ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes
Ba Animal Science
Ba Soil Science
Ba Agrotechnology

Provided by
Universitas Sebelas Maret

Version: 18.03.2022

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]
Ilmu Peternakan	Bachelor of Animal Science	ASIIN	--	08
Ilmu Tanah	Bachelor of Soil Science	ASIIN	--	11
Agroteknologi	Bachelor of Agrotechnology	ASIIN	--	08
Date of the contract: 30.10.2020 **Submission of the final version of the self-assessment report:** 30.06.2021 **Date of the onsite visit:** 11.-13.10.2021 **at: online**				
Peer panel: Prof. Dr. Bernhard Hiebl, University of Veterinary Medicine Hannover Prof. Dr. Bernhard Seggewiß, University of Applied Sciences Neubrandenburg Dipl. Agr. Thomas Illies, Tradecorp International S.A.U. Dorowati Rifalus Solehah, Universitas Gadjah Mada, student representative				
Representative of the ASIIN headquarter: Yanna Sumkötter				
Responsible decision-making committee: Accreditation Commission				
Criteria used: European Standards and Guidelines as of 15.05.2015				

[1] ASIIN Seal for degree programmes

[2] TC: Technical Committee for the following subject areas: TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture; TC 11 - Geosciences

ASIIN General Criteria, as of 10.12.2015 Subject-Specific Criteria of Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture as of 27.03.2021 Subject-Specific Criteria of Technical Committee 11 – Geosciences as of 09.12.2011	

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
Animal Science	S. Pt./ B.Sc.	1. Animal Production 2. Animal Nutrition and Feed 3. Animal Product Processing Industry 4. Socioeconomy of Animal Husbandry	6	Full time	--	8 semesters	144 SKS equivalent to 261.12 ECTS	Annually/ August
Soil Science	S.P./ B. Sc.	1. Soil Chemistry and Fertility 2. Soil Physic and Conservation 3. Soil Biology and Biotechnology 4. Pedology and Soil Survey 5. Climatology	6	Full time	--	8 semesters	144 SKS equivalent to 261.12 ECTS	Annually/ August
Agrotechnology	S.P./ B.Sc.	1. Plant Production 2. Plant Protection 3. Plant Breeding	6	Full time	--	8 semesters	144 SKS equivalent to 261.12 ECTS	Annually/ August

For the Bachelor's degree programme Animal Science the institution has presented the following profile on their website:

"The challenge in developing the world of livestock in Indonesia is an effort to increase livestock productivity. This is in line with the increase in demand for animal food products as a result of population growth, locally, nationally and globally. The potential of natural resources and the availability of local livestock require assets that require serious handling in order to achieve self-sufficiency in food from livestock. In the future, the challenges of livestock development will become more complex related to strategic issues such as zoonotic diseases, climate change and genetic erosion of both plants and animals. For this purpose, competent human resources are needed who can control the livestock development

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

program to be more focused, in addition to being able to master technology that is constantly evolving to solve problems in the field of animal science. Animal science is no longer a field that can be underestimated, with low competence and without technology. Currently, livestock is transformed into a field that plays an important role for health, development of future generations and is full of applications of modern biotechnology. For this reason, a Bachelor of Animal Science is needed to answer the challenges of industrialization in the field of animal husbandry that is environmentally friendly, sustainable and profitable."

The study programme thus pursues the following mission:

1. „Conducting educational in the animal science fields to produce graduates who are competent and devoted.
2. Conducting research to develop science / technology that is useful for the development of animal science.
3. Held a dedication to the community to implement and disseminate the science / technology"

and the following goals:

1. "Produce graduates who are knowledgeable, capable, skilled, acting, personality and high-toned character.
2. Generate knowledge / innovative and superior technology for the development of a sustainable and integrated farming
3. Implement and disseminate the science / technology to the public in order to promote sustainable and integrated farming systems
4. Develop an internal management system / management institution for the implementation capable of supporting education, research and dedication to the community."

For the Bachelor's degree programme Soil Science the institution has presented the following profile on their website:

"Soil has a very vital role for all life on earth, not only as a medium for growing plants, but also as a support for human life that aims for the benefit of all living things. Strategic issues that are still echoing related to land resources include increasing population density, food and energy sovereignty, regional infrastructure, land tenure and use, climate change, mar-

ginal land, land degradation and land conversion and agricultural development. This problem is a challenge for a soil scientist that must be faced and solved. Soil science graduates have the ability to identify, analyze, plan, utilize and evaluate the potential of land resources and are able to adopt technology and are committed to developing soil sciences and land resource management and applying them to the community for sustainable national development."

The study programme thus pursues the following mission:

1. "Providing quality education to produce graduates in the field of Soil Science and Watershed Land Resources to support Sustainable Agricultural Development.
2. Carrying out research to develop science and technology in the field of Soil and Watershed Land Resources to support Sustainable Agricultural Development.
3. Carrying out community service by applying science and technology in the fields of land and watershed land resources to support sustainable agriculture.

and the following goals:

1. To produce competent and professional graduates in the field of soil science and watershed land resources based on the principles of sustainable agriculture.
2. Produce innovative and superior research work for the development of science and technology in the field of land and watershed land resources based on the principles of sustainable agriculture.
3. Disseminate science and technology in the field of land management and watershed land resources to the community."

For the Bachelor's degree programme Agrotechnology the institution has presented the following profile on their website:

"Nowadays, agriculture faces many challenges. Agriculture is more complex as well as unpredictable than before. There are growing pressures from limited arable land, soil erosion, biodiversity loss, and climate change, as well as from consumers' changing preferences in food, fiber, fuel, concerns about how it is produced and the impact to the environment. Undeniable, the natural interaction of plants, pests and diseases also continue to pose their own challenges. Farmers must meet the changing needs of our planet. Additionally, farmers and agriculture as a business has to meet the expectations of regulators, consumers, and food processors and retailers. Farmers need to deal with many problems. For these reasons, Bachelor of Agrotechnology is the agent to answer the challenge of agriculture.

Bachelor of Agrotechnology is educated to adopt and learn new technologies on the basis of agriculture as a holistic ecosystem with all its uniqueness. Bachelor of Agrotechnology is the future farmer who will meet rising demand for higher quality of agriculture product as well as inspire young people."

The study programme thus pursues the following mission:

1. "Organizing education in the field of plant cultivation to produce competent graduates in realizing sustainable integrated agriculture
2. Carrying out research that leads to the development of science and technology to solve problems in the field of crop cultivation, especially local superior plants
3. Carrying out community service for the applications of the result of the development of science and technology.
4. Increase and develop cooperation at the national and international level.

and the following goals:

1. Competence in the field of plant cultivation which includes aspects of land resources, agronomy, and plant protection based on local wisdom.
2. Able to innovate in applying science and technology.
3. Have leadership and managerial abilities, and are adaptive to the environment.
4. Able to communicate and work together.
5. Upholding professional ethics.
6. Produce research products that enrich the repertoire of science and technology in the field of plant cultivation, especially local superior plants, and contribute to solving agricultural problems.
7. Disseminate and implement science and technology findings to the public.
8. Producing networking (networking) cooperation to improve the quality of institutions and graduates."

C Peer 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:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions of the degree programme
- Websites
- Discussions during the audit
- Graduate profile for each degree programme
- Programme learning outcomes for each degree programme
- Interrelation subject-specific criteria and programme learning outcomes for each degree programme
- Objective-module-matrices for both degree programmes

Preliminary assessment and analysis of the peers:

The peers refer to the respective ASIIN Subject-Specific Criteria (SSC) of the Technical Committees 8 (Agriculture, Nutritional Sciences and Landscape Architecture) and 11 (Geosciences), respectively**,** the objective-module-matrices for each degree programme, the matching learning objectives and the modules as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Soil Science, the Bachelor's degree programme Agrotechnology and the Bachelor's degree programme Animal Science correspond with the competences as outlined by the SSC. The descriptions of the qualification objectives are comprehensive and include the achieved competencies and possible career opportunities of the graduates. These are made accessible to all stakeholders as they can be found on UNS' website.

According to the self-assessment report, graduates of the Animal Science degree programme are capable to work in several professions, especially as entrepreneurs in livestock industry, scientists and managers in the animal science field. The competencies, which must be acquired by each student, are the following:

Manager (planner, designer, organizer, evaluator, mediator):

- Having leadership, managerial and adaptation to environment, as well as a creative, innovative, responsive in planning, implementing and evaluating livestock production system in accordance with the principles of sustainable livestock.
- Being able to actualize the self-potential to work in team

Entrepreneur in livestock industry (entrepreneur, initiator, adaptor, cooperator)

- Being able to apply science knowledge and technology in the field of livestock production based on the principles of sustainable livestock, both in modern world or local wisdom
- Courageous to start, implement, and develop business in sustainable livestock
- Being able to create collaboration (negociate and communicate) effectively
- Being able to innovate in applying science knowledge and technology in the field of animal science to the business practices
- Being able to apply business ethic that environmental friendly

Scientist:

- Being able to identify, analyze and formulate issue in the sustainable livestock precisely
- Being able to design and conduct teaching and research professionally
- Being able to make recommendation in solving problem in sustainable livestock system appropriately
- Upholding the principles of scientific ethics
- Being able to apply scientific principles in formulating, analysing and solving problems in animal science sector
- Having the ability to communicate both in oral and writing communication

Communicator (facilitator, motivator and mediator):

- Having long-life learning ability

- Being able to think analytically and synthesis by considering the impact of problem solving in global scope in social life
- Having the ability as a facilitator, motivator, and mediator systematically and effectively to solve the problem of livestock production in the community
- Being able to communicate the thought orally or in writing form, individually or in team

The Programme Learning Outcomes (PLO) of the Bachelor's degree programme Animal Science fulfil the Indonesian Qualification Framework (IQF) standard for undergraduate education and are in line with the faculty's mission and vision. The consistency with the university's mission is achieved by producing graduates with strong enthusiasm to learn and master the knowledge of animal science as well as related topics. UNS has formulated ten Programme Learning Outcomes (PLOs).

Judging from an objectives-matrix that links the ten PLOs to the Subject-Specific Criteria for Bachelor's degree programme Animal Science as well as an objective-module-matrix that delineates in which modules students learn the skills purposed in the PLOs, the peers see that the objectives and intended learning outcomes of the study programme are suitable to produce qualified graduates.

With regard to the job market perspectives and practical relevance of the field of animal science, UNS states in the self-assessment report (SAR) that information on graduate placement in the labour market is conducted through a continuous tracer study every five years, yet data is also regularly added to the study through information gathered on various social network platforms. The peers learn that most of the graduates are employed in the field of dairy production. In the discussions with the students, the peers also learn that the students are very confident in finding a job after graduating and that around 10% of them are interested in continuing their studies. UNS also offers a consecutive Master's programme in Animal Science. Furthermore, the peers acknowledge that there is sufficient support for the students regarding their strategies for finding a suitable career (s. criterion 1.4).

Graduates from the Bachelor's degree programme Soil Science are also able to find employment in the palm oil industry, become a researcher at a respective research institute or an advisor in the field of management of tropical agricultural land resources. In the discussion with the students, the peers learn that most of the graduates will find employment in coffee, cocoa and palm oil-related industries but that some also continue their studies at the consecutive Master's programme at UNS.

With regard to the objectives and learning outcomes of the study programme Soil Science,

the peers notice that UNS has set up a variety of different Learning Outcomes for the study programme, among them Programme Learning Outcomes (PLO) and Programme Educational Objectives (PEO). The PEO are also known as the Graduate Profiles (GP) and describe what the graduates are expected to achieve at least five years prior to graduation. The department of Soil Science has formulated three PEOs, namely the PEO of knowledge, skills and character. The Programme Learning Outcomes are derived from the learning objectives and cover three elements: attitude, knowledge and skills.

According to the self-assessment report, graduates of the Agrotechnology degree programme are capable to work in five professions, namely as a practitioner of plant production business activities, researcher in the fields of plant production, manager of plant production business, mediator in agricultural business development or as an entrepreneur. The competencies, which must be acquired by each student, are the following:

Practitioner:

- Able to plan and manage plant production business activities that are sustainable and adaptive to technological developments

Researcher:

- Able to identify problems, plan, implement, and analyze the results of research development in the field of plant production technology that is productive, effective, efficient, and communicates orally or in the form of scientific papers

Manager:

- Able to plan, design, initiate, coordinate, evaluate, and as a mediator of plant production business based on the latest science and technology in agriculture

Entrepreneur:

- Able to be an initiator, adapter, cooperator who can capture and develop prospective business opportunities in agriculture

Communicator:

- Able to act as facilitators, motivators, and mediators in agricultural business development

With regard to the job market perspectives and practical relevance of the field of agrotechnology, UNS states that the footprint of industrial agriculture in the Surakarta area makes

this area a strategic position nationally in the contribution of national income from the agricultural sector. Apart from the plantation agriculture sector, the seasonal agricultural sector which encompasses rice and palm oil in the Surakarta area also serves as the largest contributor at national scale. As Indonesia has such a huge agrotechnology potential, the need for qualified workers is constantly rising and chances of employment after graduating from UNS are adequate.

In summary, the auditors are convinced that the intended qualification profiles of the three undergraduate programmes under review allow students to take up an occupation, which corresponds to their qualification. The peers agree that the qualification objectives of all programmes adhere to level 6 of the European Qualification Framework, which relates to Bachelor's programmes, and to the respective ASIIN Subject-Specific Criteria of the Technical Committees 8 and 11, respectively. They aim at the acquisition of subject-specific competences and are generally formulated clearly and precisely.

The peers appreciate that a regular revision process for the objectives, learning outcomes and curricula of the programmes is in place. Every five years, a larger revision takes place that includes internal as well as external stakeholders, while minor changes are made regularly. The students, alumni and representatives of schools and the private sector confirm that they are actively involved in these processes.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The titles of the degree programmes follow the rules for naming study programmes set by the Indonesian Ministry of Education. The peers hold the opinion that the English translation and the original Indonesian name of the Bachelor's degree programmes Soil Science and Animal Science correspond with the intended aims and learning outcomes as well as the main course language.

However, the peers ask about the real difference between the Soil Science and the Agrotechnology degree programmes and learn that while the Soil Science degree programme focuses on Soil Science, the Agrotechnology degree programme concentrates on plant production rather than on the technology aspect. Moreover, the industry representatives explain that, as the Agrotechnology degree programme primarily trains farmers, students of

this degree programme need to acquire better knowledge in the field of technology. The industry tries to invest in and promote sustainable agriculture and therefore needs the farmers to produce eco-friendly products using new technologies. Accordingly, the peers ask which modules deal with modern technologies and learn that in the Agrotechnology degree programme, this aspect is taught in the modules "introduction to precision farming", "agricultural tools and machinery" as well as "sustainable agriculture". In the Soil Science degree programme, the module "geographic information system" deals with this aspect. However, the peers rate this as insufficient with regard to the title of the programme. Furthermore, the peers think that the title of a degree programme is of paramount importance when collaborating with a foreign university or during a job interview and must match the content. Thus, the peers underline that the name of the degree programme, its intended learning outcomes and its content have to correspond with each other.

Criterion 1.3 Curriculum

Evidence:

- Websites
- Self-Assessment Report
- Discussions during the audit
- Objective-module-matrices for each degree programme
- Study plans for each degree programme
- Module descriptions for each degree programme
- Overview of different stages in the curriculum development in the degree programmes
- Overview of graduate tracer study result for each degree programme
- Overview of correlation between learning outcomes and graduate profile for each degree programme
- Overview of curriculum structure in each degree programme

Preliminary assessment and analysis of the peers:

The curricula of the degree programmes are designed to comply with the programme objectives and learning outcomes and they are subject to constant revision processes. As such, the curricula are reviewed regularly and commented on by students and teachers as well as by external stakeholders such as alumni or partners from schools and the private sector. Regular changes are made to ensure that the curricula are up to modern standards. Besides the objectives and learning outcomes defined by UNS itself, the curricula also take into

account the Indonesian standards of higher education and the Indonesian national qualifications framework as well as the recommendations from industry.
The courses in all degree programmes fall into three different categories: basic courses for character development, courses on subject matter and expertise as well as elective courses. The ratio between these categories is as follows in the three degree programmes: all degree programmes feature 12 SKS (see criterion 2.2 for more details) of basic courses for character development, 15 SKS of elective courses in the Animal Science and Soil Science degree programmes and 19 SKS in the Agrotechnology degree programme as well as 129 SKS of mandatory courses on subject matter and expertise in the Animal Science and Soil Science degree programmes and 125 SKS in the Agrotechnology degree programme. Of the latter, a field work practice makes up 2 SKS, the mandatory community service another 3 SKS. The peers learn that the students are quite satisfied with the ratio between the different types of courses, as they can acquire broad knowledge and choose their own focus through the choice of elective modules.

The students of the Animal Science degree programme get an overview of biology, organic chemistry, animal physiology, dairy and meat production, management of meat and labour animal production, farm management as well as fundamentals of entrepreneurship needed for their studies in the first five semesters. This is the reason why these semesters are mostly filled with basic courses for character development and mandatory courses on subject matter and expertise. Besides the theoretical classes, they also acquire practical competences through experimental courses in various areas. Moreover, in semesters 3 to 6, the students can choose from a wide range of electives covering advanced and specialised fields of animal science. The mandatory elements of fieldwork practice and community service are located in the seventh semester. The students prepare their undergraduate thesis, which is written in the seventh and final semester, through the module “Experimental Design” in semester 6 by drafting a topic and handing in a proposal.

In the Agrotechnology degree programme, the first five semesters are mostly filled with basic courses for character development and mandatory courses on subject matter and expertise. In these, the students learn the necessary basics in the different areas of agrotechnology, for instance crop and agricultural sciences, agrotechnology, plant physiology, soil and water management, agricultural production tools and machinery, plant pest and disease management and tissue culture technology. They also acquire competences in entrepreneurship. The elective courses, through which the students can gain further insights in some of these areas, are spread out over semesters 3 to 6. The seventh semester also contains the mandatory community service and the fieldwork practice. The students begin to prepare for their thesis in the sixth semester with the course on research proposal and write it in the seventh and eighth semester.

The Soil Science degree programme is based on a similar structure and includes some of the mentioned courses. The students get an overview of soil science, statistics, soil fertility as well as fundamentals of agroclimatology and -technology needed for their studies in the first two semesters. Over the course of the first six semesters, they take mandatory courses in the different areas of soil science, such as plant protection, soil physics and chemistry, entrepreneurship, geodetic surveying and mapping, soil management and hydrology and watershed management. Besides the theoretical classes, they also acquire practical competences through experimental courses in various areas. Moreover, in semesters 3 to 6, the students can choose from a wide range of electives covering advanced and specialised fields of soil science. The mandatory elements of fieldwork practice and community service are located in the 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.

Overall, the peers are satisfied with the curricula of all programmes. They see that the programmes are well structured and that the modules build on each other in a reasonable way, enabling the students to effectively reach the learning outcomes as laid down for the programmes as a whole. In spite of this, the industry representatives also underline that specific skills, as the business and technology competencies, could still be improved. As has already been explained in more detail under criterion 1.2, the industry representatives explain that in all degree programmes, especially in the Agrotechnology degree programme students need to acquire better knowledge in the field of technology. The industry tries to invest in and promote sustainable agriculture and therefore needs the farmers to produce eco-friendly products using new technologies. Business competencies are necessary in order to place these on the market. Consequently, the peers recommend to strengthen the business and technology competencies of the students by offering lectures from industry representatives.

With regard to the internships, the peers learn that the fieldwork practice in companies usually takes 6 weeks. Through the independent campus programme, which was introduced in 2020, students in all study programmes can expand the duration of their internship until 6 months (see criterion 2.1 for more details). Both are valued by the students as they allow them to apply the skills they learned in the programmes in a real working environment. The university has established useful guidelines for these internships and every student has one advisor at the company and one at the university to ensure that the work contributes to achieving the programme's learning outcomes. The representatives of the industry are also generally content with the way these internships are organised by UNS.

Furthermore, the peers discuss with UNS the ways in which the students can improve their English proficiency. They learn that there are courses to familiarise the students with the

subject-specific English vocabulary and expressions. Moreover, students of all study programmes also take the course “English for academic purpose”. Additionally, English literature is used as can be seen from the literature suggested for the individual modules in the module descriptions. In all study programmes, students have the possibility to join the English study club, which is offered by the Language Centre. Students can obtain English certificates there, for instance by taking the TOEFL ITP. Furthermore, in the Soil Science and Agrotechnology degree programmes, students have the possibility to join the international class during the third and fourth semester. In a selection process, 20 students are chosen at a time, who can take all courses in English and are thus prepared for international exchange. The peers appreciate this offer. However, the students of the Animal Science degree programme feel disadvantaged in this matter and express the wish to be able to apply for the international class as well. Therefore, the peers recommend to offer students of the Animal Science degree programme the possibility to also choose the international class. Finally, despite the efforts of UNS to improve the English proficiency of their students, the industry representatives remark that there is still room for improvement. Even though the local dialect is the strategic language in the rural areas and on the farms where most students do their internship, the industry representatives and the peers see mastery of English as indispensable, especially in order to become an international recognized university. Therefore, the peers recommend to improve the English skills of the students

Finally, the peers ask how the teaching staff and the industry representatives evaluate the soft skills of the students. They learn that the students from UNS are particularly flexible and problem-solving oriented. This is confirmed by the students. The peers are satisfied with the explanations given.

Criterion 1.4 Admission requirements

Evidence:

- Overview of evolution of the total applicants, accepted and registered students in each degree programme between 2016 and 2019
- Admission requirements for prospective students through 3 entrance tests
- Self-Assessment Report
- Websites
- Discussions during the audit

Preliminary assessment and analysis of the peers:

According to the self-assessment report, admission of new students to UNS is possible via different modes of entry (national and local modes). The different modes of entry are designed not only to select the top-quality students from high schools, but also to provide

opportunities for high school students from all over Indonesia, especially those from rural areas.
There are three different paths of admission into the programmes:

1. National Selection of Higher Education or University (Seleksi Nasional Masuk Perguruan Tinggi Negeri, SNMPTN), a national admission system, which is based on the academic performance during high school.

2. Joint Selection of Higher Education or University (Seleksi Bersama Masuk Perguruan Tinggi Negeri, SBMPTN). This national selection test is held every year for university candidates. It is a nationwide written test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography).

3. Independent Selection (SM-UNS): This selection is an admission scheme for new students carried out by UNS in addition to SNMPTN and SBMPTN. This scheme includes:

a. Test-based UNS Admission
b. Partnership-based UNS Admission
c. Achievement-based UNS Admission
d. UNS Admission for Students with Special Needs

For each academic year, UNS determines the ratio of students admitted through these three ways. Generally, the number of applications is considerably higher than the number of admitted students. Between the academic years 2015/16 and 2019/20, the average ratio is between 1:25 for the Animal Science degree programme, 1:27 for the Soil Science degree programme and 1:28 for the Agrotechnology degree programme.
The tuition fees for the programmes are determined by the Ministry of Finance based on a proposal from UNS. There are different levels for these fees, depending on the parents' income. For students from underprivileged families, there is no tuition fee. Furthermore, there are various options for scholarships that cover the tuition fees.
The admission website informs potential students in great detail about the requirements and the necessary steps to apply for admission into the programmes. Since the rules are based on decrees by the ministry of education and on the university's written regulations, the peers deem them binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

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

Criterion 1.1:

Based on the ASIIN report that says that most of the graduates of the Agrotechnology degree programme will find employment in coffee, cocoa, and palm oil-related industries but

that some also continue their studies at the consecutive Master's program at UNS, the university responds that according to the alumni profile of 2018-2021, besides working in coffee, cocoa and palm oil-related industries, some graduates have jobs as a practitioner (21.32%), entrepreneur (10.51 %), manager (12.14%), and communicator (6.64%). Moreover, according to the already cited alumni profile, 15.17% alumni from the degree programme Agrotechnology continue their further study in master degree in several universities in Indonesia as well as overseas. Indonesia campus destinations for a Master's degree are UNS (the consecutive Master's program at UNS), UGM (Gadjah Mada University), and IPB (Bogor Agricultural University), while overseas campuses are Gifu University (Japan), Kasetsart University (Thailand), and Huazhong Agricultural University (China).

Criterion 1.2:

The peers appreciate that UNS took the requirement into consideration and provided a response statement. In this, UNS explains that "Agrotechnology" is the applied science of agronomy or plant production technology; plant production methods or techniques. UNS states that Agrotechnology stands for the international terms of Plant Production Technology or Crop Production Technology. The Bachelor's degree programme Agrotechnology at UNS develops a curriculum of agrotechnology which is technology-oriented with applied technology in cultivation activities embedded in each course. The course of "agricultural tools and machinery" is taught in the third semester as the fundamental background of technology. From the total 106 courses, courses with technology orientation are 46 courses or 43.39%. Additionally, UNS provides a detailed list of courses that teach technology contents. "Agrotechnology" in the second semester, "Technology of Annual Crops Production" and "Technology of Perennial Crops Production" in the third semester, "Technology of Organic Plant Production" and "Soil and Water Management" in the fourth semester, "Seed Technology" and "Technology and Management of Pesticide" in the fifth semester and "Technology of Plant Production in the sixth semester are only a few examples. The peers take note of these explanations and thus consider the requirement to be fulfilled.

Criterion 1.3:

The peers appreciate the explanations UNS provided regarding the improvement of the English skills of the students of all study programmes. UNS underlines that the three study programmes under review provide bilingual classes that combine Indonesian and English language in the teaching and learning process. Moreover, inviting guest lecturers from abroad who give lectures in a module/course using English is supposed to ensure the improvement of English skills of both lecturers and students. This programme is supported by funds from the World Class University programme of UNS. Furthermore, UNS has been conducting internationalization through inbound and outbound students. Since 2016, UNS has facilitated funding for outbound students in the form of Global Challenge Competition until the present. This funding is used for international internship programmes, student

exchange, short courses, summer school, online courses and international conferences. In 2022, UNS, through the International Office, plans to increase the capacity of overseas student mobility (outbond) for example through the Global Challenge. Indonesia's government (Directorate General of Higher Education (DGHE) and Ministry of Education and Culture (MoEC)) also supports internationalization programmes such as Indonesian International Student Mobility Awards (IISMA). Through this programme, students have the possibility to participate in the exchange programme in reputable universities in Europe, USA and Asia. UNS has informed their students about the IISMA Programme through formal and informal events under the coordination of the International Office. UNS also supports students who take part in the International Association of students in Agricultural and related Sciences (IAAS) extracurricular activities. Apart from that, the three study programmes are members of the ASEAN International Mobility for Students (AIMS). Thus, the students have participated in the student exchange programme in several countries in ASEAN. A list of students who participated in the ASEAN International Mobility for Students (AIMS) is provided by UNS.

UNS also encourages international atmosphere by supporting inbound students mobility. Some of the programmes are the following:

o The International Office of UNS provides facilities of administrative convenience for inbound students.

o Since 2018, UNS has provided funding (scholarship) for conducting short courses in UNS for inbound students.

o Scholarship for international students in the form of tuition waiver.

o For exchange students, UNS also has a tuition waiver for any incoming student from partner universities.

o Some other facilities that are also being supported by the IO UNS are the dormitory reservation, visa, and immigration applications.

o UNS provides language support facilities through the Language Center. Through the Language Center, the international students can learn Bahasa Indonesia freely.

The peers appreciate those explanations. However, as the industry representatives think that there is still room for improvement and as UNS is striving to become and internationally acknowledged university, English proficiency is indispensable. Therefore, the peers continue to adhere to the recommendation.

Regarding the possibility to choose the international class in the Animal Science degree programme, the peers appreciate that UNS took this recommendation into consideration as well. UNS explains that by now bilingual classes have been implemented in the degree

programme. The bilingual class is a class that combines Indonesian and English language in the process. Recently, a bilingual class has been implemented in the “Meat and Draught Animal Production” module by inviting guest lectures from Gifu University, Japan from September to October 2021 consisting of: Prof. Dr. Masato Yayota with topic “Livestock Production in Japan”, Prof. Dr. Shigeru Ninomiya with topic “Animal Welfare in Japan Livestock Production” and Prof. Dr. Takehiro Himaki with topic “The Development of Technology in Japan”. The Website link as well as a video link were provided by UNS. This programme is supported by funding from World Class University programme of UNS. The Animal Science degree programme plans to additionally increase the number of bilingual teaching programmes by increasing the number of modules that have international guest lectures.

With regard to international conferences, the Animal Science degree programme conducted the International Conference on “Animal Research for Eco-friendly Livestock” in October 2021. The event speakers were reputable scientists from five countries: Prof. Siti Nur Hidayati form Middle Tennessee State University, USA , Prof. Carlos Hermosilla, Justus Liebig University Giessen, Germany, Prof. Heekwon Ahn, Chungnam National University, South Korea, Prof. Masato Yayota, Gifu University, Japan as well as Prof. Sutrisno Hadi Purnomo, Universitas Sebelas Maret, Indonesia. UNS students were given free access to the plenary session and more than one hundred joined this event. In addition, some of the students also presented their research results in the parallel session and one of them, Thoriq Aldri B, as awarded the best presenter. With regard to the international guest lectures, some of them are open to all students, including for Animal Science students.

Regarding summer courses, the Animal Science degree programme plans to organise a short course which is open to local and international students with specific learning about livestock management practice on the farm. This programme is planned to be taught in English and involve international guest lectures in 2022.

In order to increase internationalization of Animal Science students, UNS holds international internship programmes cooperation agreements with some companies in Japan since 2017. The companies are focusing on ruminant production which are Nava Farm in Gunma Prefecture, Yukiguni Maitake in Niigata Prefecture and Daichi Co. The international internship programme duration is between six and twelve months. Furthermore, the Animal Science students have participated in student exchange programmes to several countries, including South Korea, Thailand, and Japan. One of the programmes is under The ASEAN International Mobility for Students (AIMS) with the duration of one semester. In the future, UNS plans to increase their student mobility through student exchange to more diverse countries in Europe, Australia, America, and Africa. One of the efforts is communicating the programmes through International Office and Government such as IISMA Program. The Animal Science degree programme has encouraged its students to prepare themselves to apply to IISMA programme in order to increase their possibility of getting

the student exchange abroad. UNS currently increases the advertising activities to prepare the students for 2022 intake through online platforms and social media. The peers appreciate that Animal Science students now also have the possibility to choose international or bilingual classes and therefore consider the recommendation to be fulfilled.

2. The degree programme: Structures, methods and implementation

Criterion 2.1 Structure and modules

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions for each degree programme
- Objective-modules-matrices for each degree programme
- Academic Guidelines/Manual
- Discussions during the audit
- Overview of different stages in the curriculum development in the degree programmes
- Overview of curriculum structure in each degree programme
- Overview of student exchange
- Partnership agreements with other universities
- International students guide
- Internship assessment form

Preliminary assessment and analysis of the peers:
The programmes under review are designed for 4 years and the students need to achieve 144 CPs (which is equivalent to 261.12 ECTS). Each semester is equivalent to 16 weeks of learning activities, including one week for midterm exams and one week for final exams.

After analysing the module descriptions and the study plans, the peers confirm that all degree programmes under review are divided into modules, and that each module is a sum of coherent teaching and learning units. All programmes contain adequate practical elements and allow the students to define individual focuses through broad ranges of elec-

tives. The peers notice that many modules are quite small in terms of credit points and they worry that this might lead to a very high number of exams per semester and consequently to a heavy workload for the students. They learn that this is to some extent countered by the fact that the length of the exams is proportionate to the amount of credit points for the module. The students also emphasise that they consider the workload high but manageable. As the data in the self-assessment report show, the average length of study is eight to nine semesters and there are no dropouts. This indicates that the module structure allows the students to finish their studies in time.
However, the peers notice that the module handbooks do not include the descriptions for all modules. The descriptions for some modules are not available on the website. As will be further explained under criterion 5.1, UNS has to ensure to make the latest version of the module descriptions accessible for students and teaching staff.

In summary, the peers gain the impression that the choice of modules and the structure of the curriculum ensures that the intended learning outcomes of the respective degree programme can be achieved.

International Mobility

The self-assessment report as well as the discussions make it clear that, while striving to become an international acknowledged university, international recognition is one of UNS' primary goals for the next years. The peers point out that international mobility, with regard to the lecturers as well as to the students, is a key factor in these efforts.

The peers learn that UNS already provides some opportunities for students to conduct internships and study semesters abroad. There are cooperation agreements with over 85 organisations in countries all over the world (for instance United States, Germany, China, Vietnam, Japan, Malaysia, Belgium) partly regarding student exchange, partly regarding research collaboration. The university has established its own scholarship for international mobility and moreover manages various external scholarships sponsored by the Indonesian government, the US government, the British council or the European Commission (Erasmus + programme). Moreover, as part of the government's policy, an independent campus programme (Kampus Merdeka, MBKM) has been implemented in 2020. By choosing this programme, students are given the chance to spend one semester in another university or company in Indonesia or abroad. This will make it possible for the students to collect further experience, expand their network outside the study programme or campus and be better prepared to enter the job market after their studies. Their practical activities in the field will be converted into credits.

Qualifications obtained at other universities in Indonesia or abroad are recognised in line with the courses at UNS. The students can best realise such a stay in semesters 3 to 6 or, in

case of a shorter stay, during the holidays. As they confirm, there are no problems with credit transfer or the organisation of student mobility.

The peers appreciate the efforts undertaken by the university to foster student mobility. They remark, however, that the effective amount of mobility to other higher education institutions in Indonesia or abroad is still relatively low. Furthermore, many of the stays abroad are quite short and most of them are restricted to South-East Asia. The peers emphasise that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency, to get to know other educational systems, and to enhance their job opportunities.

Criterion 2.2 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions for each degree programme
- Discussions during the audit
- Conversion table SKS-ECTS points
- Overview of maximum semester credits based on semester GPA

Preliminary assessment and analysis of the peers:
Based on the National Standard of Higher Education of Indonesia, both programmes use a credit point system called SKS, which is regulated as follows:

- 1 CP of teaching covers 50 minutes contact hours + 60 minutes assignment/tutorial + 60 minute of self-studies
- 1 CP of practical work covers 170 minutes
- 1 CP of seminar covers 170 minutes

In comparison to the ECTS credit system, wherein 1 ECTS equals 25-30 hours of students' workload, it is determined that 1 CP is awarded for different amounts of workload, depending on the kind of studies. As such, for lecture sessions, one credit point equals 50 minutes, while one credit point for practical session is awarded for 3 hours of work. The students' workload (contact hours and self studies) is measured in Indonesian credit points (CP), and

converted to the European Credit Transfer System (ECTS). According to the legal requirements, an undergraduate programme in Indonesia can have between 144 and 160 SKS, while the actual number of the programmes under review is 144 SKS (261.12 ECTS).

The workload is spread relatively evenly with each semester containing between 16 and 23 SKS according to the regular study plan. The workload of the last two semesters is markedly reduced to give the students enough time for their theses as well as to already start looking for a job. However, the effective number of SKS the students can take depends on their achievements in the previous semester. If their Grade Point Average (GPA) is less than 2.0, they can take up to 16, between 2.0 and 3.0 up to 22 and above 3.0 up to 24 SKS in one semester. This mechanism is supposed to ensure that the students can really handle the workload. It also means that theoretically, students can finish their studies in less than 8 semesters, but due to the high workload in general, this is a rather rare phenomenon. The peers are satisfied with the distribution of the workload and confirm that the distinction between classroom work and self-studies is made transparent and is in line with the credits awarded.

UNS provides statistical data about the average length of studies and the number of dropouts. According to the data, the average study period of the students from the Animal Science degree programme is 4,5 years, from the Soil Science degree programme is 4,2 years and from the Agrotechnology degree programme is 4,1 years. According to the SAR and the survey results, this is due to all the written examinations and the paper reports and also due to the fact that they have a final thesis or work next to studying. Additionally, they see that all students complete the degree programmes as there are no students who dropped out of the degree programmes in the last years.

The data verifies that all three degree programmes under review can be completed in the expected period.

As has already been mentioned, the vast majority of the students manage to finish their studies on time. Moreover, the dropout rates are equal to 0. Therefore, the peers conclude that the general workload is high but manageable, as the students confirm.

Criterion 2.3 Teaching methodology

Evidence:

- Photos of laboratories and visits
- Overview of offline and online learning process
- Overview of permanent teachers‘ pedagogical evaluation

- Self-Assessment Report
- Module descriptions for each degree programme
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The three programmes under review make use of several different educational methods for each course such as interactive lectures, small group discussions, problem-based learning, collaborative learning, laboratory practical work, computer-based assignments, excursions, literature studies and final tasks consisting of internship, student community service, seminars, final project and case-study.

During the classes, active and interactive teaching methods (e.g. lectures, discussions, reports, presentations, and group work) are applied. UNS wants to encourage the students to gain knowledge from different scientific areas and wants to introduce them to research activities. This leads to the transition from a teacher centred to a student centred learning approach. The teaching and learning is supported by a broad range of media, both traditional (books, papers) and online (videos, presentations etc.). In the course of the Covid-19 pandemic, UNS has swiftly switched to online learning with videoconferences, recorded videos and other media. Online learning is conducted by using WhatsApp group chats, Google Classroom, Zoom or Google Meet sessions.

UNS introduced an online-learning platform SPADA in order to monitor the teaching methodology that is applied and makes accessible the various course materials. Therefore, each teacher or professor must upload his or her teaching materials and working procedures on SPADA.

In summary, the peer group judges the teaching methods and instruments to be suitable for supporting the students in achieving the intended learning outcomes.

Criterion 2.4 Support and assistance

Evidence:
- Websites
- Self-Assessment Report
- International Students Guide
- Discussions during the audit

Preliminary assessment and analysis of the peers:
In order to support students in completing their studies on time with good achievements,

the university and the faculty provide academic and personal support and assistance through various means. The offers can be divided into two types: academic support and non-academic supports. Academic advice includes the academic advisors, the Counselling Guidance Centre, the International Office, the programme coordinators, the Dean and the supervisors for the Bachelor's thesis. Non-academic supports comprises the Medical Centre, the Sports Centre, the Disability Study Centre, the Language Centre, the Career Development Centre, the Central Library, computer laboratories, Student Creativity Program and student dormitories.

The main contact person for every student is their academic advisor, which is assigned to them in their first semester. An academic advisor shall help them develop an adequate schedule for their studies, choose electives according to their skills and interests and support them in case of academic and non-academic problems. Each student has the opportunity to meet with their academic advisor, who is also responsible for monitoring their study progress, at least four times per semester. Furthermore, there are supervisors for the thesis, the fieldwork practice or teaching internship, and the community service, who give advice on specific issues related to these aspects. At the beginning of each semester, DPA provides direction for the students regarding their study plans, targets to be achieved and strategies for selecting courses. During the semester, GPA monitors the academic progress of the students they guide. At the end of the semester, GPA evaluates the student's achievement under their supervision by checking the GPA that the students achieve. In UNS, this mentoring process is supported by the presence of the academic administration information system (SIAKAD) that facilitates GPA to monitor the academic progress and approval for semester plans as well as the final undergraduate thesis.

The Disability Study Centre helps and guides students who have individual problems, such as anxiety, depression or other personal or psychological issues. The Career Development Centre offers scholarships, entrepreneurship programmes, student creativity programmes and other similar activities. There are many scholarships offered to students, (e.g. from private companies, the government or other foundations). This includes scholarship for students from low-income families and for those with high academic achievements. New students can attend classes to develop their effective learning and soft skills.

In addition, every student who enrols for the Bachelor's thesis course will be assigned 2 to 3 thesis supervisors. The role of the thesis supervisors is to help students to complete their thesis research; they also monitor the progress of the thesis in order to ensure the completion of the thesis in the intended amount of time.

The students confirm towards the peers that they are supervised in the research group during their work on the Bachelor's thesis. There are regular meetings where the students

present their results and receive feedback from the other members.

All students at UNS have access to the online-learning platform SPADA. By using SPADA, lecturers can upload their syllabus and learning materials or modules as well as assignment for students. Through SPADA, students can also interact with other students and lecturers.

The peers notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and support for all students. Also disabled students receive extensive support. The support system helps the students to achieve the intended learning outcomes and to complete their studies successfully and without delay. The students are well informed about the services available to them.

Overall, the peers judge the extensive support system to be one of the strong points of UNS.

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

Criterion 2.1:

For more details about the requirements regarding the module descriptions, please refer to the final assessment comment under criterion 5.1.

With regard to the remark of the peers that it is very useful for students to spend some time abroad already during their Bachelor's studies to improve their English proficiency, to get to know other educational systems, and to enhance their job opportunities, UNS states in its response statement that the Animal Science degree programme has sent some students to join a student exchange programme for about six months in Thai Nguyen University of Agriculture and Forestry, Thailand in 2018. Some students from the same degree programme also joined an internship programme in different companies in Japan for about one semester in 2018. UNS provides detailed statistical data about this programme. Moreover, in order to increase the Animal Science students' mobility, UNS, through the International Office, collaborates with 100 universities from 24 countries around the world (Australia, Austria, Belgium, China, Egypt, Ethiopia, France, Germany, India, Italy, Japan, Madagascar, Malaysia, Netherlands, Philippines, Portugal, South Korea, Taiwan, Thailand, Turkey, UK, USA, Uzbekistan, and Vietnam). UNS provides a list of the corresponding academic partners. The International Office is responsible for facilitating any academic and non-academic collaboration, such as joint-research, faculty exchange, student exchange as well as some other mutual collaboration. Additionally, as already mentioned in the report, the implementation of the independent campus curriculum makes students entitled to study for three semesters outside the study programme. In addition to improving communication

and English proficiency, these activities are also able to introduce students to the education systems in other countries and to enhance their job opportunities.

The Soil Science degree programme aims to increase student mobility by encouraging students to take courses/short courses abroad. On several occasions, the degree programme has sent several students to take part in a student exchange program at Universiti Malaysia Sabah, Malaysia for approximately six months in 2019. UNS provides the list of students who participate in this exchange programme. Apart from that, UNS also sends students for a 45 days-internship programme to Gifu University, Japan and to other various companies in Japan for approximately one semester. Furthermore, UNS involves students in committees at international conference events organized by the Soil Science degree programme in collaboration with other institutions. The 10th International Seminar of Indonesian Society for Microbiology (Collaborate with Perhimpunan Mikrobiologi Indonesia) as well as the International Conference of Climate Change (Collaborate with Gifu University, Japan), which is held annually, starting in 2016 as mentioned as to examples. The corresponding student certificates are provided by UNS as part of its response statement.

UNS further underlines that in the Agrotechnology degree programme, students have always been supported in spending some time abroad already during their Bachelor's studies to improve their English proficiency. The degree programme is a member of The ASEAN International Mobility for Students (AIMS). The agenda of AIMS is to create a vibrant student mobility for citizens of all SEAMEO member countries in the form of student exchange programme (In-bond and out-bond student) for one semester (approximately four to five months). AIMS affiliated universities are Kasetsart University, Thailand, University of the Philippines Los Baños, Philippines, Vietnam National University of Agriculture, Vietnam, Thai Nguyen University of Agriculture and Forestry) Vietnam and Universiti Putra Malaysia, Malaysia. UNS provides the list of students who participate in the AIMS Student Exchange programme. Moreover, the degree programme supports students to conduct international internship programmes for about one month abroad. Countries such as Japan, USA and Germany are part of the international internship programme. The peers appreciate the detailed explanations provided by UNS and motivate the university to continue to pursue these efforts.

3. Exams: System, concept and organisation

Criterion 3 Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions for each degree programme
- Guide of Learning Assessment
- Overview of assessment rubrics
- Overview of OBE score
- Websites
- Academic calendar
- Worksheet examples

Preliminary assessment and analysis of the peers:
Each course has to determine objectives, which support the achievement of the Programme Learning Outcomes of the respective programme. Accordingly, each course must assess whether all defined learning outcomes stated in the module description have been achieved.

According to the self-assessment report, quizzes, tests, practical performances, assignments, small projects, reports and presentations are employed to assess the students' achievement of the learning outcomes. At the first meeting of a course, the students are informed about what exactly is required to pass the module. The form and length of each exam is mentioned in the course descriptions that are available to the students via UNS' homepage. It is common to hold small quizzes every two or three weeks, but there are generally no unscheduled tests. The students are informed about mid-term and final exams via the Academic Calendar. The final grade of each module is calculated based on the score of these individual kinds of assessment. The exact formula is given in the module handbook. UNS uses a grading system with the grades A, A-, B+, B, C+, C, D and E, where a C (equivalent to a Grade Point of 2) is necessary to pass a module.

Based on the academic regulation to be eligible to take final exam, students must attend at least 75% of the total course sessions. On the other hand, students must attend all lab work activities in order to get a practice examination permit. Students who have not yet reached the minimum achievement criteria have to join the remedial programme which is an additional programme that should help them improve their unsatisfactory results. The lecturers will provide several alternatives such as a second trial of exams, additional assignments, remedial learning or a peer tutor to accommodate this programme. In some instances, lectures may not allocate specific times for remedy and provide direct feedback

on students' work to improve the assignment instead. The remedial program allows students to fix their shortcomings and finish the course on time with satisfactory results and is meant to shorten the study period.

The peers discuss with the students how many and what kind of exams they have to take each semester as all three study programmes are divided into a huge number of small modules. They learn that for each course there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or quizzes. The final grade is the sum of the sub exams. The students appreciate that there are several short exams instead of one big exam as this forces them to continuously study during the entire semester and not having to solely work for one final exam at the end of the semester. The students also confirm that they are well informed about the examination schedule, the examination form and the rules for grading.

Every student is required to do a final thesis in the fourth year of studies. Prior to the actual research work, the students are required to write a research proposal and present it in a seminar attended by lecturers and other students who form a research group. The research proposal has to be accepted by the Dean and the supervisor committee who will then appoint the research supervisors. Usually, there are 2 to 3 research supervisors for each student. One will act as the principal supervisor and the others act as co-supervisors. In case the student writes her or his thesis in collaboration with the industry, she or he is also assigned a supervisor from the industry. After completing the work on the Bachelor's thesis, the student has to present and defend the results in front of teachers and fellow students. From the programme coordinators and the students, the peers learn that students and lecturers of the Soil Science degree programme have the possibility to publish their thesis and research projects in the department's own journal. However, students and lecturers from the other two degree programmes are deprived of this offer, as there does not exist any journal service in the respective departments. By asking the students about these circumstances, the peers learn that they wish to be able to also publish their thesis in a journal owned by their respective department or faculty in order to avoid dividing bigger final projects into smaller projects and get the chance to publish on an international level. Therefore, the peers recommend to offer a journal service in the Animal Science and Agrotechnology degree programmes in order for students and lecturers to publish their thesis and scientific projects.

Furthermore, the peers discuss with the programme coordinators, the members of the teaching staff, and the students about the process of finding suitable topic of the Bachelor's thesis. Basically, there are two possibilities. Either students can propose their own ideas or

they can ask their academic advisor or other teachers for suggestions. The peers also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples.

The peers conclude that the criteria regarding the examinations system, concept, and organization are fulfilled and that the examinations are suitable to verify whether the intended learning outcomes are achieved or not.

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

The peers appreciate that UNS took the recommendation to offer a journal service in the Animal Science and Agrotechnology degree programmes into consideration. UNS states in its response statement that the Animal Science degree programme has a commitment to assist students in publishing their scientific articles originating from theses or final assignments in journals managed by the study programme. These journals include the "Livestock and Animal Research (LAR)" journal that has been in the Science and Technology Index (Sinta) of the Ministry of Education and Culture since 2019 and obtained the Sinta 2 accreditation as well as the "Tropical Animal Husbandry" journal, published four times a year (January, April, July and October). The editors receive manuscripts of research results in the field of animal husbandry that have never been published in other media. Students who have not succeeded in publishing scientific articles through journals, have the possibility to publish them through the university repository which is managed by the UNS library and can be accessed online.

The Agrotechnology degree programme has two journals for facilitating students' and lecturers publication. The "Agrotechnology Research Journal" on the one hand is a peer-reviewed journal published by Perkumpulan Agroteknologi/Agroekoteknologi Indonesia (PAGI) in collaboration with the Department of Agrotechnology, UNS. "Agrosains, Jurnal Penelitian Agronomi", on the other hand is an agricultural journal published twice a year (April and October) managed and published by the Department of Agrotechnology, Faculty of Agriculture, UNS.

As the peers already learned during the audit, the Soil Science degree programme has three journals to assist students and lecturers in publishing scientific articles derived from their research results in journals managed by the study programme. Firstly, "Sains Tanah: Journal of Soil Science and Agroclimatology (STJSSA)" has been published by the Department of Soil Science, Faculty of Agriculture, UNS and covers original research articles, review, and short communication on diverse topics related to soil science and agricultural climatology. STJSSA has been indexed SCOPUS, DOAJ, ASEAN Citation Index (ACI), SINTA by Ristek/BRIN

of The Republic of Indonesia, GOOGLE Scholar. Secondly, "Caraka Tani: Journal of Sustainable Agriculture" is an international scientific journal focused on sustainable agriculture. Caraka Tani has been accredited for five years as scientific journal based on Ministry of Research, Technology and Higher Education of the Republic of Indonesia. Caraka Tani has been indexed in Directory of Open Access Journals (DOAJ) and Centre for Agriculture and Bioscience International (CABI). Thirsdly, "PRIMA: Journal of Community Empowering and Services" is a scientific journal that publishes the result of thoughts and activities on empowerment and community service with the focus on communities as an employer in the field of agriculture and the other fields whose activity targets are farmer community. PRIMA has been indexed in Directory of Open Access Journals (DOAJ).

The peers appreciate the explanations provided by UNS and welcome the fact that students and lecturers of all study programmes are offered a journal service in order for them to publish their theses and scientific projects. However, as students from the Animal Science and Agrotechnology degree programmes did not seem to know about these possibilities during the audit, the peers recommend to better inform students and lecturers about the existing journal service in order to facilitate publishing their theses and scientific projects.

4. Resources

Criterion 4.1 Staff

Evidence:

- List of teachers
- Résumés of teachers
- Profile of research collaboration of teachers
- Profile of publication of teachers
- International and national activity of teachers
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
At UNS, the staff members have different academic positions. There are professors, associate professors, assistant professors and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full professor needs to hold a PhD

degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision depend on the academic position. The main difference of tasks and responsibilities based on academic staff position lies on the proportion of teaching and research activities. The higher the academic staff position is, the greater is the proportion of research activities, but the lower is the proportion of teaching activities.

There are 26 teaching staff for Animal Science (2 professors, 10 with PhD, 2 PhD candidate, 12 with Master's degree), 22 (8 professors, 8 with PhD, 6 with Master's degree) for Soil Science and 38 (12 professors, 14 with PhD, 12 with Master's degree) for Agrotechnology. The university encourages the teaching staff with a Master's degree to pursue further qualification. These numbers mean that the ratio between academic staff and students is between 1:17 and 1:21. In addition, the faculty regularly invites visiting lecturers from Indonesia and abroad to facilitate academic exchange.

Recruiting new teaching staff follows a defined procedure starting with a needs analysis of the degree programme, the proposal for new positions to the university, a public announcement and finally the recruitment based on the results of a basic competence test, a field competence test and an interview.
The academic staff is involved in a number of research projects funded by grants from the Indonesian government, the university itself or other research funds. This results in a considerable number of publications. If the respective grants allow it, students are involved in these projects, mostly through undergraduate theses.

In summary, the peers confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes.

Criterion 4.2 Staff development

Evidence:

- Self-Assessment Report
- Websites
- Overview of permanent teachers' pedagogical evaluation
- Discussions during the audit

Preliminary assessment and analysis of the peers:
According to the self-assessment report, UNS encourages the continuous professional development of its staff. For this purpose, various opportunities are provided. There is a mandatory educational training for new academic staff that encompasses curriculum design,

teaching material, and innovative teaching and learning methods. Moreover, at the beginning of each semester workshops are held to refresh and to deepen didactic competences by the Institute for Research and Community Services.

The peers discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at the university and their opportunities to further improve their educational abilities. UNS supports the professional development of its personnel by awarding scholarships for lecturers who decide to pursue further studies. The peers support the strategy to send academic staff members to international universities to pursue a higher academic degree (Master's or PhD). This will not only foster academic expertise and knowledge, but also improve the English proficiency and promote the internationalisation of the degree programmes.

Moreover, the peers ask the members of the teaching staff to explain the process and the prerequisites of becoming a professor in more detail. They learn that apart from the obligation to collect a certain amount of credit points and publications, there is no absolute necessity for the professors to have international experience. Therefore, the peers have the impression that becoming a professor relies on the amount of credit points rather than on the research activity and international participation. An increasing international participation would give the professors the possibility to attend conferences, workshops or seminars in order to enhance their knowledge, increase their English proficiency and to build international networks. Therefore, the peers recommend to increase the lecturer's participation in international conferences as well as their connections to the international scientific community in order to improve their research possibilities.

Criterion 4.3 Funds and equipment

Evidence:

- Partnership Agreements
- List of laboratories and equipment
- Photos and videos of the facilities
- Overview of scholarships for students
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The university and the faculty are mainly funded by the Indonesian government, through the tuition fees and through grants for research projects. The figures presented by the university show that the faculty's income is stable and the funding of the degree programmes is secured. The academic staff emphasise that from their point of view, all three undergraduate programmes under review receive sufficient funding for teaching and learning activities. The students confirm this positive impression and state their satisfaction with the available resources.

In preparation of the audit, the university provides a number of videos showing the laboratories of the programmes. During the online visit, the laboratories, the lecture rooms and the library were shown in more detail. The peers notice that the lecture rooms are in a very good condition and equipped with modern technology. The university has teaching as well as research laboratories for all three degree programmes. Overall, they notice that there are no bottlenecks due to missing equipment or a lacking infrastructure. The students confirm this positive impression during the discussion with the peers. They are satisfied with the available equipment and the technical infrastructure.

The university has licensed Microsoft Office and other standard software. UNS provides the students full access to this software. Students and teaching staff are satisfied with their functionality. The central library as well as the reading room of the faculties are well equipped overall.

The peers judge the impressive amount of funds to be one of the strong points of UNS.

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

Criterion 4.2:

The peers appreciate that UNS provides a response to this recommendation. UNS first explains that, generally speaking, for being a professor in higher education, the candidates need to collect a certain amount of credit points. However, in detail, the process consists of several requirements related to the research and international publications. Currently, in order to become a professor, a lecturer needs to publish in international journals as the main author/corresponding author. A professor must produce at least three scientific papers published in international journals or at least one scientific work published in reputable international journals or patents. The promotion of all lecturer positions is regulated by the Indonesian Directorate General of Higher Education (DIKTI).

Secondly, UNS states that in the Animal Science degree programme, the lecturers present their works in international conferences since 2000. UNS provides a list that shows the title,

content and participants of these conferences. Moreover, the Animal Science degree programmes successfully held its first international conference named ICARELI on November 23rd, 2021. The website informs about the programme and the registration process.

The Soil Science degree programme holds an international conference annually, namely the International Conference on Climate Change. The ICCC collaborates with The United Graduate School of Agriculture Science (UGSAS) and Gifu University (Japan). The website informs about the programme, the publications, the participants and the registration process. In 2019, the programme also organised the 10th International Seminar of Indonesian Society for Microbiology and the 12th Congress of Indonesian Society for Microbiology. For this event, UNS collaborates with the Indonesian Society for Microbiology. Besides that, the lecturers of the Soil Science degree programme are constantly encouraged to increase their participation in international conferences well as their connections to the international scientific community to improve the research collaboration opportunities. UNS provides a representative number of certificates awarded to Soil Science lecturers after their participation in an international conference.

In the Agrotechnology degree programme, in order to increase international activities, the Faculty of Agriculture and the Agrotechnology programmes of UNS provide the lecturers with information, funding and facilities to support their participation in international conferences, international events, as the article presenter or/and the speakers. UNS provides two lists that show the international and national activities of Agrotechnology lecturers during the last few years. Furthermore, in order to expose the staff to the international standards, the Agrotechnology degree programme always encourages the staff to publish articles in international journals as well as international conferences. A list of international articles in Agrotechnology from 2012 until 2016 is provided by UNS. Some lecturers are also involved in the committee of international conferences. As an example, UNS mentions Prof. Dr. Ahmad Yunus who was the speaker at the 8th International Conference on Sustainable Agriculture and Environment. Finally, the degree programme motivates and supports the lecturers to do a bridging programme to overseas universities. UNS provides a list of lecturers who participated in the corresponding programme. The peers appreciate the detailed explanations that UNS provided with regard to lecturers participation in international conferences and recommends UNS to continue supporting their staff in these activities. However, as UNS is applying for an international accreditation and striving to become an internationally recognised university, the peers stick to their previous assessment and consequently to the recommendation.

5. Transparency and documentation

Criterion 5.1 Module descriptions

Evidence:

- Module descriptions for each degree programme
- Website
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The module handbooks for all three programmes have been published on UNS' website and are thus accessible to the students as well as to all stakeholders. However, the module handbooks do not include the descriptions for all modules. For instance the descriptions for the modules "English for Academic Purpose", Thesis, Internship in all study programmes are missing. Therefore, it must be ensured that the latest version of the module descriptions is made accessible for students and teaching staff. The peers ask to provide these information together with the comment of the Higher Education Institution.

The peers observe that the existing module descriptions contain information about the persons responsible for each module, the teaching methods and workload, the credit points awarded, the intended learning outcomes, the examination requirements, the forms of assessment and details explaining how the final grade is calculated. However, information about the applicability and the admission requirements is not included in the module descriptions. Therefore, the peers request to include this information in the module descriptions.

Criterion 5.2 Diploma and Diploma Supplement

Evidence:

- Sample Transcript of Records for each degree programme
- Sample Diploma certificate for each degree programme
- Sample Diploma Supplement for each degree programme
- Self-Assessment Report

Preliminary assessment and analysis of the peers:
The peers confirm that the students of all three degree programmes under review are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Transcript of Records lists all

courses that the graduate has completed, the achieved credit points, grades, and cumulative GPA. However, the Diploma Supplement does not contain all necessary information about the degree programmes. Information about the language of instruction, the mode of study as well as the individual credits gained by the student are missing. Therefore, the peers urge UNS to include this information in the Diploma Supplements.

Criterion 5.3 Relevant rules

Evidence:

- Self-Assessment Report
- Websites
- Discussions during the audit
- Guide of Learning Assessment
- Internal rules of quality assurance

Preliminary assessment and analysis of the peers:
The auditors confirm that the rights and duties of both UNS and the students are clearly defined and binding. All rules and regulations are published on the university's website in and hence available to all stakeholders. In addition, the students receive all relevant course material in the language of the degree programme at the beginning of each semester.

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

Criterion 5.1:

Together with the response statement, UNS provided the latest version of the module descriptions which now include the descriptions for all modules. This version of the module descriptions is made accessible for students and teaching staff. Therefore, the peers consider this requirement as fulfilled.

Furthermore, UNS included the information about the admission requirements and the applicability in the module descriptions of all degree programmes. Therefore, the peers consider this requirement to be fulfilled as well.

Criterion 5.2:

UNS included the information about the language of instruction, the mode of study and the individual credits gained by the student in the Diploma Supplement. Therefore, the peers consider this requirement to be fulfilled as well.

6. Quality management: quality assessment and development

Criterion 6 Quality management: quality assessment and development

Evidence:

- Internal rules of quality assurance
- Internal quality audit assessment form
- Questionnaire used for the evaluation of studies
- Student satisfaction questionnaire
- Learning evaluation sheet
- Academic service quality survey results
- Programs and key performance indicators
- Self-Assessment Report
- Discussions during the audit

Preliminary assessment and analysis of the peers:
The peers discuss the quality management system at UNS with the programme coordinators. The peers learn that there is an institutional system of quality management aiming at continuously improving the degree programmes.

This system relies on internal (SPMI) as well as external (SPME) quality assurance. SPMI encompasses all activities focused on implementing measures for improving the teaching and learning quality at UNS. SPME focuses on both national and international accreditations. Every degree programme and every Higher Education Institution in Indonesia has to be accredited by the national Accreditation Agency (BAN-PT). UNS as an institution as well as all three degree programmes under review have received the highest accreditation status (A) from BAN-PT.

Since UNS is striving to become an internationally acknowledged university, the reliance on students' feedback and the necessity to ensure and improve the employability of the graduates are of major importance to the coordinators. Internal evaluation of the quality of the degree programmes is mainly provided through student, alumni and employer surveys. The students give their feedback on the courses by filling out the questionnaire online. The course evaluations are conducted at the end of each semester; the questionnaire was developed by the course survey committee and includes questions with respect to the course

in general and about the teachers' performance. Further surveys are carried out by gathering statistics about graduates and alumni. The discussion with the students revealed that those in charge are always eager and open for feedback aside from the official evaluations and that students have the impression that their comments are taken into consideration with regard to the further improvement of the programmes. This becomes apparent in the constant curricular revision process that is performed under participation of students and industry partners. The industry representatives confirm in the discussion that the university is eager to receive feedback about new developments and trends and the employability of their graduates.

That this process is fruitful and effective, becomes visible in the high percentage of graduates that find employment immediately after graduation. Concerning the internal feedback loops the results of the course evaluations are centrally assessed and analysed before they are communicated to the Head of Department. He would then be responsible to initiate any measures if problems or needs for improvement have been detected. A summary of the results is made accessible to the students. In case the satisfaction of the students with staff members is deficient, the Heads of Department will contact the respective teacher, discuss the issue and propose solutions. If no improvement can be achieved over a longer period, the staff member will be dismissed. Thus, the peers agree that the quality management circles at UNS are well established and work under participation of all stakeholders.

Moreover, the peers learn that students so far have only been included into decision-making processes by contributing to the conception of the curricula. However, the students express the wish to be able to have an impact on the teaching contents and other relevant decisions within the study programmes. Therefore, the peers recommend to include students in decision-making processes by giving them the right to vote. Furthermore, the peers ask whether there is some kind of advisory board. The industry representatives explain that there is no standard operation procedure regarding the communication with the university. Typically, the industry representatives act as supervisors while students write their thesis or do their internship and constantly deliver a corresponding feedback to the university. They are also regularly invited by UNS in order to discuss new developments and trends. In order to institutionalize the communication between the industry representatives and UNS as well as to promote equal opportunities for all companies, it is recommended to implement an industry board.

In summary, the peers are satisfied with the quality management system at UNS, especially with the continuous feedback loops and the involvement of important stakeholder groups such as students, alumni and representatives from the industry.

Final assessment of the peers after the comment of the Higher Education Institution regarding criterion 6:

Since UNS does not address this in its statement, the evaluators stick to their previous impression.

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:

D 1. Module descriptions for all modules (including “English for Academic Purpose”, Thesis, Internships)

E Comment of the Higher Education Institution (10.01.2022)

The institution provided a detailed statement as well as the following additional documents:

- Revised module descriptions for all degree programmes
- Revised Diploma Supplements for all degree programmes
- Overview of international conferences, student exchange programmes, internship programmes, international guest lectures

F Summary: Peer recommendations (26.01.2022)

Taking into account the additional information and the comments given by UNS, 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	Maximum duration of accreditation
Ba Agrotechnology	Without requirements	30.09.2027	–	–
Ba Soil Science	Without requirements	30.09.2027	–	–
Ba Animal Science	Without requirements	30.09.2027	–	–

Recommendations

For Animal Science and Agrotechnology programmes

E 1. (ASIIN 3) It is recommended to better inform students and lecturers about the existing journal service in order to facilitate publishing their theses and scientific projects.

For all degree programmes

E 2. (ASIIN 1.3) It is recommended to improve the English skills of the students.

E 3. (ASIIN 1.3) It is recommended to strengthen the business and technology competencies of the students by offering lectures from industry representatives.

E 4. (ASIIN 4.2) It is recommended to increase the lecturer's participation in international conferences as well as their connections to the international scientific community in order to improve their research possibilities.

E 5. (ASIIN 6) It is recommended to include students in decision-making processes by giving them the right to vote.

E 6. (ASIIN 6) It is recommended to implement an industry board.

G Comment of the Technical Committees (10.03.2022)

Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture (10.03.2022)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the accrediting procedure and follows the assessment of the peers without any changes.

The TC 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	Maximum duration of accreditation
Ba Agrotechnology	Without requirements	30.09.2027	–	–
Ba Animal Science	Without requirements	30.09.2027	–	–

Recommendations

For Animal Science and Agrotechnology programmes

E 1. (ASIIN 3) It is recommended to better inform students and lecturers about the existing journal service in order to facilitate publishing their theses and scientific projects.

For all degree programmes

E 2. (ASIIN 1.3) It is recommended to improve the English skills of the students.

E 3. (ASIIN 1.3) It is recommended to strengthen the business and technology competencies of the students by offering lectures from industry representatives.

E 4. (ASIIN 4.2) It is recommended to increase the lecturer's participation in international conferences as well as their connections to the international scientific community in order to improve their research possibilities.

E 5. (ASIIN 6) It is recommended to include students in decision-making processes by giving them the right to vote.

E 6. (ASIIN 6) It is recommended to implement an industry board.

Technical Committee 11 – Geosciences

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the accrediting procedure and follows the assessment of the peers without any changes.

The TC 11– Geosciences recommends the award of the seals as follows:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Soil Science	Without requirements	30.09.2027	–	–

Recommendations

For all degree programmes

E 1. (ASIIN 1.3) It is recommended to improve the English skills of the students.

E 2. (ASIIN 1.3) It is recommended to strengthen the business and technology competencies of the students by offering lectures from industry representatives.

E 3. (ASIIN 4.2) It is recommended to increase the lecturer's participation in international conferences as well as their connections to the international scientific community in order to improve their research possibilities.

E 4. (ASIIN 6) It is recommended to include students in decision-making processes by giving them the right to vote.

E 5. (ASIIN 6) It is recommended to implement an industry board.

H Decision of the Accreditation Commission (18.03.2022)

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

The Accreditation Commission discusses the accrediting procedure and follows the assessment of the peers and the Technical Committees without any changes.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN Seal	Maximum duration of accreditation	Subject-specific label	Maximum duration of accreditation
Ba Agrotechnology	Without requirements	30.09.2027	–	–
Ba Soil Science	Without requirements	30.09.2027	–	–
Ba Animal Science	Without requirements	30.09.2027	–	–

Recommendations

For Animal Science and Agrotechnology programmes

E 1. (ASIIN 3) It is recommended to better inform students and lecturers about the existing journal service in order to facilitate publishing their theses and scientific projects.

For all degree programmes

E 2. (ASIIN 1.3) It is recommended to improve the English skills of the students.

E 3. (ASIIN 1.3) It is recommended to strengthen the business and technology competencies of the students by offering lectures from industry representatives.

E 4. (ASIIN 4.2) It is recommended to increase the lecturer's participation in international conferences as well as their connections to the international scientific community in order to improve their research possibilities.

E 5. (ASIIN 6) It is recommended to include students in decision-making processes by giving them the right to vote.

E 6. (ASIIN 6) It is recommended to implement an industry board.

Appendix: Programme Learning Outcomes and Curricula

According to the Self-Assessment Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Animal Science:

The Bachelor's Degree Program in Animal Science is a study program of the Faculty of Agriculture. Faculty of Agriculture UNS is committed to producing graduates with knowledge, capability, and skills in the field of integrated sustainable agriculture through administration of learning. In line with the Visions and Missions of UNS, Faculty of Agriculture UNS, and the study program, it has Program Educational Objectives (PEO), best known as Graduate Profile. The PEOs of Animal Science are as follows:

1. Having basic knowledge in Animal Science and being able to apply Animal Science technology effectively and efficiently, which is supported by knowledge about principles of leadership, communication, and Animal Science resource management to achieve sustainable Animal Science production system.
2. Being able to apply logical, critical, innovative, quality, and careful thinking in doing types of work based on the results of information and data analysis in relation with scientific principles, procedures, and ethics, as well as being able to apply an effective and efficient Animal Science production system.
3. Having attitudes of respecting differences in culture, religion, and outlook of others and being responsible for their areas of expertise with independent, resilient, and entrepreneurial spirits. The graduate profile of the Bachelor's Degree Program in Animal Science is designed in accordance with the curriculum with abilities in basic knowledge, Science and Technology, and analytical knowledge with responsibilities as managers, entrepreneurs, scientists, and communicators. The study program graduate profiles are a reflection of the realization of qualities expected from a graduate after working for 2-3 years.

Graduate Profile Description

Manager (planner, designer, organizer, evaluator, mediator)	• Having leadership, managerial and adaptation to environment, as well as a creative, innovative, responsive in planning,

	implementing and evaluating livestock production system in accordance with the principles of sustainable livestock. • Being able to actualize the self-potential to work in team
Entrepreneur in livestock industry (entrepreneur, initiator, adaptor, cooperator)	• Being able to apply science knowledge and technology in the field of livestock production based on the principles of sustainable livestock, both in modern world or local wisdom • Couraging to start, implement, and develop business in sustainable livestock • Being able to create collaboration (negociate and communicate) effectively • Being able to innovate in applying science knowledge and technology in the field of animal science to the business practices • Being able to apply business ethic that environmental friendly
Scientist	• Being able to identify, analyze and formulate issue in the sustainable livestock precisely • Being able to design and conduct teaching and research professionally • Being able to make recommendation in solving problem in sustainable livestock system appropriately • Upholding the principles of scientific ethics • Being able to apply scientific principles in formulating, analyzing, and solving problems in animal science sector • Having the ability to communicate both in oral and writing communication
Communicator (fasilitator, motivator dan mediator)	• Having long-life learning ability • Being able to think analytically and synthesis by considering the impact of problem solving in global scope in social life

	• Having the ability as a facilitator, motivator, and mediator systematically and effectively to solve the problem of livestock production in the community • Being able to communicate the thought orally or in writing form, individually or in team

In the effort of supporting the formation of competent graduates corresponding to PEO, the study program organizes Program Learning Outcomes (PLO). There are ten points of PLO of the Bachelor's Degree Program in Animal Science as shown in the following chart:

PROGRAM LEARNING OUTCOMES

PLO1	Having international-standard knowledge in Animal Science and effective and efficient Animal Science technology, covering breeding, livestock farming management, feed technology, Animal Science product processing, and management of sustainable Animal Science production system.
PLO2	Understanding principles of leadership, communication, and Animal Science resource management and development of state-of-the-art knowledge in order to be able to apply them at the workplace.
PLO3	Mastering science-based Animal Science problem solving concepts with scientific methods.
PLO4	Being able to apply logical, critical, innovative, quality, and careful thinking in doing types of work in the field of Animal Science corresponding to the work competence standards.
PLO5	Being able to make right decisions in the context of problem solving in their areas of expertise, based on the result of information and data analysis.
PLO6	Becoming able to study implications of development or implementations of science

	and technology that consider and apply values of humanities according to their expertise based on the scientific rules, procedures, and ethics.
PLO7	Being able to apply state-of-the-art Animal Science technology and sophisticated information technology oriented towards increasing production, efficiency, quality, and sustainability based on Animal Science, covering nursery, feed, Animal Science product processing, and sustainable management of Animal Science production system.
PLO8	Being able to plan, design, apply effective and efficient Animal Science production system, either individually or in teams with multidisciplinary approach, and being responsible for team performance results.
PLO9	Having attitudes of respecting differences in culture, outlook, religion, faith, opinion, and original discovery of others.
PLO10	Internalizing academic values, norms, and ethics, and being responsible for their areas of expertise with independent, resilient, and entrepreneurial spirits

The following **curriculum** is presented:

SEMESTER 1

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	HMU101	Nation Philosophy	2	0	3.62
2	HMU102	Citizenship Education	2	0	3.62
3	HMU103	Indonesian Language	2	0	3.62
4	HMU104	English for Academic Purpose	0	0	0
5	HMF101	Scientific method	2	0	3.62
6	HPT101	Organic chemistry	2	1	5.43
7	HPT102	Mathematics	3	0	5.43
8	HPT103	Biology	2	1	5.43
9	HPT104	Genetics	2	0	3.62
10	HPT105	Introduction to Animal Science	2	0	3.62
11	HPT106	Introduction to economics	2	0	3.62
TOTAL			21	2	
			23		41.63

SEMESTER 2

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	MU201E	Islamic Religion	2	0	3.62
	MU202E	Catholic Religion			
	MU203E	Christian Religion			
	MU204E	Hindu Religion			
	MU205E	Buddhism Religion			
2	MU206E	Principles of social science	2	0	3.62
3	MF201E	Statistics	2	0	3.62
4	PT201E	Principles of biochemistry	2	1	5.43
5	PT202E	Principles of animal product technology	2	1	5.43
6	PT203E	Animal physiology	2	1	5.43
7	PT204E	Management of agribusiness	3	0	5.43
8	PT205E	Animal microbiology	2	1	5.43
TOTAL			17	4	
			21		38.01

SEMESTER 3

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	PT301E	Feedstuff and ration formulation	2	1	5.43
2	PT302E	Principles of animal reproduction	2	0	3.62
3	PT303E	Herbage and forage science	2	1	5.43

4	PT304E	Dairy production	2	1	5.43
5	PT305E	Meat and labour animal production	2	1	5.43
6	PT306E	Poultry production	2	1	5.43
7	PT307E	Principles of animal nutrition	2	1	5.43
8	PT308E	Animal products processing technology	2	1	5.43
TOTAL			**16**	**7**	
			23		**41.63**

SEMESTER 4

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	MU401E	Entrepreneurship	2	1	5.43
2	MF401E	Integrated sustainable agriculture system	2	0	3.62
3	PT401E	Principles of animal breeding	2	0	3.62
4	PT402E	Management dairy production	2	1	5.43
5	PT403E	Management of meat and labour animal production	2	1	5.43
6	PT404E	Management of poultry production	2	1	5.43
7	PT405E	Non-ruminant nutrition	2	0	3.62
8	PT406E	Animal Science Law and Policy	2	0	3.62
TOTAL			**16**	**4**	
			20		**36.2**

NO	CODE	ELECTIVE MODULE	Credit Points		ECTS cr-eq
1	PT407E	Animal feed industry	2	0	3.62
2	PT408E	Animal environment and behaviour	2	1	5.43
3	PT409E	Quality and safety of animal product	2	1	5.43
4	PT410E	Farm Management	2	1	5.43
5	PT411E	Animal reproduction	2	1	5.43

SEMESTER 5

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	PT501E	Abatoir and slaughtering technology	2	1	5.43
2	PT502E	Animal health	2	1	5.43
3	PT503E	Research methodology	2	0	3.62
4	PT504E	Ruminant nutrition	2	0	3.62
5	PT505E	Livestock marketing management	2	1	5.43
6	PT506E	Extension and communication of Animal Science	2	1	5.43
TOTAL			**12**	**4**	
			16		**28.96**

NO	CODE	ELECTIVE MODULE	Credit Points		ECTS cr-eq
1	MP104E	Rural sociology	2	1	5.43
2	PT507E	Animal breeding	2	1	5.43
3	PT508E	Miscellaneous poultry production	2	1	5.43
4	PT509E	Feasibility study and project evaluation Animal Science	2	0	3.62
5	PT510E	Animal by products processing technology	2	1	5.43

SEMESTER 6

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	PT601E	Livestock industry economics	2	1	5.43
2	PT602E	Livestock waste management	2	1	5.43
3	PT603E	Experimental design	2	1	5.43
4	PT604E	Feedlot technology	2	1	5.43
5	PT605E	Feed processing technology	2	1	5.43
TOTAL			**10**	**5**	
			15		**27.15**

NO	CODE	ELECTIVE MODULE	Credit Points		ECTS cr-eq
1	PT606E	Animal biotechnology	2	1	5.43
2	PT607E	Feed evaluation technique	2	1	5.43
3	TN203E	Soil fertility	2	1	5.43

SEMESTER 7 / 8

NO	CODE	COMPULSORY MODULE	Credit Points		ECTS cr-eq
1	MU701E	Practical Field Study	0	2	3.62
2	MU702E	Job training	0	3	5.43
3	MF701E	Thesis	0	5	9.05
4	MP701E	Seminar	0	1	1.81
TOTAL			**0**	**11**	
			11		**19.91**

According to the Self-Assessment Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Soil Science:

The Bachelor's Degree Program in Soil Science was established on June 20th, 1984 with the Decision of Director-General of Higher Education No. 39/Dikti/Kep/1984. The objectives of the Study Program are in line with its vision and missions and that of UNS. The competences

and ethics of graduates of the Bachelor's Degree Program in Soil Science have been clearly and comprehensively formulated in the graduate profiles and PLOs. Internal and external stakeholders such as lecturers, students, related professional organizations (APSITI and HITI), stakeholders, and alumni were involved in the preparation of Vision, Missions, Objectives, and Targets of the Soil Science study program. The revision on vision and missions will impact the learning outcomes and curriculum.
In order to assure realization of graduate profiles, PEO are designed as follows:

1. Mastering knowledge to analyze tropical soil properties, its problems, and solutions in accordance with scientific rules by using science and technology with integrated sustainable soil management (ISSM) approach.
2. Having skills to analyze, evaluate, and develop innovation in tropical soil use according to its ability and suitability and becoming aware to the global problems by using science and technology with integrated sustainable soil management (ISSM) approach.
3. Having attitudes of honesty, integrity, responsibility, self-performance, teamwork, leadership, and entrepreneurship, concern to community and environment, and becoming able to develop local, national, and international networks according to the field of tropical farming with integrated sustainable soil management (ISSM) approach.

The study program has five graduate profiles: practitioners, researchers, managers, entrepreneurs, and consultants.

Graduate Profile Description

Practitioners	A person whose activity on tropical agriculture as a bureaucrat, technocrat, and scientist by applying the principles of Integrated Sustainable Soil Management (ISSM)
Researcher	Designer, executor, analyzer, compiler of research reports and research developer in the field of sustainable soil and water resource management by applying the principles of Integrated Sustainable Soil Management (ISSM)
Manager	Leaders who are responsible for planning, implementation, evaluators and control activities in the field of tropical agriculture by applying the principles of

	Sustainable Integrated Soil Management (ISSM)
Entrepreneur	Business actors capable of producing innovative-creative products and services (determining production methods, arranging operations for product procurement, marketing, managing capital, and risk analysis) by following professional ethics by applying the principles of Integrated Sustainable Soil Management (ISSM)
Consultant	Advisor in the field of management of tropical agricultural land resources by applying the principles of Integrated Sustainable Soil Management (ISSM)

In the effort of supporting the formation of competent graduates corresponding to PEO, the study program organizes Program Learning Outcomes (PLO). There are eight points of PLO of the Bachelor's Degree Program in Soil Science as shown in the following chart:

PROGRAM LEARNING OUTCOMES

PLO1	Mastering theoretical concepts on soil properties and features, soil forming process, soil morphology and classification, conservation and management of soil and water, soil biology, soil fertility, and agroclimatology that supports farming.
PLO2	Understanding knowledge and information technology on scientific method, experiment design, research implementation, and research presentation with integrated sustainable soil management (ISSM) approach.
PLO3	Able to identify and solve various soil problems by applying rules of Soil Science with integrated sustainable soil management (ISSM) approach.
PLO4	Applying principles and recommend actions of soil and water management, fertilization technology, and regional design

	and development based on specific locations on various types of soil and plant with integrated sustainable soil management (ISSM) approach.
PLO5	Mastering ability to classify soil and evaluate class of soil capability/suitability, and provide recommendations by basing it on efforts to improve limiting factors of soil characteristics based on current information technology with integrated sustainable soil management (ISSM) approach.
PLO6	Becoming able to evaluate and research innovations to solve tropical soil problems with soil health approach and adaptation and climate change mitigation.
PLO7	Having attitudes of honesty, integrity, responsibility, self-performance, teamwork, entrepreneurship, concern to community and environment and to develop local, national, and international networks according to the field of tropical farming with integrated sustainable soil management (ISSM) approach.
PLO8	Having ability to write and publish original scientific work into various publication media, supervise and evaluate application of science and technology, and have lifelong learning spirits in the field of tropical farming with integrated sustainable soil management (ISSM) approach.

The following **curriculum** is presented:

COMPULSORY SUBJECT

NO	CODE	MODULE	CREDIT POINTS	ECTS cr-eq
SEMESTER – 1				
1	HMU101	Pancasila	2	3.62
2	HMU102	Citizenship	2	3.62
3	HMU103	Indonesian Language	2	3.62
4	HMU104	English for Academic Purpose	0	0
5	HMF101	Scientific Methods	2	3.62
6	HMP101	Introduction to Agricultural Science	2	3.62
7	HMP102	Botany	3	5.43
8	HMP103	Agricultural Economics	3	5.43
9	HMP104	Rural Sociology	3	5.43
10	HMP105	Soil Science	3	5.43
11	HTN101	Field Study 1	1	1.81
Total Credit Points			23	41.63
SEMESTER - 2				
1	MU201C	Islamic Religion	2	3.62
2	MU202C	Catholic Religion		
3	MU203C	Christian Religion		
4	MU204C	Hindu Religion		
5	MU205C	Buddhism Religion		
6	MU206C	Principles of Social and Culture Science	2	3.62
7	MF201C	Statistics	2	3.62
8	MP201C	Agroclimatology	3	5.43
9	MP202C	Agrotechnology	3	5.43
10	TN201C	Plant Physiology and Biochemistry	2	3.62
11	TN202C	Geology and Mineralogy	3	5.43
12	TN203C	Soil Fertility	3	5.43
13	TN204C	Agriculture Microbiology	3	5.43
Total Credit Points			23	41.63
SEMESTER - 3				
1	MP301C	Agricultural Production Machinery and Tool	2	3.62

2	MP302C	Plant Protection	3	5.43
3	TN301C	Soil Biology and Health	3	5.43
4	TN302C	Soil and Environmental Technology	3	5.43
5	TN303C	Soil Physics	3	5.43
6	TN304C	Soil Chemistry	3	5.43
7	TN305C	Water Management	3	5.43
Total Credit Points			20	36.2
SEMESTER - 4				
1	MU401C	Entrepreneurship	3	5.43
2	TN402C	Sustainable Agriculture System	2	3.62
3	TN401C	Soil, Water, Fertilizer and Plant Analysis	2	3.62
4	MF401C	Geodetic Surveying and Mapping	3	5.43
5	TN403C	Soil and Water Conservation	3	5.43
6	TN404C	Pedology	2	3.62
7	TN405C	Remote Sensing	3	5.43
8	TN406C	Field Studies 2	1	1.81
Total Credit Points			19	34.39
SEMESTER - 5				
1	TN501C	Research Methodology and Experimental Design	3	5.43
2	TN502C	Soil Morphology and Classification	3	5.43
3	TN503C	Soil Management	2	3.62
4	TN504C	Fertilizer and Fertilization	3	5.43
5	TN505C	Principles of Geographic Information System	3	5.43
6	AB303C	Agricultural Business Science	3	5.43
Total Credit Points			17	30.77
SEMESTER - 6				
1	MP203C	Agricultural Extension	3	5.43
2	TN601C	Land Reclamation and Soil Bioremediation	2	3.62
3	TN602C	Hydrology and Watershed Management	2	3.62
4	TN603C	Scientific Presentation	2	3.62
5	TN604C	Soil Survey and Land Evaluation	3	5.43
6	TN605C	Field Study 3	1	1.81
7	TN606C	Biofertilizer Technology	3	5.43
Total Credit Points			16	28.96

SEMESTER - 7/8				
1	MU701C	Social Internship Program	2	3.62
2	MU702C	Internship	3	5.43
3	MF701C	Thesis	5	9.05
4	MP701C	Seminar	1	1.81
Total Credit Points			11	19.91

ELECTIVE SUBJECT

No	Code	Module	Credit Points	ECTS cr-eq
SEMESTER - 3				
1	TN306C	Plant Nutrition	2	3.62
2	TN307C	Lanscape	2	3.62
3	AT303C	Production Technology of Annual Crop	3	5.43
4	AT304C	Production Technology of Perennial Crop	3	5.43
5	AT309C	Information Technology	2	3.62
6	AB307C	Human Resource Management	2	3.62
7	PT303C	Plant and Forage Science	3	5.43
Total Credit Points			17	30.77
SEMESTER - 4				
1	TN407C	Edaphology	2	3.62
2	TN408C	Microbial Ecology	2	3.62
3	TN409C	Clay Mineralogy	2	3.62
4	AT201C	Agroecology	2	3.62
5	AT401C	Seed Physiology	2	3.62
6	AT406C	Fruit Crop Production Technology	2	3.62
7	AT407C	Food Crop Production Technology	2	3.62
8	AT408C	Vegetable Production Technology	2	3.62
9	KP601C	Agrarian Law and Politics	2	3.62
10	AB403C	Agricultural Resource Economics	3	5.43
11	AB405C	Agricultural Commerce	2	3.62
Total Credit Points			23	41.63

SEMESTER - 5				
1	TN506C	Microbial Physiology	2	3.62
2	TN507C	Soil Microclimate	2	3.62
3	TN508C	Soil Quality	2	3.62
4	TN509C	Agricultural Environmental Management	2	3.62
5	AB304B	Cooperation and Agrobusiness Partnership	3	5.43
6	AB502C	Production and Operations Management	3	5.43
7	AB504C	Agricultural Development	2	3.62
8	AT505C	Tissue Culture Technology	3	5.43
9	AT507C	Soiless Culture Technology	3	5.43
10	AT512C	Spices and Medicinal Plants Production Technology	2	3.62
11	AT513C	Tubers and Nuts Production Technology	2	3.62
12	KP501C	Business communication	3	5.43
13	IP513C	Waste Utilization Technology	3	5.43
Total Credit Points			32	57.92

SEMESTER - 6				
1	TN607C	Environmental Impact Analysis in Development Planning	2	3.62
2	TN608C	Principles of Geographic Information System	2	3.62
3	TN609C	Soil Capita Selecta	2	3.62
4	TN610C	Turfgrass Management	2	3.62
5	TN611C	Environmental Microbiology	2	3.62
6	TN612C	Regional Development Planning	2	3.62
7	AT604C	Post Harvest Management	3	5.43
8	AT610C	Production Technology of Industrial Crop	2	3.62
9	AT611C	Production Technology of Plantation Crop	2	3.62
10	AB604C	Agricultural Policy	2	3.62
11	AB607C	Feasibility Study of Agribusiness Investment	3	5.43
Total Credit Points			24	43.44

According to the Self-Assessment Report the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor degree programme Agrotechnology:

The vision and missions of Agrotechnology study program are in line with those of Faculty of Agriculture UNS. The study program's vision is to provide education and become the center for science and technology development in the field of plant cultivation that can produce graduates who are competent in realizing integrated agriculture and who are able to compete at the national and international levels. Its missions are (1) to provide education in the field of plant cultivation to produce graduates who are competent in manifesting integrated and sustainable agriculture; (2) to conduct researches that lead to science and technology development to solve problems in the field of plant cultivation, especially quality local plants; (3) to hold community service in applying the results of science and technology development; (4) to increase and develop cooperation at the national and international levels.
The Agrotechnology study program determines its PEOs as follows:

1. Having professional attitudes in the field of agrotechnology based on religious, legal, and social norms, academic ethics, and noble values of national culture, willingness of lifelong learning, and abilities to communicate effectively and work efficiently and responsibly either on their own or in a team for the benefits of sustainable development in agriculture.
2. Having the knowledge to develop science and technology in the field of agrotechnology, especially plant production systems based on sustainable agricultural principles and the use local resources, and the ability to solve crop production problems coherently and holistically based on research and scientific publications.

3. Having the skills to apply science and technology in the field of agrotechnology in solving practical problems based on project management and sustainable agricultural business practices by empowering local resources and being adaptive to the development of the Industry 4.0 era.

In so doing it guarantees that graduates are able to become practitioners, researchers, managers, entrepreneurs, and consultants in accordance with its graduate profiles after undergoing all the learning processes. The study program graduate profiles are a reflection of the realization of qualities expected from a graduate after working for 2-3 years. Their formulation considers the input from stakeholders and decision makers based on scientific analysis and market needs analysis. The profiles are also determined by the general requirements of the labor market expectations for Agrotechnology graduates. Several government and private institutions and companies demand Agrotechnology graduates. Further description of the graduates' profile is presented in the following chart:

Graduate Profile Description

Practitioner	Able to plan and manage plant production business activities in a sustainable and adaptive to technological developments
Researcher	Able to identify problems, plan, implement, and analyze the results of research development in the field of plant production technology that is productive, effective, efficient, and communicates orally or in the form of scientific papers
Manager	Able to plan, design, initiate, coordinate, evaluate, and as a mediator of plant production business based on the latest science and technology in agriculture
Entrepreneur	Able to be an initiator, adapter, cooperator who can capture and develop prospective business opportunities in agriculture
Communicator	Able to act as facilitators, motivators, and mediators in agricultural business development

To realize competence standards and produce graduates who in the beginning of their career conform to the profile of the Agrotechnology study program, the PLOs are determined.

The PLOs offer students the possibility to acquire the competences required to fill several positions in agrotechnology in various sectors of community. Further description of the PLOs is presented in the following chart:

PROGRAM LEARNING OUTCOMES

PLO1	Capable to apply ethics based on religious, legal, and social norms as well as the noble values of the nation's culture, especially in the profession in the field of agrotechnology
PLO2	Able to work effectively and responsibly based on academic values, norms, and ethics, both individually and in group work
PLO3	Have lifelong learning ability, to develop professionalism in the field of agrotechnology
PLO4	Have agrotechnology knowledge, especially plant production system based on sustainable agriculture principles and utilization of local resources.
PLO5	Capable to apply adaptive plant production technology to industrial era 4.0, based on agrotechnology knowledge and sustainable agriculture principles by empowering local resources.
PLO6	Able to conduct research and scientific publications to contribute to the development of science and technology in the field of agrotechnology
PLO7	Capable to initiate and implement entrepreneurship in the field of plant production in a professional and innovative.
PLO8	Capable to communicate science and technology in the field of agrotechnology to the community for agricultural development purposes.

The following **curriculum** is presented:

SEMESTER 1

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	HMU101	Pancasila	2	0	3.62
2	HMU102	Citizenship	2	0	3.62
3	HMU103	Indonesian Language	2	0	3.62
4	HMU104	English (EAP)	0	0	0
5	HMF101	Scientific Method	2	0	3.62
6	HMP101	Introduction to Agricultural Sciences	2	0	3.62
7	HMP102	Botany	2	1	5.43
8	HMP103	Agricultural Economics	2	1	5.43
9	HMP104	Rural Sociology	2	1	5.43
10	HMP105	Soil Science	2	1	5.43
TOTAL			**18**	**4**	
			22		**39.82**

SEMESTER 2

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	MU201C	Religion	2	0	3.62
2	MU206A	Fundamental of Society and Culture Science	2	0	3.62
3	MF201A	Statistics	2	0	3.62
4	MP201A	Agroclimatology	2	1	5.43
5	MP202A	Agrotechnology	2	1	5.43
6	MP203A	Agricultural Extension	2	1	5.43
7	AT201A	Agroecology	2	0	3.62
8	AT202A	Plant Physiology	2	1	5.43
9	TN203A	Soil Fertility	2	1	5.43
TOTAL			**18**	**5**	
			23		**41.63**

SEMESTER 3

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	MP301A	Agricultural Production Tools and Machinery	2	0	3.62
2	MP302A	Plant Protection	2	1	5.43
3	AT301A	Plant Genetics	2	0	3.62
4	AT302A	Weed Management	1	1	3.62
5	AT303A	Technology of Annual Crops Production	2	1	5.43
6	AT304A	Technology of Perennial Crops Production	2	1	5.43
7	AB303A	Farm Management	2	1	5.43
TOTAL			**13**	**5**	
			18		**32.58**

No	Code	Elective Module	Credit points		ECTS cr-eq
1	AT305A	Plant Nutrient	2	0	3.62
2	AT306A	Insects and Plants Relationship	2	0	3.62
3	AT307	Interaction of Microorganisms and Plants	2	0	3.62
4	AT308A	Biodiversity	2	0	3.62
5	AT309A	Information Technology	2	0	3.62
6	TN301A	Soil Biology and Health	2	1	5.43
TOTAL			**12**	**1**	
			13		**23.53**

SEMESTER 4

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	MU401	Entrepreneurship	2	1	5.43

2	MF401	Sustainable Agriculture System	2	0	3.62
3	AT504A	Seed Physiology	2	0	3.62
4	AT402A	Plant Breeding	2	0	3.62
5	AT403A	Soil and Water Management	2	1	5.43
6	AT404A	Technology of Horticulture Plant Production	2	1	5.43
7	AT405A	Technology of Organic Plant Production	2	1	5.43
TOTAL			**14**	**4**	
			18		**32.58**

No	Code	Elective Module	Credit points		ECTS cr-eq
1	AT406A	Technology of Fruit Crops Production	2	0	3.62
2	AT407A	Technology of Food Crops Production	2	0	3.62
3	AT408A	Technology of Vegetables Crops Production	2	0	3.62
4	AB201A	Agribusiness Management	2	1	5.43
5	TN204A	Agricultural Microbiology	2	1	5.43
6	TN401A	Soil, Water, Fertilizer and Plant Analysis	1	1	3.62
7	TN405	Remote Sensing	2	1	5.43
8	TN612A	Regional Development Planning	2	0	3.62
9	AT409A	Plant Pest	1	1	3.62
10	AT410A	Plant Disease	1	1	3.62
11	AT411A	Technology of Organic Vegetables Production	2	0	3.62
12	AT412A	Technology of Organic Spices and Medicinal Plants Production	2	0	3.62
TOTAL			**21**	**6**	
			27		**48.87**

SEMESTER 5

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	AT501A	Plant Pest and Disease Management	2	1	5.43
2	AT502A	Research Design	2	0	3.62
3	AT503A	Cytogenetics	1	1	3.62
4	AT504A	Seed Technology	2	1	5.43
5	AT505A	Tissue Culture Technology	1	2	5.43
6	AT506A	Plant Breeding Technology	1	1	3.62
7	AT507A	Soiless Culture Technology	2	1	5.43
TOTAL			**11**	**7**	
			18		**32.58**

No	Code	Elective Module	Credit points		ECTS cr-eq
1	AT508A	Soil and Water Conservation	1	1	3.62
2	AT509A	Research Design on Plant Breeding	2	0	3.62
3	AT510A	Technology and Management of	1	1	3.62

		Pesticide			
4	AT511A	Technology of Ornamental Plants Production	1	1	3.62
5	AT512A	Technology of Spices and Medicinal Plants Production	2	0	3.62
6	AT513A	Technology of Tubers and Nuts Production	2	0	3.62
7	AT514A	Fertilizer and Fertilization Technology	1	1	3.62
8	AT515A	Biofertilizer Technology	1	1	3.62
9	AB501A	Marketing Management	2	1	5.43
10	KP501A	Business Communication	2	1	5.43
11	KP503A	Community Development	2	0	3.62
12	TN509A	Agricultural Environmental Management	2	0	3.62
13	TN302A	Soil Biotechnology and Environment	2	1	5.43
14	TN502A	Soil Morfology and Classification	2	1	5.43
15	TN505A	Basic Geographical Information Systems	2	1	5.43
16	AT516A	Research Design on Plant Pests and Diseases	2	1	5.43
17	AT517A	Agricultural Entomology	2	0	3.62
18	AT518A	Agricultural Virology	1	1	3.62
19	AT519A	Agricultural Mycology	1	1	3.62
20	AT520A	Technology of Organic Fruit Crops Production	1	1	3.62
21	AT521A	Technology of Organic Tubers and Nuts Production	2	0	3.62
22	AT522A	Technology of Botanical Pesticides	2	0	3.62
TOTAL			**36**	**14**	
			50		**90.12**

SEMESTER 6

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	AT601A	Data Analysis	2	0	3.62
2	AT602A	Agricultural Biotechnology	2	1	5.43
3	AT603A	Profession Independence	0	2	3.62
4	AT604A	Post-Harvest Management	2	1	5.43
5	AT605A	Biologycal Control and Habitat Management	2	1	5.43
6	AT606A	Scientific Presentation	2	0	3.62
7	AT607A	Research Proposal	0	1	1.81
TOTAL			**10**	**6**	
			16		**28.96**

No	Code	Elective Module	Credit points		ECTS cr-eq
1	AT608A	Landscape Architecture	1	1	3.62
2	AT609A	Control of Post-Harvest Pests and Diseases	2	0	3.62
3	AT610A	Technology of Industrial Plant Production	2	0	3.62
4	AT611A	Technology of Plantation Production	2	0	3.62
5	AB605A	Management of Agribusiness Strategy	2	1	5.43
6	AB607A	Feasibilitiy Study of Agribusiness Investment	2	1	5.43
7	TN402A	Soil Measurement Science and Mapping	2	1	5.43
8	TN602A	Hydrology and Watershed Management	2	0	3.62
9	TN604A	Soil Survey and Land Evaluation	2	1	5.43
10	TN609A	Capita Selecta of Soil	2	0	3.62
11	AT612A	Agricultural Bacteriology	1	1	3.62
12	AT613A	Biotechnology of Plant Protection	2	0	3.62
13	AT614A	Agricultural Nematology	2	0	3.62
14	AT615	Technology of Organic Crops Production	2	0	3.62
TOTAL			**26**	**6**	
			32		**57.92**

SEMESTER 7 / 8

No	Code	Compulsory Module	Credit points		ECTS cr-eq
1	MU701A	Community Service Program	0	2	3.62
2	MU702A	Internship	0	3	5.43
3	MF701A	Thesis	0	5	9.05
TOTAL			**0**	**10**	
			10		**18.1**