Ir. Adrinal, MS
Dr. Gusmini, SP. MP
Prof.Dr.Ir. Aprisal, MP
Dr.rer.nat.Ir. Syafrimen Yasin, MS.MSc

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

1. Brady, N.C and R.R. Weil 1999. The nature and properties of soils. Prentice Hall Inc.
2. IBSRAM, 1995. ASIALAND: The management of sloping lands for sustainable agriculture in Asia. Phase 2, 1992-1994. Network Document No. 12. IBSRAM, Bangkok
3. Puslittanak, 1993. Proceedings of the use of alang-alang land for sustainable farming. Bogor
4. Puslitannak, 2000. Indonesia's land resources and management. Balitbangtan. Department of Agriculture.
5. Soil Survey Staff 1998. Key to soil taxonomy. 8th edition, NRCS. Washington DC.
6. Unger, P.W (eds). 1994. Managing Agricultural residues. Lewis Publishers. 447 pp.
7. Principles of the Ecosystem Approach (IUCN Commission on Ecosystem Management,2004)

5. Specific course information

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

To determine land management, land/soil quality, dry land, lowland dryland (LKDR), soil properties and their distribution, potential and constraints of LKDR, development and management of LKDR, LKDR management technology, highland dryland (LKDT), soil properties and distribution, potential and constraints of LKDT, development and management of LKDT, management technology. LKDT, dryland management innovation strategy in improving

environmental quality, rain harvesting technology and water conservation in dry land
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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 1: Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development (P) PI 1: Analyzing agricultural problems with a soil science approach and agricultural sciences in general
ILO 2: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development PI 4: Determining the rate of soil degradation and its causative factors
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Analyze agricultural problems with a soil science approach and agricultural sciences in general
2. Determining the degree of soil degradation and its causative factors
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN611 06 Research Methodology

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Prof.Dr.Ir. Herviyanti, MS
Dr.Ir. Gusnidar, MP
Dr.Ir. Teguh Budi Prasetyo, MS
Dr.Ir. Agustian
Dr. Mimien Harianti, SP. MP
Prof.Dr.Ir. Hermansah, MS. MSc
Dr.rer.nat.Ir. Syafrimen Yasin, MS.MSc

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

1. Sangadji, E. M. and Sopiah. 2010. Research Methodology. CV. Andi. Yogyakarta.
2. Wibowo, W. 2010. Grammar Language Scientific Writing. Earth Literacy. Jakarta.
3. Creswell,J.W. 2012. Educational Research; Planning, conducting, and Evaluating Quantitative and Qualitative Research (4 ed.) Boston; PEARSON
4. Muhadjir, N. 1998. Philosophy of Science. Rake Sarasin. Yogyakarta.
5. Mutahhari, M. 1998. Quranic Perspectives on Man and Religion. Mizan. Bandung

5. *Specific course information*

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

The Research Methodology course aims to provide students with the ability to prepare research proposals, carry out research, and write reports in the form of a thesis for the purposes of their final project.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 5: Able to keep up with the latest knowledge and apply it to support appropriate learning strategies PI 1 : Review the literature and novelty of technological knowledge about soil and environmental science
ILO 7: Able to communicate with audiences of different backgrounds/levels PI 1: Presenting assignments in groups in front of lecturers and students
7. ***Course Learning Outcomes*** *(**CPMK**) ex. The student will be able to explain the significance of current research about a particular topic.*
1. Review the literature and the novelty of technological knowledge about soil and environmental science
2. Presenting assignments in groups in front of lecturers and students
8. Learning and teaching methods
Cooperative Learning and Project Based Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 09 Radioisotope Techniques in Soil and Plant Studies

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Prof. Dr. Ir. Yulnafatmawita
Dr. Ir. Gusnidar, MP

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

1. Hadarson.G.A. 1989. The Use of Nuclear Technique in studies of Soil and Plant Relationship. Vienna

2. L'Annunziata, M.F. 1987. Radionuclide Traces :Their Detection and Measurement. Acad.Press.

3. London Vose, P. E. 1980. Introduction to Nuclear Technique in Agronomy and Plant Biology. Pergamon

4. Press. Frankfurt Yulnafatmawita, 2009. Radio isotope techniques in soil-plant studies. Student Manual. Yulnafatmawita, N. Hakim, and Gusnidar. 1993. Radioisotope technique practicum guide for soil and plant studies. Faculty of Agriculture, Andalas University, Padang.

5. *Specific course information*

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

ISOTOPE RADIO TECHNIQUE IN THE STUDY OF SOIL-PLANT RELATIONSHIP (TRI) is so that students of the Department of Soil of the Faculty of Agriculture know ISOTOPE RADIO ENGINEERING as a complement (complementary) to conventional methods in studying soil and plant relationships, especially in terms of fertilizer and fertilization.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

C. Year of study when the course unit is delivered (if applicable)

2nd Year
D. Semester when the course unit is delivered
Even Semester
E. Mode of delivery (face-to-face, distance learning)
Face to face
6. *Intended Learning Outcomes (CPL)*
LO-3: Able to use various methods for soil and crop analysis appropriately in land resource management PI 1 : Using laboratory equipment for soil analysis and follow-up plants with SOP PI 2: Able to analyze soil and plants precisely, meticulously using the latest methods
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1.Using laboratory equipment for soil analysis and milk crops with SOPs
2. Able to analyze soil and plants precisely, meticulously using the latest methods
8. Learning and teaching methods
Cooperative Learning and Case Method Learning
9. Language of instruction
English
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

SEMESTER 6

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

AND601 02 Agribusiness and Entrepreneurship

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

Ir. Yusri Usman MS
Rina Sari SP. MSi
Syofyan Fairuzi STP. MSi
Ir. Syahyana Raesi MSc
Ir. Dwi Evaliza MSi
Nuraini Budi Astuti SP. MSi

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

5. *Specific course information*

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

This course provides an understanding of the relationship between agribusiness and entrepreneurship, the characteristics of an entrepreneur, the process of becoming an entrepreneur and the challenges that an entrepreneur must face in agribusiness.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management
P 4.4 Using regulatory concepts and principles in land use and management
P 4.5 Prepare regional development plans

7. ***Course Learning Outcomes (CPMK)*** *ex. The student will be able to explain the significance of current research about a particular topic.*
4.4 Using regulatory concepts and principles in land use and management 4.5 Prepare regional development plans
8. Learning and teaching methods
LCD & Projector
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PIT62202 Soil Biotechnology

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

3 credits

3. Instructors and course coordinator

1. Is. Lusi Maira, MAgrSc
2. Dr.Ir. Agustian
3. Dr. Mimien Harianti, SP. MP
4. Prof.Dr.Ir., Hermansah MS. MSc,
5. Yes., Lusi Maira, MAgrSc,
6. Nofrita Sandi, SP. MP
7. Prof.Dr.Ir., Aprisal, MP,
8. Dr., Mimien Harianti, SP. MP,

4. Text book, title, outhor, and year

1. Metting, F.B. Jr. 1993. Soil Microbial Ecology, Applications in Agricultural and Environmental Management
2. Paul, E.A and F.E Clark. 1996. Soil Microbiology and Biochemistry
3. Sylvia, D.M. et.al. 1998. Principles and Applications of Soil Microbiology

5. Specific course information

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

After completing this course, students are expected to be able to explain the role of microorganisms in the biotransformation process in the soil, know about the genetic potential of soil microorganisms and understand microorganism manipulation techniques for various purposes of use for both agricultural and non-agricultural purposes

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.2 Interpreting soil properties and characteristics
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Interpret soil properties and characteristics assess soil properties and characteristics
8. Learning and teaching methods
Cooperative Learning and Project Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : Assignment UTS UAS Internship **Formative Assessment**: Thumb up and thumb down Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT62203 Soil Mineralogy

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

3 credits

3. *Instructors and course coordinator*

1. Dr.rer.nat.Ir. Syafrimen Yasin, MS, M.Sc
2. Prof. Dr. Ir. Dian Fiantis, M.Sc

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

1. Allen, B. L and D. S. Fanning. (1983). Composition and Soil Genesis. P. 141-192 in L. P. Wilding et al (Eds). Pedogenesis and soil taxonomi. i. concept and interaction. Elsevier Sci. Publ. Co., Amsterdam.
2. Allen, b. l. and b. f. Hajek. 1989. Mineral occurrence in soil environment. P. 199-278. In J. B. Weed (Eds). Minerals in Soil Environments. Soil Sci. Of Amer., Madison, USA
3. Munir, M. 1996. Geology and Soil Mineragy. Jaya Library. Jakarta. 290 p.
4. Suharyadi. 2004. Introduction to Engineering Geology. Publishing Bureau of Civil Engineering Department UGM. Jogyakarta. 134 p.
5. Perkins, D. 1998. Mineralogy. Prentice Hall.484 hal.
6. Klein, C. 2004. The 22nd edition of the Manual of Mineral Science. John Wiley & Sons, Inc. 641 hal.

5. *Specific course information*

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

After attending this course, students will be able to understand the process of formation of primary, secondary and oxide minerals. The relationship between the mineral content in the soil with soil fertility and the type of soil formed. Students can explainhow to identify minerals.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor
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-3: Able to use various methods for soil and crop analysis appropriately in land resource management P3.1 Using laboratory equipment for soil analysis and crops with SOPs.
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.1 Assessing soil properties and features
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Using laboratory equipment for soil analysis and follow-up plants with SOPs
2. Assess soil properties and characteristics
8. Learning and teaching methods
Cooperative Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT62204 Regional Planning and Development

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

3 credits

3. *Instructors and course coordinator*

1. Prof.Dr.Ir., Aprisal, MP,
2. Prof.Dr.Ir., Azwar Rashidin, MSc

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

1. Ali Kabul Mahi. 2016. Regional Development. Theory and Application.Dating Publishers. Prenadamedia Group. Jakarta.
2. Agency for the Assessment and Application of Technology. 2000. Development of Rural Areas and Certain Areas. An exploratory study.
3. Ernam Rustiadi et al. 2011. Regional Planning and Development. Crestpent Press and Yayasan Pustaka Obor Jakarata.
4. Johara.t.J. 1992. Use in Rural, Urban and Regional Planning. ITB Bandung Publisher.
5. Lutfi Rayes. 2007. Land Resource Inventory Methods. Andy Publishers. Yogyakarta.
6. Mulyono Sadyohutomo. 2016. Land Use and Spatial Harmony. Student Library.

5. *Specific course information*

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

Students are able to explain and use knowledge in understanding in regional planning and development. The concept and theory of regional development, Spatial analysis and von Thunen location theory, Land resource evaluation, Regional development, Spatial planning, Development of rural and urban areas, development of coastal areas and small islands, feasibility of administrative area expansion and problems. In addition, students can find out about the equitable development between regions in the archipelago, both physically and socio-economically. Students can understand the phenomenon of regional expansion

carried out today and the feasibility of the area related to supporting factors such as population, regional economic capacity, regional potential, welfare, polbudhankam, area and span of control.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.2 Interpreting soil properties and characteristics P4.3 Determine alternative solutions to land problems P4.4 Using regulatory concepts and principles in land utilization and structuring P4.5 Develop regional development planning
ILO-6: Able to work in teams both as members and as leaders with various scientific backgrounds P6.1 Develop task planning independently or with a team
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Interpret soil properties and characteristics
2. Determine alternative solutions to land problems
3. Using regulatory concepts and principles in land utilization and arrangement
4. Prepare regional development planning
5. Develop task planning independently or with a team
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
Indonesian

10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT62107 Integrated Field Practice

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

1 credit

3. *Instructors and course coordinator*

1. Dr. Junaidi, MP
2. Novrita Sandi SP, MP

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

1. Sarwono Hardjowigeno. (1989). Soil Science.
2. Fundamentals of Soil Science.
3. Land Survey and Evaluation.
4. Soil Morphology and Classification

5. *Specific course information*

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

Students are able to study and know the properties of soil in the field; physical, chemical and biological properties of soil, knowing soil fertility and integrated agricultural systems, soil and water conservation and can classify soil into certain soil classification systems, group similar soils and describe their distribution in an area on a soil map, evaluate their ability and suitability for various uses, make recommendations for soil use and management

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.4 Using regulatory concepts and principles in land utilization and structuring
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Using regulatory concepts and principles in land utilization and arrangement
8. Learning and teaching methods
Project Basd Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT62205 Land Reclamation and Bioremediation

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Is. Lusi Maira, Magrsc
2. Dr. Ir. Agustian
3. Dr. Ir. Teguh Budi Prasetyo, MS
4. Dr., Gusmini, SP. MP

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

1. Cummings, S. P. 2010. Bioremediation: Methods and Protocols. Humana Press UK, ISBN 978-1-60761 438-8. DOI 10.1007/978-1-60761-439-5. 290p

2. Wiley, N. 2007. Pytoremediation: Methods and Review. Humana Press-UK. ISBN 13: 978-1-59745-098-0,

3. Directorate of Land Management, Director General of Land and Water Management. Department of Agriculture 2008. Optimization and Reclamation of Agricultural Land in Central Kalimantan Peatland Development Area. 4. Directorate of Land Management, Director General of Land and Water Management. Department of Agriculture. 2008. Post-Mining Land Reclamation.

4. Enviromental Protection Agency, 1993. Biological and Chemical Assessment of Contaminated Great Lakes Sediment. EPA 905-R93-006

5. Enviromental Protection Agency, 1991. Biological remediation of Contaminated Sediments, with Special Emphasis on the Great Lakes. EPA/600/9-91/001

6. Negim, O. 2009. New Technique for Soil Reclamation and Conservation: In Situ Stabilization of Trace Elements in Contaminated Soils. Thèse Docteur. École Doctorale Des Sciences Et Environnements

7. Chen, F.H. 1999, Soil Engineering: Testing, Design, And Remediation. CRC Press. Boca Raton London, Université Bordeaux 1, New York Washington, D.C.

5. *Specific course information*

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

After completing this course, students are expected to be able to apply reclamation measures for degraded land and bioremediation for soil polluted by toxic organic materials as a resultof agricultural or non-dairy activities

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management
P4.3 Determine alternative solutions to land problems

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Determine alternative solutions to land problems

8. Learning and teaching methods

Cooperative Learning and Project Based Learning

9. Language of instruction

Indonesian

10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS

4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PTN62202 Integrated Agricultural System

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

3 credits

3. *Instructors and course coordinator*

1. Dr. Gusnidar, Mp
2. Prof. Dr. Ir. Yulnafatmawita, MSc

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

1. Guntoro. S. 2011. Time to implement Techno-Ecological Agriculture: A model of future agriculture. to respond to climate change. Agromedia Library. Jakarta. 174 p.
2. Arsyad, S. and Rustiadi. E (ed). 2008. Saving Land, Water and the Environment. Collaboration between Crespent Press and Yayasan Obor Indonesia. 287 p.
3. Handayanto, E. and Gairiah, K. 2007. Soil Biology, the foundation of healthy soil management. Adipura Library. Yogyakarta. 195 p.
4. Sutanto, R. 2002a. Organic Farming, Towards alternative and sustainable agriculture. Canisius. Yogyakarta. 217 p.
5. Sutanto, R. 2002b. Application of Organic Farming, Correctional Services. and and its development. Canisius. Yogyakarta, 219 p.
6. Other materials relevant to sustainable land management.

5. *Specific course information*

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

The integrated system course aims to provide students with the ability to manage natural resources in an integrated manner that prioritizes empowering farmers in providing natural and environment-based inputs

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.3 Determine alternative solutions to land problems
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Determine alternative solutions to land problems
8. Learning and teaching methods
Cooperative Learning and Project Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

SEMESTER 7

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN601 01 Internship

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

2 credits

3. Instructors and course coordinator

4. Text book, title, outhor, and year

5. Specific course information

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

Carrying out practical work in government agencies, companies or institutions operating in the agricultural sector related to their respective fields of science which have been managed professionally or which have professional management such as government or private agencies, state or private plantation companies, agricultural cooperatives, farmer groups, associations farmer groups, micro and medium agricultural enterprises, as well as other related units.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-6: Able to work together in a team both as a member and as a leader with various scientific backgrounds
6.2 Write task/project reports

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

6.2 Write task/project reports
8. Learning and teaching methods
Problem Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 5. Assignment 6. UTS 7. UAS 8. Internship **Formative Assessment**: 3. Thumb up and thumb down 4. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 10 Watershed Management

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

2 credits

3. *Instructors and course coordinator*

1. Prof. Dr. Ir. Aprisal, M.P.
2. Dr.Ir., Adrinal MS

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

1. Chay Asdak. 1995. Hydrology and Management of River Basin Areas UGM Press
2. Hariadi Kartodihardjo, et al. 2004. Watershed Management Institute. Faculty of Forestry, IPB.
3. Rusman B. 2014. Soil and Water Conservation. Unand Press.
4. Morgan, R. P. C. 1979. Soil Erosion. Longman Group Ltd., New York.
5. Singht, Vijay.P. 1992. Elementary Hidrology. Department of Civil Engineering. Lousiana State University. New Jesey.
6. Government Regulation No. 37 of 2012. Watershed Management.
7. Soil Conservation Act. No 37/2014.

5. *Specific course information*

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

After completing this learning activity, a participant is expected to be able to know about the basic understanding of watershed management, able to know the methods of watershed planning, implementation, programs and monev. Able to explain the understanding and function of watersheds in an ecosystem and watershed

hydrology. Able to explain the relationship of watershed characteristics in management. Able to know problems in biophysical, socio-economic and institutional and legal aspects. Able to determine the classification of watersheds, and link with policies and programs related to watershed management. Able to take an ecosystem approach in managingwatershed-scale water resources.
B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
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: Able to identify, analyze, and solve land problems in improving productivity and quality of agricultural products for sustainable agricultural development P2.4 Determining the rate of soil degradation and its causative factors
ILO-4: Able to apply their professional responsibilities to make decisions in land and environmental management P4.3 Determine alternative solutions to land problems P4.4 Using regulatory concepts and principles in land utilization and structuring P4.5 Develop regional development planning
7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*
1. Determine the extent of soil degradation and its causative factors
2. Determine alternative solutions to land problems
3. Using regulatory concepts and principles in land utilization and arrangement
4. Prepare regional development planning
8. Learning and teaching methods
Cooperative Learning and Problem Based Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria

Summative Assessment :

1. Assignment
2. UTS
3. UAS
4. Internship

Formative Assessment:

1. Thumb up and thumb down
2. Minutes paper

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. *Course number and name*

PIT612 11 Land Use and Agricultural Law

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

3 credits (2 classes, 1 practicum)

3. *Instructors and course coordinator*

1. Prof.Dr.Ir., Hermansah, MS. MSc,
2. Prof.Dr.Ir., Azwar Rashidin, MSc,
3. Zuldadan Naspendra, , SP. MSi
4. Ir., Junaidi MP,
5. Nofrita Sandi, , SP. MP

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

1. World Agroforestry Center (ICRAF), 2003 Agroforestry teaching materials I-IX Bogor, Indonesia
2. F.A O., 1989 Land Evaluation and Farming System Analysis for Land Use Planning..
3. FAO Guidelines Second Edition, Departemen of Land Resources Surveys and Rural Development.,
4. Santun R.P Sitorus, 1985, Evaluation of Land Resources. Tarsito, Bandung
5. Pedro A. Sanchez, 1976, Properties and Management of Soils in the Tropics. John Wiley & Sons, New York World Bank. 1994. Indonesia Environment and Development Challenges for the Future. For official use only. Washington, D.C 292p
6. FAO, 1989. Guide line for Land Use Planning
7. Hardjowigeno, and Widiatmaka, Land use planning
8. LKAAM, 1979. Ulayat Land
9. Schwab, 1989. Soil and water engineering conservation
10. Syss, et. Al. 1991 Land Evaluation

11. Troeh, FR. Hobbs, A. Donahoe LR, 1980. Soil and water conservation

12. Sihombing, 2005, The Evolution of Land Policy in Land Law in Indonesia. Mount Agung-Jkt

5. *Specific course information*

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

Land stewardship is an effort to realize sustainable development, the effort is related to; (1) biophysical, socio-economic, cultural aspects of the community in the concept of sustainable development, (2) legal certainty on land ownership rights and regulations on land allocation for cultivation areas and conservation areas, (3) legislation system for the preservation of land resources and protection of biodiversity

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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-4: Able to apply their professional responsibilities to make decisions in land and environmental management
P4.2 Interpreting soil properties and characteristics
P4.3 Determine alternative solutions to land problems
P4.4 Using regulatory concepts and principles in land utilization and structuring
P4.5 Develop regional development planning

7. *Course Learning Outcomes (CPMK)* *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Interpret soil properties and characteristics
2. Determine alternative solutions to land problems
3. Using regulatory concepts and principles in land utilization and arrangement
4. Prepare regional development planning

8. Learning and teaching methods

Cooperative Learning and Case Method Learning
9. Language of instruction
Indonesian
10. Assessment methods and criteria
Summative Assessment : 1. Assignment 2. UTS 3. UAS 4. Internship **Formative Assessment**: 1. Thumb up and thumb down 2. Minutes paper

Module Description/Course Syllabi

Study Program : S1 Undergraduate Program
Faculty of Agriculture
University of Andalas

1. Course number and name

PIT612 10 Amdal Basics

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

2 credits

3. Instructors and course coordinator

Prof. Dr. Ir. Hermansah, MS,. Msc
Is. Lusi Maira, MAgr.SC

4. Text book, title, outhor, and year

5. Specific course information

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

Students will be able to explain and understand the basics of environmental impact analysis / AMDAL

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

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 4: Able to apply their professional responsibilities to make decisions in land and environmental management
PI 3 : Determining alternative solutions to land problems

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

1. Determine alternative solutions to land problems

8. Learning and teaching methods

Cooperative Learning and Problem Based Learning

11. Language of instruction
English
12. Assessment methods and criteria
Summative Assessment : 4. Assignment 5. UTS 6. UAS **Formative Assessment**: 3. Thumb up and thumb down 4. Minutes paper

SEMESTER 8

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN601 03 Research Proposal Seminar

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

1 credits

3. Specific course information

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

Research proposals that have been written by students are presented at seminars to accommodate input from both lecturers and students who are invited to improve proposals and carry out research.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

C. Semester when the course unit is delivered

Even Semester

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

Face to face

4. Intended Learning Outcomes (CPL)

ILO-6: Able to work together in a team both as a member and as a leader with various scientific backgrounds
P 6.1 Prepare task plans independently or with a team

ILO-7:
Able to communicate with audiences of different backgrounds/levels
P 7.2 Express opinions and answer responses

5. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

6.1. Prepare task plans independently or with a team

7.2 Express opinions and answer response

6. Learning and teaching methods
Project Based Learning
7. Language of instruction
Indonesian

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN601 02 Research Result Seminar

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

1 credits

3. Specific course information

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

Research results that have been written in the form of a thesis draft and have been discussed with the supervisor need to get perspectives from outside parties. The thesis draft is written in the form of seminar material and will be presented at the seminar to accommodate input from both lecturers and students who are invited to improve the thesis before entering the Comprehensive examination stage.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

D. Semester when the course unit is delivered

Even Semester

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

Face to face

4. Intended Learning Outcomes (CPL)

ILO-6: Able to work together in a team both as a member and as a leader with various scientific backgrounds
P 6.1 Prepare task plans independently or with a team

ILO-7:
Able to communicate with audiences of different backgrounds/levels
P 7.2 Express opinions and answer responses

5. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

6.1. Prepare task plans independently or with a team

7.2 Express opinions and answer response
6. Learning and teaching methods
Project Based Learning
7. Language of instruction
Indonesian

Module Description/Course Syllabi

Study Program : Bachelor Program (S1)
Faculty of Agriculture
University of Andalas

1. Course number and name

PTN601 04 Skripsi

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

4 credits

4. Specific course information

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

A thesis is one of the requirements for obtaining a bachelor's degree in agriculture, which is a final assignment written based on the results of research or surveys conducted by students with guidance from the supervisor and defended in front of the undergraduate examination committee session.

B. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)

First Cycle Bachelor

C. when the course unit is delivered

Even Semester

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

Face to face

4. Intended Learning Outcomes (CPL)

ILO-6: Able to work together in a team both as a member and as a leader with various scientific backgrounds
P 6.2 Write task/project reports

5. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*

6.2 Write task/project reports

6. Learning and teaching methods

Project Based Learning
7. Language of instruction
Indonesian