	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) / 4.65

3. Instructors and course coordinator

1. Prof. Dr. Ir. Yulnafatmawita
2. 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. Occupational Radiation Protection. 2018. INTERNATIONAL ATOMIC ENERGY AGENCY VIENNA,
3. L'Annunziata, M.F. 1987. Radionuclide Traces :Their Detection and Measurement. Acad.Press.
4. Goodwin, M.A. 2024. Radionuclide measurements of the international monitoring system. Journal of Environmental Radioactivity Vol 272, February 2024, 107357
5. London Vose, P. E. 1980. Introduction to Nuclear Technique in Agronomy and Plant Biology. Pergamon Press. Frankfurt
6. Yulnafatmawita, 2009. Radio isotope techniques in soil-plant studies. Student Manual.
7. 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)
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
7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3.1 Using laboratory equipment for soil analysis and milk crops with SOP
3.2 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. Minutes paper

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)
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

7. Course Learning Outcomes (CPMK) *ex. The student will be able to explain the significance of current research about a particular topic.*
3.1 Using laboratory equipment for soil analysis and milk crops with SOP
3.2 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 : 5. Assignment 6. UTS 7. UAS 8. Internship **Formative Assessment**: 1. Minutes paper