ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Soil Science

Master's Degree Programme
Soil Science

Provided by
Universitas Andalas

Version: 26 September 2025

Table of Content

A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for [1]	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC)[2]
Sarjana Ilmu Tanah	Bachelor of Soil Science	ASIIN	BAN PT (2023-2027)	08
Magister Ilmu Tanah	Master of Soil Science	ASIIN	BAN PT (2022-2027)	08
Date of the contract: 24.03.2024 **Submission of the final version of the self-assessment report:** 15.09.2023 **Date of the onsite visit:** 29./30.05.2024 **at: Department of Soil Science and Land Resources, Universitas Andalas**				
Expert panel: Prof. Dr. Georg Guggenberger, Leibnitz University Hannover Prof. Dr. Bernhard Seggewiß, HS Neubrandenburg Assoc. Prof. Rusnadi Padjung, Hasanuddin University Dr. Markus Dotterweich, UDATA GmbH M. Hafizh Amwanaya, Universitas Sriwijaya				
Representative of the ASIIN headquarter: Sascha Warnke				
Responsible decision-making committee: Accreditation Commission for Degree Programmes				
Criteria used: European Standards and Guidelines as of May 15, 2015				

[1] ASIIN Seal for degree programmes.

[2] TC: Technical Committee for the following subject areas: TC 08 - Agriculture, Forestry, Food Sciences, and Landscape Architecture.

ASIIN General Criteria, as of December 10, 2015 Subject-Specific Criteria of Technical Committee 08 – Agriculture, Forestry, Food Sciences, and Landscape Architecture as of March 27, 2015	

B Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF[3]	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Soil Science	Bachelor of Agricultural Science (Sarjana Pertanian)	/	6	Full time	/	8 semesters	144 SKS (277.96 ECTS)	Annually in August, since July 1968
Soil Science	Master of Agricultural Science (Magister Pertanian)	/	7	Full time	/	4 semesters	36 SKS (104.98 ECTS)	Biannually, since August 1993

For the Bachelor's and Master's degree programmes Soil Science the institution has presented the following profile on the website of the Department of Soil Science and Land Resources, describing the programmes' vision, mission, and goals:

"Vision of Soil Science Study Programs:

To become a superior Soil Science Study Program in tropical marginal land studies at the INTERNATIONAL level in 2028.

[This] means [being] reputable in higher education in the field of tropical marginal land at the INTERNATIONAL level. This reputation is shown by the production of competitive graduates in order to support the nation's independence in the field of sustainable tropical marginal land management.

Mission of Soil Science Study Programs:

Organizing education to produce competent and superior scholars in the field of tropical marginal land.

Organizing research and development in the field of tropical marginal land to support sustainable agricultural science and technology.

[3] EQF = The European Qualifications Framework for lifelong learning

Carrying out community service in the field of tropical marginal land to support the achievement of sustainable agriculture

Carrying out cooperation with government and private institutions at home and abroad in the field of tropical marginal land.

Soil Science Study Program Goals:

Producing graduates who are professional in the field of tropical marginal land to realize sustainable agriculture

Producing quality research in the field of tropical marginal land to support science and technology in sustainable agriculture.

Assisting problem solving in the government, private sector, and communities/farmers, especially in the management of tropical marginal lands.

To collaborate with government and private institutions, both nationally and internationally in tropical marginal land management."

C Expert Report for the ASIIN Seal

1. The Degree Programme: Concept, Content & Implementation

Criterion 1.1 Objectives and Learning Outcomes of a Degree Programme (Intended Qualifications Profile)

Evidence:

- Homepage of the Department of Soil Science and Land Resources: http://tanah.faperta.unand.ac.id/
- Curricular overview
- Objective-module matrices
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Universitas Andalas (UNAND), situated in the city of Padang, is the oldest university on the island of Sumatra. Founded in 1956, it now offers 144 study programmes at 15 faculties. There are more than 32,000 students enrolled at the university, about 2,200 of them being postgraduates, at three campuses in Padang City, Darmasraya and Payakumbuh.

The university's mission is to achieve a rank within the top 500 QS universities in the world, which the rector states as optimistic, but still they have mapped out milestones up to 2044. Until 2028, the university has a "transformation plan": By developing a sound management system and corporate culture they strive towards a global reputation. An international accreditation is part of this development.

The two degree programmes under review for an international accreditation in this report, a Bachelor's and Master's in Soil Science, are offered at the Department of Soil Science and Land Resources within the Faculty of Agriculture at Padang City Campus. The general competencies to be acquired by students of these study programmes are subdivided into main competencies (related to soil science, agriculture, sustainability), supporting competencies (related to communication, ethics), and other competencies (comprising English skills and knowledge about information technology and management of, e.g., land resources).

The intended learning outcomes (ILOs) are published on the website of the Department of Soil Science and Land Resources in the curricular overview.

For the Ba Soil Science, the general education objectives are defined as follows:

1. Having the ability to improve the quality of soil and land resources;
2. Having the ability to develop professional career and education;
3. Having leadership capability to address an organisation or an institution.

The university lists seven ILOs for the programme, which are annexed to the back of this report. The ILOs refer to general knowledge about soil, agriculture and plant analysis, as well as skills in teamwork, communication and professional responsibilities.

The general education objectives for the Ma Soil Science are given as follows:

1. Having the ability to manage and to plan the usage of soil and land resources for sustainable agricultural and environmental purposes;
2. Having the ability to develop professional carrier and/or research in soils and land resource;
3. Having the ability to participate and communicate with scientific and social communities to apply science and technology in soil and land resources.

The five ILOs of the Master's degree programme refer to more in-depth knowledge about the assessment of soil properties, natural resources and the environment, as well as their proper and sustainable management. The usage of technology and innovation as well as the involvement in research are more pronounced features of the Master's degree.

According to the experts, the ILOs of the two study programmes under review are sensible and reflect well the expectations of graduates in soil science. The differences in skill and knowledge between EQF levels 6 and 7 are tangible and the most important subjects of competencies related to soil science and life-long learning are covered. An objective-module matrix for both degree programmes shows that the subject-specific criteria of ASIIN's Technical Committee 08 is taken into account. The assessors find the matrices to be highly convincing.

The objectives of the study programmes at the faculty are reviewed every five years to accommodate technological advances in soil science, or general changes, e.g., in teaching methodology. To get an impression of the concerns of stakeholders, the department invites several internal representatives, among them students of the Soil Science study programmes, lecturers, and the management staff, as well as external stakeholders, such as alumni of the programmes, practitioners of land resources, relevant companies, related institutions and users. All groups present during the audit – i.e., internal stakeholders,

alumni and industrial representatives – confirm that they are involved in these processes. Regularly, they have been asked to evaluate the programme and they were invited to the workshops which is the foundation for the review of the objectives and learning outcomes.

Criterion 1.2 Name of the Degree Programme

Evidence:

- Academic guide
- Curriculum overview
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The programmes under review here are a Bachelor's and a Master's degree in Soil Science taught predominantly in Indonesian. The name of the programmes, Ilmu Tanah in Bahasa Indonesia, translates to "Soil Science" and is in accordance with the Decree of the General of Learning and Students Affairs, Ministry of Research, Technology, and Higher Education, Republic of Indonesia Number 163/E/KPT/2022, which regulates which nomenclatures may be used for study programmes in Indonesia. The names are used consistently throughout the documentation, e.g., in the academic guide, the curriculum overview and on the web-site of the university and the department.

During the audit the assessors discuss the nomenclature of the study programmes. They state that the curricula have a heavy focus on tropical soils with other types of soil being disregarded. The department formulates as a goal in their self-assessment report for the Ba Soil Science to become "a Soil Science Study Program that is excellent in the study of tropical land […]" (p. 11). Likewise, the Ma Soil Science is supposed to "focus[…] on tropical land management […]" (ibid.), which according to the assessors could signify a need to use a less vague naming scheme. However, after several discussions with the programme co-ordinators, lecturers and industry representatives the expert team comes to the conclusion that students are prepared for their professional career that, being in Indonesia or sur-rounding countries like Malaysia, Vietnam or Thailand, heavily features tropical soils. This concentration on the issue of tropical soil, hence, does not warrant a more distinct naming, as many principles taught hold true for soils in general. This includes, e.g., the role of soil organic matter in soil fertility or the relationship between matric potential and water-filled

pore space for soils of different particle size distribution. The experts are content with the names for both programmes.

Criterion 1.3 Curriculum

Evidence:

- Academic guide
- Curriculum overview
- Homepage of the Department of Soil Science and Land Resources: http://tanah.faperta.unand.ac.id/
- Objective-module matrices
- Module handbooks
- Exemplary internship reports
- Statistical data on student mobility
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

Content

For the Ba Soil Science, the programme consists of a four-year study programme to be studied full-time. During these four years students need to acquire 144 Indonesian credit semester units (SKS), which converts to a value of 277.96 ECTS. Students begin their first year with several introductory courses to fundamental topics of Soil Science, such as biology, chemistry, physics and mathematics, agronomy and agricultural science as well as plant protection and physiology. These courses are complemented by academic English courses as well as civic education, religion and Pancasila which are mandatory courses imposed by the Indonesian government. Up until the sixth semester the students take mandatory courses in the more detailed aspects of the study programme. This includes, e.g., soil physics and management, hydrology and watershed management as well as surveying and mapping. Furthermore, students start to take part in experimental courses to acquire practical competencies. This includes working outside and describing soil profiles at and around campus. In the third and sixth semester students may also choose electives that cover advanced and specialized fields of soil science. The mandatory elements of fieldwork practice and community service are located between the sixth and seventh semester. The

students prepare their undergraduate thesis, which is written in the seventh and final semester, through the module "Scientific Presentation" in semester 6 by drafting a topic and handing in a proposal. The Bachelor's degree programme also requires students to take part in an internship throughout one semester for 4 ECTS. The internship is well integrated into the curriculum. There is an "Internship Technical Implementation Unit" at faculty level which arranges student internships and coordinates with agencies and companies that have signed memoranda of understanding. An internship has one supervisor from the university and another one from the company or institution. The students present during the audit confirm that an internship is beneficial to them and easy to arrange through the help of the faculty. They appreciate the glimpse into the working world. The industrial representatives also appreciate having students to work for them.

The Ma Soil Science is a consecutive programme in which students must acquire 36 SKS (104.98 ECTS) in four semesters. The full-time study programme offers several advances courses in the field of soil science from which the students can choose. The courses include soil genesis, soil fertility, clay mineralogy, and rice field or wet tropical dryland management among others. The fourth semester is dedicated to the thesis and a seminar as well as – if the students decide to – presentation of the thesis at seminars or conferences.

During the audit, the assessors were most interested in topic of soil biology and soil biotechnology, given the current trends in the field. While from the curricula it might appear that these subjects are only taught superficially the lecturers can show during that these subjects are well integrated into the curricula. Concerning topics, such as climate change and urbanisation, lack their dedicated modules but the handbooks show that these issues are covered from different angles throughout the other courses. Since the lecturers in the department appear to communicate well their specific teachings the assessors are sure that student do learn about current topics from different courses. The content of the curricula is very well conceived for a degree programme in soil science, be it Bachelor's or Master's.

Structure of the programmes

Structurally, both programmes are organised by modules which range from 1 to 3 SKS, whereas the courses are predominantly worth 3 SKS. There are some exceptions to this, e.g., the thesis is worth 4 ECTS for the Bachelor's degree programme, and 8 ECTS for the Master's. Especially in the Bachelor's degree programme the structure of the modules follow an established route from basic and foundational courses to more specialised topics later in the programme. This way, students can actively build on their previous knowledge. The community service and internship are deliberately placed late into the programme, since by then the students have acquired specialised knowledge to actually contribute to

the community or the company. The government-mandated MBKM, an initiative that emboldens students to individualise their study experience, can also be achieved within the study programme. The students have a total of 42 SKS of elective courses, allowing the students to choose individual focal points and courses of study.

For the Master's degree programme the courses available amount to 80 SKS, out of which the students may choose courses amounting to 36 SKS. This means that the programme is particularly predisposed to students choosing their individual topics of interest. This way, students can reach the required amount of SKS within the four semester study programme.

The assessors find that the structure of both programmes is sensible and well-constructed. The modules and their progression is sensible and the electives are sufficiently varied for students to develop their own niche of interest in the topic of soil science.

Student mobility

Student mobility is part of the transformation plans of the university mentioned earlier in this report. According to the rector, there are endeavours to internationalise the student body. By 2029, the university expects more than 2% of the student body to be from abroad and all faculties to offer courses in English.

At the department, there are several opportunities for students to go abroad. There are partnerships with, e.g., Sydney University (Australia), University of Terengganu (Malaysia) and with the Prefectural University of Hiroshima (Japan). The university in Japan is a particularly interesting partner since currently the departments are negotiating a double degree programme which will enhance the opportunities to study abroad. Apart from study programmes students are also encouraged to take part in field programmes in Vietnam or summer schools in Japan. Students also have the opportunity to visit other universities in Indonesia within the framework of MBKM, which is also the greatest contributor for external students to spend some time at UNAND. Lastly, the community service is another contributing factor for student mobility.

UNAND provides financial support or scholarships, respectively, that cover allowances and travel costs. This also includes a specific budget for student mobility regarding community service. Additional funding is available from partners, such as collaborating companies and organizations. The international office further supports students to apply for governmental funding, which allows the students to stay outside Indonesia for six months. For governmental and institutional scholarships, the students need to fulfil certain criteria including a high academic score and TOEFL test scores.

During the audit, the students prove enthusiastic about the student mobility programmes. They confirm that student mobility programmes are advertised throughout the university. Those students who actually spent time abroad describe the credit transfer as simple.

Still, the incoming and outgoing student numbers are quite low. The experts support UNAND's endeavour to internationalise the university by planning to offer more courses in English. This way, students may be attracted to the programme in the near future.

Periodic review of the curriculum

The periodic review of the curriculum is conducted every five years. UNAND understands the interconnectedness between the programme objectives and the curriculum which is why the review of the curriculum in conjunction with the review of the programme objectives mentioned in criterion 1.1. The curriculum review includes feedback by internal stakeholders (lecturers, programme coordinators and students) as well as external stakeholders (alumni and industrial representatives).

After the review of the programme objectives – in which technological advances, changes in the job market or elsewhere and the quality of the alumni are considered – the responsible people screen whether the curricula still reflect the programme objectives sufficiently. If they do not, they are modified.

Next to the contents of the curriculum the programme coordinators also evaluate the structure of the modules. Since the goal is for students to finish their studies in time, the organisation of the curricula is tested by help of student evaluations and graduation statistics. In the last review they found that students in the Ba Soil Science take more than four years to graduate on average. Reason for that is that the writing of the thesis takes longer than anticipated due to there being not enough equipment in the laboratories which results in longer waiting times. Since then, the main laboratories have been overhauled so that this problem should no longer occur.

During the audit, the external stakeholders confirm their involvement with the curriculum. The industrial partners state that they are asked for feedback and that their suggestions for curricular changes are taken seriously. The programme coordinators corroborate this statement saying that the opinions of the industrial representatives are very important for adjusting the curriculum to be in line with the skills needed in the job market. The experts, generally speaking, are content with the regular review of the curriculum.

Criterion 1.4 Admission Requirements

Evidence:

- Permenristekdikti Number 126 of 2016, concerning Admission of New Undergraduate Students at State Universities
- Regulation of UNAND Rector Number 3 of 2016 concerning Andalas University Academic Regulations by Decree of Rector
- Website of the department: http://tanah.faperta.unand.ac.id/
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

The admission requirements for the Ba Soil Science are built on the two legislative pieces Permenristekdikti Number 126 of 2016, concerning Admission of New Undergraduate Students at State Universities; and Regulation of UNAND Rector Number 3 of 2016 concerning Andalas University Academic Regulations by Decree of Rector. In them, it says that the selection of students in the Bachelor's degree programme is conducted through three channels. The first one is the National Selection Based on Achievement (SNBP), the second one is the National Selection Based on Tests (SNBT), and the last one is the independent selection by UNY. As the names suggest, the first two are held throughout Indonesia, while the third one is designed by the university proper. The quota for each selection channel is given by the university as 20% from SNBP, 35% from SNBT and the remaining 45% from the individual SIMA. Information on these admission channels are given on the website of the Department of Soil Science and Land Resources.

For the Ma Soil Science the process of admission is conducted through document evaluation and followed by a Joint Entrance Examination. Part of this examination is a written test including the Academic Potency Test, as well as the TOEFL. Finally, the prospective Master's students are interviewed individually by the Dean of the Faculty of Agriculture and the head of the study programme. Requirements for students who want to study a Master's at UNAND are a minimal GPA of 2.75, a TOEFL score of 450 and a TPA of 550. Furthermore they need recommendations from two of their undergraduate lecturers.

The experts summarize that UNAND has established admission requirements and procedures, which are binding and transparent. Rules for the recognition of qualifications achieved externally (e.g., at other higher education institutions or outside the higher education sector) are clearly defined.

Criterion 1.5 Workload and Credits

Evidence:

- Module handbook
- Semester study plan
- Decree of the Minister of Education, Research and Technology (ME-RT)Number 3, year 2020
- Conversion table between SKS and ECTS
- Student evaluations
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:

In their self-assessment report, the university describes student workload to be measured by the Indonesian Credit Point System (abbrev. SKS). 1 SKS is equivalent to 170 minutes of work, subcategorised into 50 minutes of face-to-face teaching, 60 minutes of structures assignments and another 60 minutes of self-study. Both curricula under review here are based on modules, the completion of which grants a predetermined amount of SKS. In order to complete a Bachelor's programme, students need to acquire 144 SKS, a Master's requires 36 SKS. The curricula are structured in a way that peaks with many courses can be avoided.

Each module is listed in a module handbook and a semester study plan, in which the amount of SKS is given per course. The conversion to ECTS, where 1 ECTS is given as 30 hours of work, is given as well. According to the experts, the conversion between the two credit systems is transparent and sensible.

The students present during the audit state that the award of credit points follows the workload transparently. Some students find the workload to be higher than credited, with a few complaining about it to the programme coordinators. They claim that particularly the weekly assignments are too demanding and too high in number. The university tries to organise this constant workload efficiently and has had several talks with the students. These talks did not bring about an instantaneous solution but, according to the programme coordinators, convinced the students of the necessity of weekly assignments. The experts want to err on the side of caution in this matter. Generally, they find the workload to be high with many subjects to be covered and many assignments. This workload, granted, does not seem to influence the students' performance in general according to both the graduation

statistics and the majority of students interviewed, but the experts still want to suggest that the university evaluate the practical workload regarding the assignment.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Academic regulation
- Module handbooks
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
According to the Ministry of Research, Technology, and Higher Education, each module needs students to work or study independently, which is why each course features out-of-classroom assignments and homework. The individual teaching and learning methods in each module are adapted to the principles of outcomes-based education and student-centred learning wherever possible. Among the instruction methods used for both programmes are group discussions, simulations, case studies, collaborative learning, cooperative learning, project-based learning as well as case-based methods. While most of the lectures are given face-to-face there is also the opportunity for distant learning.

The learning methods are transparently listed in the module handbooks and semester study plan for the most part. While each course is itemised, the actual learning methods appear to be filled in wrong or are missing. The Ba Soil Science course "Fundamentals of agronomy", e.g., lists as learning and teaching method "LCD & Projector". This particular mistake is repeated throughout the module handbooks. It is unclear whether these mistakes are copying errors or misunderstandings, the experts urge the university to put the information in the module handbooks in order. For a more in-depth examination of the module handbooks and semester study plans see criterion 4.1.

During the audit the teachers state that they try to use as many different teaching methods as possible throughout the semesters to help students get different sorts of input and to strengthen their soft skills. The students confirm this saying that they face a variety of teaching methods in a semester that exceeds ex-cathedra teaching. The assessors welcome the different teaching methods used by the lecturers at UNAND.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 1:

Regarding the focus on tropical soils in the content of the study programmes, the university informs in their statement that all soils are discussed in the study programmes according to USDA Soil Taxonomy or World Reference Base (WRB). Only the practical part of the study programmes focuses on tropical soils, evidently, due to the geographical location of the university. Still, UNAND agrees that the name of the Master's degree programme is not particularly well-fitting and suggests the alternative name "Land Resource Management." The change of name is not a simple procedure, though, so the nomenclature has yet to be altered. Nonetheless, as was already mentioned in the report, the name of both study programmes is fitting the way they are now.

Regarding the high workload for the students the university assumes the reason to be the weekly reports in practical activities. To lower the workload UNAND has proposed to shrink the continuous work to data collection. The experts welcome this proposal and look forward to its implementation.

Lastly, the university concedes that the module handbooks contain copying errors in the teaching methods used in the courses. They make clear that the teachers predominantly make use of Student Centred Learning (SCL), Case Based Method (CBM), and Project Based Method (PBM). The expert team recognise that correction.

After the statement of the university the experts considers criterion 1 to be fulfilled.

2. Exams: System, Concept and Organisation

Criterion 2 Exams: System, Concept and Organisation

Evidence:

- Module handbook and semester study plan
- Academic regulation
- Statistical data
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
UNAND writes in their self-assessment report that the assessment methods are defined by the individual learning outcomes of each module. These are given in the semester learning plan as well as curricular overviews. Exams are supposed to assess the individual's capability of students to understand and to learn course materials given by lecturers. Therefore, exams can be used as an assessment to ensure the quality of teaching-learning process. The type and time for examinations are guided by rules set by the university which in turn are regulated by decrees from the Ministry of Research, Technology, and Higher Education.

Exams are conducted in each semester and usually take place in a dedicated week in the middle of the lecture period (midterms) and at the end (finals). Both exams are in written form and take about 120 minutes. The students report that there are also oral exams, essays and more creative exams like drawing maps. Students who have an attendance rate of at least 75%, and those who can prove sickness or obligations else may take part in the final exam. Since the sequence of each module is already set before the beginning of the semester, the exam dates and types are usually announced with the first lecture and published in the semester learning plan. Students who receive low grades may take a remedial exam. Apart from the two exams, students need to complete different kinds of assessments throughout each semester including exams, quizzes, self-assignments and group assignments. This continuous learning assessment is supposed to help the students to get feedback in their performance and to keep engaging with the material. The students agree to this, stating that they give attention to the material and have an easier time following along the lectures and, at the same time, feel more prepared for the final exams. On the flipside, this means a far higher workload and continuous effort for the students. As was discussed in criterion 1.6, the advantages and drawbacks of this continuous assessment should be checked by the programme coordinators.

Both degree programmes terminate with a mandatory thesis. For the Ba Soil Science, the awarded credit points are 4 SKS; For the Ma Soil Science student acquire 6 SKS. The credit points do not include additional seminars about the proposal of the subject, the research and data collection as well as about the final results. The experts peruse several theses of both programmes during the on-site visit and come to the conclusion that the subject and scientific working greatly satisfy the corresponding EQF level of 6 or 7.

At the end of each semester the students are asked to evaluate the teaching-learning process at the Faculty of Agriculture. The assessment is carried out online in the Academic Portal of UNAND. Students are asked to fill out questionnaires designed by University Quality Assurance Unit. During the audit, both students and lecturers confirm that these evaluations take place regularly. The teachers state that the University Quality Assurance Unit sends the results of the evaluations to the faculty for discussion. If a course is rated poorly,

the respective lecturer and the faculty think about appropriate changes to the course, e.g., changing the teaching or assessment methods. The assessors consider the quality management system regarding exams to be sound and welcome the university's thorough approach to quality assurance.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 2:

The university did not comment on criterion 2. The university considers this criterion to be fulfilled.

3. Resources

Criterion 3.1 Staff and Staff Development

Evidence:

- Decree of the Minister of Research, Technology, and Higher Education No. 7 of 2022
- Staff handbook
- List of research and publications at UNAND
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
The Department of Soil Science and Land Resources currently has the following capacities according to the self-assessment report:

Program study	Total Lecturer	Professor	Doctoral Degree	Master degree
Bachelor of Soil Science	20	7	14	6
Master of soil science	14	7	14	0

Most of the staff for the Ma Soil Science, however, also teaches on a Bachelor's level, bringing the total lecturers amount of staff to 20 lecturers, 14 of whom hold a doctoral degree. Seven teachers are professors. This brings the ratio of lecturers to students to 1:26 in the Ba programme and 1:0.86 in the Ma programme, which is considered ideal by the Indonesian Ministry of Research, Technology, and Higher Education. Lecturers need to pass a certification to prove that they meet competencies expected of teaching personnel. Lecturer certification is carried out through a competency test in a portfolio assessment to obtain an educator certificate. A lecturer can take the qualification test to get Lecturer Certification after two years of teaching. Currently, 90% of teaching staff in the department are certified.

Lecturers in Indonesia have to carry out a Tridharma quota that consists of teaching, researching and community service. Lecturers are awarded credits if they fulfil these quotas with 12-16 credits being expected. This is equivalent to a 37.5 hour work week. The minimum number of credits for teaching and research activities is nine; For community service

and support activities the minimum credits must equal 3. Lecturers carry out scientific research and development to support peer group research and enhance international networks. Research is also carried out collaboratively between groups of colleagues in related fields supported by research grants from various funding sources such as faculties, universities, national institutions as well as internationally. Lecturers regularly involve their students in the research which they may in turn use for their final thesis. Generally, the teachers appear to be quite busy. During the audit they state that they have a high workload with the current amount of students, the research and community service. Taking into account that the student body is supposed to grow over the next years the assessors argue that, even with the current student-teacher ratio the workload for teaching alone cannot be borne by the staff as is. The programme coordinators state during the audit that they want to use automation and digitalisation to alleviate some of the more tedious work but the experts do not think this will be enough in the long run. This is why they suggest hiring more teaching staff and technicians to fulfil all necessary duties for a bigger student body that the university is actively working towards. Given the current circumstances the experts are under the impression that UNAND offers sufficient human resources to ensure the organization of the study programs. This involves supervision, support and counselling students as well as support in administrative and technical tasks. Still, the assessors deem it necessary to increase administrative capacities in accordance with the university's vision and mission.

Lecturers and other educational staff at the Department of Soil Science and Land Resources have the opportunity to develop competencies and skill in the form of trainings. Lecturers especially are encouraged to pursue a higher level of education, particularly those with a Master's degree. The department want to further the share of lecturers with a Doctoral degree from currently 70% to 80% in 2025. UNAND offers trainings to further didactic skills with the help of programmes such as Instructional Technique (PEKERTI) and Applied Approach (AA). All lecturers at the department have undergone this training. Further education is offered in the form of trainings to use tools, such as geographic information systems (GIS), or by offering participation in public lectures by national and international experts. UNAND also invites lecturers from other universities both from within Indonesia and abroad. At last, UNAND encourages lecturers to be part of scientific forums such as national and international conferences. The teachers present during the audit are satisfied with the offers of furthering education at UNAND.

Criterion 3.2 Funds and equipment

Evidence:

- List of equipment of laboratories
- Self-assessment report
- Tour of the facilities
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Universitas Andalas was recognised as a government agency with legal status in 2021. In 2023, the university had a revenue of IDR 891 billion, about 40% came from government funding. The rest came from fees, businesses (e.g., the university hospital) as well as other services. The faculties receive funding from the university level who, in turn, allocate finances to the departments in proportion to the student number in the respective programmes. The respective departments plan their needed budget in a study programme meeting and submits the plans to the faculty. Management, reporting, and accountability for the use of the budget are entirely the responsibility of the faculty. Budget planning is done annually at the faculty level.

Both degree programmes under review here make use of teaching in classrooms, laboratories and in the field. The university provides sufficient facilities such as lecture halls, seminar rooms and administrative rooms for students to study. Moreover, the university provides computer labs where students can use software needed for the study programme. There are two laboratory facilities that are accessible to the students at campus. One is the centralised laboratory, and the second one is the Soil Science laboratory situated at the Department of Soil Science and Land Resources. The centralised laboratory was recently renovated and features a lot of new equipment. Among them are spectrophotometers, AAS, SEM, AFM, GC-MS, elemental analysers for carbon and nitrogen analysis, as well as permeability sets, current meters, soil bores and lab GIS. There are several labs which all accommodate 40-50 students. During the audit, the assessors received a tour of the centralised laboratory to get a full picture of the space and equipment. They are of the opinion that the facility is very well equipped to conduct teaching and research and that machines, tools and devices are up to date. The soil science laboratory, particularly in contrast with the centralised laboratory, appears older and used. Despite its age the laboratory is valuable for the department, as it features equipment for integral parts of the study, e.g., a laboratory on soil fertility parameters. The experts suggest to increase funding for this labor-

atory as it is a vital scene for the study programmes under review here. The university campus borders on a national park which is why field work can be easily arranged at the fringes of campus.

Lastly, the university features a library building with five stories where students can read, meet and work on computers. The library features 140,000 printed books and journals and access to over a million electronic titles. Currently, the library opens from 7.30 am to 6.00 pm but extensions are being discussed. UNAND offers several extracurricular activities, has a sports facility and a student centre on campus, as well as dormitories and a mosque.

The assessors can confirm that the infrastructure at the university is more than sufficient to deliver a suitable environment for lecturers and students to teach/learn, do research and conduct field work. The university offers enough spaces for individual work, as well as classrooms and computers.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 3:

In their statement the university outlines their plan to increase the number of staff at the department. Moreover, they state that they already employed a new lecturer, a lab analyst and an administrator. The experts welcome the willingness to increase the number of staff in accordance with the planned expansion of the student body.

Regarding the funding of the department laboratory the university states that they already have procured new equipment for soil science, as well as improved availability of electricity and water. The experts welcome the constant improvement of the laboratory.

The experts consider criterion 3 to be fulfilled.

4. Transparency and Documentation

Criterion 4.1 Module Descriptions

Evidence:

- Module handbooks
- Website of the department: http://tanah.faperta.unand.ac.id/

Preliminary assessment and analysis of the experts:
Universitas Andalas provided the experts with a module handbook and a semester study plan for both programmes. The module handbooks are available on the website of the department. As a preparation for the audit the assessors check the module handbooks. The outline of the module descriptions is standardised and contains information on the course name and the credits, the teaching methods and assessment forms, as well as the persons responsible for each module. Moreover, the students can learn about the course contents and intended learning outcomes, as well as recommended literature.

As was said before, the module handbooks appear to have several copying or similar mistakes. The teaching methodology is often given as "LCD & projector" or the assessment methods are not complete. The assessors request that the handbooks be reworked to eliminate mistakes like these. Another issue that stands out to the assessors is the recommended literature. The recommendations are for the most part old or even outdated. In the module "Soil Fertility", for example, the literature ranges from 1967-1985. While, understandably, specific textbooks might be standard and used over several years the generally old materials disregarding decades of innovations and changes in the field. This is why the experts the revision of the recommended literature.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Exemplary diplomas
- Exemplary diploma supplements
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
Graduates receive a degree certificate on graduation day by the rector. The degree is handed out in Bahasa Indonesia but an English translation can be issued on request. Next to this certificate the students receive an academic transcript and a diploma supplement. The documents contain all courses taken by the student and the grades achieved, the final mark and its calculation, as well as learning outcomes of the programme. This document is in English and the assessors confirm that it contains all relevant data.

Criterion 4.3 Relevant Rules

Evidence:

- Academic guidebook
- Website of the department: http://tanah.faperta.unand.ac.id/

Preliminary assessment and analysis of the experts:
The statute of Universitas Andalas defines rights and duties of officers on all levels, study programme, faculty and university. Rules and duties for students and lecturers are also stated in the academic guidebook. The guidebook is accessible online. During the audit the students and lecturers confirm that they know about the guides and regulations and that they know where to find them.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 4:

The university has reworked the module handbooks to give all necessary information and get rid of the copying errors. Moreover, they updated the recommended literature to feature more modern papers. The experts look forward to a concise file of the module handbooks to properly check for correctness.

The experts consider criterion 4 to partially fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Academic guidebook
- Self-assessment report
- Discussion during the audit

Preliminary assessment and analysis of the experts:
As was said throughout this report the two study programmes are subject to periodical quality assurance at least every five years. The university then checks the viability of the learning outcomes in conjunction with the job market and the curriculum. UNAND invites internal and external stakeholders which include lecturers, students, as well as alumni and

representatives of institutes and the industry. Additionally, the department conducts evaluations regularly after every semester to gauge the students' opinion on courses, assessments and the performance of lecturers.

The quality assurance for the two programmes under review has policies developed on the university level and monitored by the Quality Assurance Unit on the faculty level. The department level has another assurance unit called the Quality Control Unit. Every year, all study programmes are subject to an internal quality audit where university standards are evaluated.

The assessors interview the various stakeholders during the audit to find out how the quality management is conducted and perceived. The stakeholders state unanimously that UNAND regularly asks for feedback in the form of questionnaires, interviews and discussions, and that feedback is considered and taken seriously. The students further confirm their involvement with the questionnaires after each course. The university communicates the results of questionnaires as well as intended consequences that follow from the feedback. Generally, the assessors are content with the quality assurance management of UNAND and the department.

Final assessment of the experts after the comment of the Higher Education Institution regarding criterion 5:

The university did not hand in a statement for criterion 5. The experts consider this criterion to be fulfilled.

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

No additional documents needed

E Comment of the Higher Education Institution (02.09.2024)

The following quotes the comment of the institution:

Criterion 1.2 Name of the Degree Program p 10	They state that the curricula have a heavy focus on tropical soils with other types of soil being disregarded.	Our department strongly focuses on tropical soils without disregarding other soils in the world. Our study program discusses all types of soils either based on Soil Taxonomy USDA or on World Reference Base (WRB). However, student and lecturer researches are about tropical soils, because there are only tropical soils in our environment. Here is attached of semester learning plan of Soil Morphology and Classification, it's can be seen here.
Criterion 1.2 Name of the Degree Program p 10	The department formulates as a goal …, which according to the assessors could signify a need to use a less vague naming scheme	As suggested, we prefer to change the Master Study Program of Soil Science into **Land Resource Management**. For this, we need to learn the nomenclature given by our ministry and our study program for Master Degree and to discuss with the dean of Agriculture Faculty and Rector of Universitas Andalas.
Criterion 1.5 Workload and Credits p.15	Generally, they find the workload to be high …, but the experts still want to suggest that the university evaluate the practical workload regarding the assignment.	High workload for the practical activities could be due to weekly report, because every student has to write down the report each week for each practical object, besides final report for the whole ones at the end. The workload will be reduced by changing the weekly report to just collect data of each object every week.

Criterion 1.6. Didactic and Teaching Methodology p.17	The Ba Soil Science course "Fundamentals of agronomy", e.g., lists as learning and teaching method "LCD & Projector"	This is not a misunderstanding, but a copying error. The methods of teaching are mostly **Student Centered Learning (SCL), Case Based Method (CBM), and Project Based Method (PBM)** as attached at RPS (Semester Learning Plan). The new Handbook is attached in website of Department of Soil Science and Land Resources. Here the link of Sylabus Modul Handbook Ba. Soil Science and Ma. Soil Science Study Program.
Criterion 3.1. Staff and Staff Development p.21	This is why they suggest hiring more teaching staff and technicians to fulfil … This involves supervision, support and counselling students as well as support in administrative and technical tasks. Still, the assessors deem it necessary to increase administrative capacities in accordance with the university's vision and mission.	Universitas Andalas step by step will fulfill the vacancies in lecturer, administrator, and lab analyst for The Department of Soil Science and Land Resources through Faculty of Agriculture request. For this year (2024) we have had a new lecturer in the field of GIS and Remote Sensing, 1 additional lab analyst, and 1 administrator. The formation of staff members of the Department of Soil Science and Land Resources are attached here (Indonesian) and here (English). Dean Letter is attached here.
Criterion 3.2. Funds and equitment p.22-23	The experts suggest to increase funding for this laboratory as it is a vital scene for the study programmes under review here. The university campus borders on a national park which is why field	As for human resources, there is a commitment of the Rector of Universitas Andalas through Dean of Agriculture Faculty to increase funding for soil laboratory equipment each year. Besides some fund could be raised incidentally, such as from ministry of Education, from ministry of Agriculture, etc. For this year 2024, soil laboratory have been facilitated with some new equipment, such as: 1. Vertical Laminar Air Flow 2. Digital Electromagnetic siev3 shaker 3. Industrial Flame photometer 4. Vortex mixer 5. High speed Refrigerated micro centrifuge 6. Water Purification System

	work can be easily arranged at the fringes of campus.	7. Autoclave Steam Sterilizer LAC 5060SD 8. Shaking Incubator LSI 3016R 9. Refrigerated Centrifuge for Life Science ... etc. The pictures of the equipment are attached here. The additional equipment is facilitated with better electricity and water availability at laboratories. The statement of The Record of Universitas Andalas as follows through the Statement Letter of Dean can be seen here.
Criterion 4.1. Module Description p.24	The assessors request that the handbooks be reworked to eliminate mistakes like these.	We have reworked for the handbook, the sample can be seen here. (all have been uploaded on the website)
	The recommendations are for the most part old or even outdated. This is why the experts the revision of the recommended literature.	We have already revised the Literature in RPS for each course. The examples are attached and can be seen here.

F Summary: Expert recommendations (03.09.2024)

Taking into account the additional information and the comments given by UNAND the peers summarize their analysis and **final assessment** for the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label
Ba Soil Science	With requirements for one year	30.09.2030	–
Ma Soil Science	With requirements for one year	30.09.2030	–

Requirements

For all programmes

A 1. (ASIIN 4.1) The module handbooks need to be made accessible in full to all interested parties.

Recommendations

For all programmes

E 1. (ASIIN 1.5) It is recommended to evaluate the students' workload for assignments.

E 2. (ASIIN 3.1) It is recommended to consider hiring more teaching staff and technicians to fulfil all duties for a bigger student body.

E 3. (ASIIN 3.2) It is recommended to increase the funding for the Soil Science laboratory.

E 4. (ASIIN 4.1) It is recommended to further opportunities for lecturers to improve their English proficiency.

G Comment of the Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture (16.09.2024)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the procedure and follows the suggestions of the expert panel without changes.

The Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label
Ba Soil Science	With requirements for one year	30.09.2030	–
Ma Soil Science	With requirements for one year	30.09.2030	–

Requirements

For all programmes

A 1. (ASIIN 4.1) The module handbooks need to be made accessible, in full, to all interested parties.

Recommendations

For all programmes

E 1. (ASIIN 1.5) It is recommended to evaluate the students' workload for assignments.

E 2. (ASIIN 3.1) It is recommended to consider hiring more teaching staff and technicians to fulfil all duties for a bigger student body.

E 3. (ASIIN 3.2) It is recommended to increase the funding for the Soil Science laboratory.

E 4. (ASIIN 4.1) It is recommended to further opportunities for lecturers to improve their English proficiency.

H Decision of the Accreditation Commission (26.09.2024)

Assessment and analysis for the award of the subject-specific ASIIN seal:

The Accreditation Commission discusses the procedure and follows the suggestions made by the expert team and the Technical Committee.

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label
Ba Soil Science	With requirements for one year	30.09.2030	–
Ma Soil Science	With requirements for one year	30.09.2030	–

Requirements

For all programmes

A 1. (ASIIN 4.1) The module handbooks need to be made accessible in full to all interested parties.

Recommendations

For all programmes

E 1. (ASIIN 1.5) It is recommended to evaluate the students' workload for assignments.

E 2. (ASIIN 3.1) It is recommended to consider hiring more teaching staff and technicians to fulfil all duties for a bigger student body.

E 3. (ASIIN 3.2) It is recommended to increase the funding for the Soil Science laboratory.

E 4. (ASIIN 4.1) It is recommended to further opportunities for lecturers to improve their English proficiency.

I Fulfilment of Requirements

Analysis of the Experts and the Technical Committee (11.09.2025)

Requirements

For both degree programmes

A 1. (ASIIN 4.1) The module handbooks need to be made accessible in full to all interested parties.

Initial Treatment	
Experts	fulfilled Vote: per majority Justification: The university has published the module handbooks on its website and social media platforms, although access is limited due to safety issues. However, all people associated with the university can access the handbooks via the LMS, which satisfies the experts.
TC 08	fulfilled Vote: unanimous Justification: The TC follows the recommendation of the experts.

Decision of the Accreditation Commission (26.09.2025)

Degree programme	**ASIIN-label**	**Subject-specific label**	**Accreditation until max.**
Ba Soil Science	All requirements fulfilled	-	30.09.2030
Ma Soil Science	All requirements fulfilled	-	30.09.2030

Appendix: Programme Learning Outcomes and Curricula

According to the website of the Faculty of Agriculture (accessed 30 July 24) the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Soil Science:

ILO-1 : Able to apply basic agricultural sciences widely in overcoming agricultural problems for sustainable agricultural development

ILO-2 : Able to identify, analyze and solve the land problems in increasing productivity and quality for sustainable agricultural development

ILO-3: Able to use methods for soil and plant analysis in land resources management

ILO-4: Able to recognize professional responsibilities to make decision in soil and land management

ILO-5: Able to acquire and apply in new knowledge as needed with appropriate learning strategies

ILO-6: Able to build teamwork among different scientific backgrounds.

ILO-7: Able to communicate with in different community backgrounds and/or levels.

The following **curriculum** is presented:

1st Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MWU601 04	Indonesian	2 (2-0)	3.7	36.3	54.6
MWU601 03	Civic Education	3 (3-0)	3.7	36.3	54.6
PTN611 01	Biology	3 (2-1)	3.6	39.3	45.8
PTN611 02	Fundamental of Agronomy	3 (2-1)	3.6	39.3	45.8
KIM611 05	Chemistry	3 (2-1)	3.6	39.3	45.8
PTN611 04	Introduction to Agricultural Science	2 (2-0)	3.7	36.3	54.6
AGT611 02	Mathematics	3 (2-1)	3.6	39.3	45.8
PTN611 03	Introduction to Ecology	2 (2-0)	3.5	42	54.6
PAB611 01	Fundamental of Management	2 (2-0)	3,7	36.3	54.6
Sub-Total		23 sks sks	32.9	344.4	456.2

2nd Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MWU601 02	Pancasila Education	3 (3-0)	3.5	42	44
MWU601 01	Religious Study	2 (2-0)	3,7	36.3	54.6
PIT621 01	Agroclimatology	3 (2-1)	3.6	39.3	45.8
PTN621 01	Fundamental of Soil Science	3 (2-1)	3.6	39.3	45.8
PTN621 02	Fundamental of Plant Protection	3 (2-1)	3.6	39.3	45.8
PTN621 03	English For Academic Purpose (agriculture)	3 (3-0)	3.7	36.3	54.6
PTN621 04	Physics	3 (2-1)	3.6	36.3	45.8
AGT621 01	Fundamental of Plant Physiology	3 (2-1)	3.6	36.3	45.8
Sub-Total		23 sks	28.9	305.1	382.2

3rd Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
PTN 611 05	Statistics	3 (3-0)	3.9	55	44
PIT 611 01	Agrogeology	3 (2-1)	3.6	39.3	45.8
PIT 611 02	Soil Physics	3 (2-1)	3.6	39.3	45.8
PIT 611 03	Soil Fertility	3 (2-1)	3.6	39.3	45.8
PIT 611 06	Communication technique and presentation	1 (1-0)	2.9	24.6	44
PIT 611 04	Soil and Water Conservation	3 (2-1)	3.6	39.3	45.8
PIT 611 05	Soil Morphology and Classification	3 (2-1)	3.6	39.3	45.8
PIT612 01	Applied Agroclimatology	3 (2- 1)	3.6	39.3	45.8
PIT612 02	English for scientific Purposes	2 (2-0)	3.7	49.3	54.6
PPT611 01	Agriculture Microbiology	3 (2-1)	3.6	39.3	45.8
PAB611 05	Introduction to Economics	2 (2-0)	3.7	36.3	54.6
PAB611 06	Sociology and Agriculture	2 (2- 0)	3.7	36.3	54.6
Sub-Total	29 sks	43.1	476.6	618.2	

4th Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
PTN621 05	Experimental Design	3 (3-0)	3.9	55	44
PIT621 02	Soil Biology	3 (2-1)	3.6	39.3	45.8
PIT621 03	Agricultural Hydrology	3 (2-1)	3.6	39.3	45.8
PIT621 05	Soil Chemistry	3 (2-1)	3.6	39.3	45.8
PIT621 04	Cadastral and Cartography	3 (2-1)	3.6	39.3	45.8
PIT621 06	Geomorphology and Landscape Analysis	2 (2-0)	3.7	36.3	44
PIT621 08	Fertilizer and Fertility Management	3 (2-1)	3.6	39.3	45.8
PIT621 09	Survey and Land Evaluation	3 (2-1)	3.6	39.3	45.8
PTN622 01	Organic Farming System	3 (2-1)	3.6	39.3	45.8
PIT622 01	Remote Sensing	3 (2-1)	3.6	39.3	45.8
AGT621 05	Horticulture Crop Production	3 (2-1)	3.6	39.3	45.8
AGT621 06	Food Crop Production	3 (2-1)	3.6	39.3	45.8
AGT621 07	Estate Crop Production	3 (2-1)	3.6	39.3	45.8
Sub-Total		38 sks	47.2	523.6	546

5th Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
PTN611 06	Scientific methods	3 (2-1)	3.9	55	44
PIT612 03	Agroforestry	2 (2-0)	3.7	36.3	54.6
PIT612 04	Soil and Plant Analysis	3 (2-1)	3.6	39.3	45.8
PIT612 05	Irrigation and Drainage	3 (2-1)	3.6	39.3	45.8
PIT612 06	Wetland Management	2 (2-0)	3.7	36.3	54.6
PIT612 07	Dryland Management	2 (2-0)	3.7	36.3	54.6
PIT612 09	Radioisotopes in Soil and Plant Studies	3 (2-1)	3.6	39.3	45.8
PIT612 08	Land Resources Information System	3 (2-1)	3.6	39.3	45.8
PAB611 02	Fundamental of extension and communication	3 (2-1)	3.6	39.3	45.8
Sub Total		**24 sks**	33	360.1	436.8

6th Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
AND601 02	Agribusiness andEntrepreneurship	3 (2-1)	3.6	39.3	45.8
PIT621 07	Field Study	1 (1-0)	0.2	6.7	0
PTN622 02	Integrated farming system	3 (2-1)	3.7	36.3	54.6
PIT622 02	Soil Biotechnology	3 (2-1)	3.6	39.3	45.8
PIT622 03	Soil Mineralogy	3 (2-1)	3.6	39.3	45.8
PIT622 04	Regional development and planning	3 (2-1)	3.6	39.3	45.8
PIT622 05	Reclamation and soilbioremediation	3 (2-1)	3.6	39.3	45.8
Sub-Total		19 sks	21.9	239.5	283.6

7th Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
AND601 01	Student field service	4 (0 + 4)	1.5	-	-
PTN601 01	Internship	2 (2 - 0)	1	-	-
PIT612 09	Fundamental of Environmental ImpactAnalysis	2 (2-0)	3.7	36.3	54.6
PIT612 10	Watershed Management	2 (2- 0)	3.7	36.3	54.6
PIT612 11	Landuse and Agrarian	3 (2-1)	3.6	39.3	45.8
PIT612 12	Writing Technique /TOEFL	1 (1-0)	2.9	24.6	44
Sub-Total	15 sks	11.3	136.5	199	

8th Semester

Code	Course Module	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
PAF421	Research Proposal Seminar	1(0-1)	0.3	1.1	-
PAF422	Research Result Seminar	1(0-1)	0.3	1.1	-
PAF423	Skripsi	4(0-4)	3.3	-	100
Sub-Total		6 sks	3.9	2.2	100

According to the website of the Faculty of Agriculture (accessed 30 July 24) the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Soil Science:

ILO-1 Able to analyze and interpret any soil properties and characteristics to determine the potential and the constraints in utilizing the soils, natural resource, and environment

ILO-2 Able to classify, evaluate the capability and the suitability of the land, as well as to determine the alternative uses for achieving sustainable agriculture and environment

ILO-3 Able to utilize technology in determining and solving problems in soil, land resource, and the environment independently, capably, and detectably.

ILO-4 Able to develop knowledge and professionalism, as well as to be a driving force for sustainable agricultural development.

ILO-5 Able to innovate in the development of science and business/industry in soil and land resource

The following **curriculum** is presented:

1st Semester

Code	Course Name	Credit (CP)	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MIT 81101	Soil Genesis and Classification	3(2-1)	8.18	53.33	192
MIT 81102	Advanced Soil Physics	3(2-1)	8.18	53.33	192
MIT 81103	Advanced Soil Fertility	3(2-1)	8.18	53.33	192
MIT 81204	Clay mineralogy	3(3-0)	7.73	40	192
MIT 81205	Advanced Soil and Water Conservation	3(2-1)	8.18	53.33	192
STK 511	Applied Statistics	3(3-0)	7.73	40	192
AGR 534	Plant Ecophysiology	3(3-0)	7.73	40	192
MIT 00000	Matriculation	3(2-1)	8.18	53.33	192
Sub-Total		**24(19-5)**	**64.09**	**386.65**	**1536**

2nd Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MIT 82118	Advanced Soil Biology	3 (2-1)	8.18	53.33	192
MIT 82119	Advanced Soil Chemistry	3 (2-1)	8.18	53.33	192
MIT 82120	Integrated Watershed Management	3 (3-0)	7.73	40	192
MIT 82221	Land Suitability Evaluation	3 (2-1)	8.18	53.33	192
MIT 82222	Peatland Management	3 (3-0)	7.73	40	192
MIT 82223	Remote Sensing (RS)	3 (2-1)	8.17	53	192
PAF 524	Research methodology	3 (3-0)	7.73	40	192
Sub-Total		21(17-4)	**55.90**	**332.99**	**1344**

3rd Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MIT 81206	Research Plan Seminar	1 (0-1)	4.00	0	120
MIT 81207	Advanced Soil and Plant Analysis	3 (2-1)	8.18	53.33	192
MIT 81208	Geographical Information System	3 (2-1)	8.18	53.33	192
MIT 81209	Spatial Planning	3 (2-1)	8.18	53.33	192
MIT 81210	Soil and Environment	3 (3-0)	7.73	40	192
MIT 81211	Rice Field Management	3 (3-0)	7.73	40	192
MIT 81226	Wet Tropical Dryland Management	3(3-0)	7.73	40	192
Sub-Total		19 (15-4)	31.70	279.99	1272

4th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MIT 80124	Research Results Seminar	2 (0-2)	4.00	0	120
MIT 80125	Thesis	8 (0-6)	24.00	0	720
MIT 80126	Publication of scientific articles in accredited national/international reputable journals	3 (0-3)	9.07	0	272
MIT 80227	Publication of scientific articles in unaccredited national/international journals is not reputable	3 (0-3)	9.07	0	272
MIT 80228	Poster Presentation at the National Seminar	1 (0-1)	3.02	0	90.6
MIT 80229	Poster Presentation at International Seminar	1 (0-1)	3.02	0	90.6
MIT 80230	Oral Presentation at International Seminars	2 (0-2)	6.40	0	192
MIT 80231	Oral presentation at a national seminar	1 (0-1)	3.02	0	90.6
Sub-Total		19 (0-19)	61.59	0	1847.8