



ASIIN Seal

Accreditation Report

Bachelor's Degree Programme
Biology

Master's Degree Programme
Biology

Provided by
Universitas Andalas, Indonesia

Version: 23 June 2023

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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
Program Studi Sarjana Biologi	Undergraduate programme in Biology	ASIIN	BAN-PT ³ : A 2017 - 2022	10
Program Studi Magister Biologi	Master programme in Biology	ASIIN	BAN-PT: A 2018 - 2023	10
Date of the contract: 09.06.2022				
Submission of the final version of the self-assessment report: 04.01.2023				
Date of the audit (online): 28.02. – 02.03.2023				
Peer panel: Prof. Dr. Robert Haensch, Technical University of Braunschweig PD Dr. Alois Palmetshofer, University Wuerzburg Yayang Vionita, PT Cinquer Agro Nusantara Jihan Wardani, Universitas Lampung, student				
Representative of the ASIIN headquarter: Rainer Arnold				
Responsible decision-making committee: Accreditation Commission				
Criteria used:				

¹ ASIIN Seal for degree programmes;

² TC: Technical Committee for the following subject areas: TC 10 – Life Sciences

³ National Accreditation Board of Higher Education / Badan Akreditasi Nasional Perguruan Tinggi (BAN-PT)

A About the Accreditation Process

European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2014 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019	
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B Characteristics of the Degree Programmes

a) Name	Final degree (original)	b) Areas of Specialization	c) Corresponding level of the EQF ⁴	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Undergraduate programme in Biology	Sarjana Sains / Bachelor of Science in Biology	-	6	Full time	no	8 Semester	144 SKS / 217.60 ECTS	Once a year (August)
Master programme in Biology	Magister Sains / Master of Science in Biology	-	7	Full time	no	4 Semester	41 - 43 SKS / 61.91 - 64.93 ECTS	Once a year (August)

⁴ EQF = The European Qualifications Framework for lifelong learning

For the Bachelor's degree programme Biology, Universitas Andalas (UNAND) has presented the following profile on its webpage:

Vision:

To become a study programme that excels in studying and developing biodiversity and conservation of tropical biological resources and producing graduates with international competence in 2028.

Mission:

In line with the mission set by the university and faculty, the Biology Undergraduate Study Programme sets four missions as follows:

1. Carry out a quality education process to produce graduates who are able to compete at the INTERNATIONAL level.
2. Carry out research in the field of biodiversity and conservation of biological resources for international publication-oriented and acquisition of IPR.
3. Carrying out community service services based on the results of biodiversity research and conservation of biological resources for the welfare of the community.
4. Utilising cooperation to support the Tridharma of Higher Education activities.

Objectives:

Based on the vision and mission that have been formulated, the medium-term strategic goals of FMIPA are formulated as follows:

1. Producing graduates who are highly competitive nationally and recognised at the international level.
2. Increase the productivity of basic research in studying and developing the potential of tropical natural resources to support sustainable development.
3. Increasing the implementation of research results in the context of science transformation to the community.
4. Expanding the network of mutually beneficial cooperation with various government/private institutions at home and abroad for the productivity of tridharma activities of higher education.

For the Master's degree programme Biology, Universitas Andalas (UNAND) has presented the following profile on its webpage:

Vision:

In line with the vision of FMIPA UNAND, the vision of the Biology Master Programme of FMIPA UNAND is: "To become an internationally reputable Master of Biology Programme in studying, developing and saving the biodiversity of the Sumatra region in 2028.

Mission:

To realise the vision, Biology Master Programme FMIPA Andalas University sets four missions as follows:

1. Carry out a quality educational process in the field of Biodiversity and Bioconservation at the national and international levels.
2. Carrying out research in the field of Sumatran biodiversity that is oriented towards publication in reputable international journals and the acquisition of IPR / Patents.
3. Carry out community service based on research results to improve community welfare and environmental safety.
4. Utilising domestic and foreign cooperation to support the tridharma activities of higher education.

Objectives:

To realise the vision and carry out the mission above, four strategic goals have been set as follows:

1. Producing qualified graduates in studying, developing, and saving the field of Sumatran biodiversity that is recognised at the national and international levels.
2. Producing publications in reputable international journals and obtaining IPR / Patents in the field of Sumatran Biodiversity
3. Increasing the implementation of research results in the field of biodiversity and conservation for the welfare of society and environmental safety
4. Increase the output of cooperation in the fields of education, research and community service.

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
- Homepage UNAND: <https://www.unand.ac.id>
- Homepage Ba Biology: <http://biologi.fmipa.unand.ac.id/en/study-program/bachelor-study-program>
- Homepage Ma Biology: <http://biologi.fmipa.unand.ac.id/en/studyprogram/master-study-program>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The peers base their assessment of the learning outcomes on the information provided on the websites and in the Self-Assessment Report of both the Bachelor's degree programme Biology and the Master's degree programme Biology.

For both programmes, Universitas Andalas (UNAND) has described and published Educational Objectives (EO) and Intended Learning Outcomes (ILO). While the EO are rather general and refer to the vision and mission of the Faculty of Mathematics and Natural Sciences (FMIPA), the ILO cover a number of specific competences students should acquire in their respective degree programme. Both, EO and ILO of each degree programme are published on the programme's website.

The peers refer to the Subject-Specific Criteria (SSC) of the Technical Committee 10 - Life Sciences as a basis for judging whether the intended learning outcomes of the Bachelor's degree programmes Biology and the Master's degree programme Biology as defined by

UNAND correspond with the competences as outlined by the SSC. They come to the following conclusions:

Graduates of the Bachelor's degree programme Biology should understand the basic biological processes and should be capable of applying the scientific and technological methods of the biological sciences. In addition, graduates should acquire relevant scientific knowledge in the different biological areas such as botany, zoology, biochemistry, biostatistics, molecular biology, cell biology, ecology, plant & animal physiology, and related natural sciences (chemistry, physics). They learn to work in a team and to carry out practical work in a laboratory and in the field. In addition, graduates should be able to work scientifically and be familiar with technological innovations and the use and preservation of biological resources.

The Bachelor's degree programme Biology has a clear focus on biodiversity, ecological preservation, and organismic biology with several specialization options by selecting elective modules and particularly in the course of the final research project. Supplementing the subject-related qualification objectives, Bachelor's students should have adequate competences in oral and written communication skills, be capable of working autonomously as well as in a team-oriented manner, and be able to conduct research activities. Furthermore, they should have trained their analytical and logical abilities, be able to apply information and communication technology, and show a social and academic attitude. Finally, students should acquire language skills and should develop a strategy for life-long learning.

The programme's educational objectives and learning outcomes are expected to equip the graduates with life skills required to develop and adapt to the wide spectrum of possible occupations. Biology graduates have manifold job opportunities, which includes research assistants, teachers/lecturers, entrepreneurs, environmental consultants and they can find a suitable occupation in companies, academia, or public institutions.

Most of the Bachelor's graduates enter the job market directly, only few continue with a Master's degree either at UNAND or at other universities. Approximately 70 % of the Bachelor's graduates work for private companies or public institutions, 10 % become entrepreneurs and found their own company, and 20 % pursue further academic education.

As defined in the Self-Assessment Report, graduates of the Master's degree programme Biology should be able to work scientifically and be able to understand and solve complex problems in the area of biology and the environment. To this end, they should be in a position to discuss complex life science issues as well as own research results comprehensively and in the context of current international research and present these in writing. More specifically they should be able to identify, validate, curate, and analyse DNA data to manage biological data and be familiar with biological specimens. In addition, students of

the Master's degree programme Biology should acquire social competences, such as abstraction ability, analytical thinking, capacity for teamwork, ability to communicate, international and intercultural experience, and are therefore especially prepared to take on leadership responsibilities.

Graduates of the Master's degree programme Biology have manifold job perspectives, for example, they can work as biological curators at public and private institutions, as conservation manager for plantations or other agricultural companies, as environmental managers at public or non-governmental organisations, as researcher at public and private institutions, or as teachers at universities.

The peers gain the impression that the graduates of both degree programmes under review are well prepared for entering the labour market and can find adequate jobs in Indonesia. In general, all graduates have good and manifold job perspectives.

The peers can deduce the correlation of the programmes' competence profile with the SSC and see how each course contributes to achieving the intended learning outcomes from the provided Objectives-Module-Matrix for each programme.

In summary, the peers are convinced that the intended qualification profiles of both programmes under review allow graduates to take up an occupation, which corresponds to their qualification. The degree programmes are designed in such a way that they meet the goals set for them. The objectives and intended learning outcomes of both degree programmes under review are reasonable and well founded.

The peers conclude that the objectives and intended learning outcomes of the Bachelor's degree programmes Biology and the Master's degree programme Biology adequately reflect the intended level of academic qualification (EQF 6 for Ba Biology and EQF 7 for Ma Biology) and correspond sufficiently with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 10 – Life Sciences.

Criterion 1.2 Name of the degree programme

Evidence:

- Self-Assessment Report

Preliminary assessment and analysis of the peers:

UNAND awards a Bachelor of Science (B.Sc.) or Sarjana Sains (S.Si.) degree to the graduates of the Bachelor's degree programme Biology and a Master of Science (M.Sc.) or Magister Sains (M.Si.) to the graduates of the Master's degree programme Biology.

The peers confirm that the English translation and the original Indonesian names of both degree programmes correspond with the intended aims and learning outcomes as well as the main course language (Bahasa Indonesia).

Criterion 1.3 Curriculum

Evidence:

- Study plans of the degree programmes
- Module descriptions
- Homepage UNAND: <https://www.unand.ac.id>
- Homepage Ba Biology: <http://biologi.fmipa.unand.ac.id/en/study-program/bachelor-study-program>
- Homepage Ma Biology: <http://biologi.fmipa.unand.ac.id/en/studyprogram/master-study-program>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Both programmes are offered by the Faculty of Mathematics and Natural Sciences (FMIPA) of Universitas Andalas (UNAND).

The Bachelor's degree programme Biology is designed for four years and offered as a full-time programme. The curriculum encompasses, 144 credit semester units (SKS), this is equivalent to 217.60 ECTS points. Nevertheless, it is also possible for excellent students to complete the degree in only seven semesters. Students cannot cover more than 24 SKS per semester. All students have to complete the undergraduate programme within seven years. The students' individual study plans are different from each other, but have to be approved by their academic advisors.

Master's degree programme Biology is designed for two years and offered as a full-time programme. Students need to complete between 41 - 43 SKS, which is equivalent to 61.91 - 64.93 ECTS points, in order to complete the programme successfully. The range in SKS is due to the fact, that students can choose to publish their results either nationally (41 SKS) or internationally (43 SKS).

Each semester is equivalent to 14 weeks of learning activities. Besides these learning activities, there is one week for midterm exams and one week for final exams. The odd semester starts in August and ends in January of the following year, while the even semester last from February to July. A systematic university-wide review of the curriculum is conducted

every five years but minor changes may be implemented every year after endorsement by FMIPA.

The curriculum of the Bachelor's degree programme Biology consists of university requirements and compulsory and elective courses determined by UNAND and the respective departments. University requirements are courses that need to be attended by all undergraduate students at UNAND. There are five university requirements: Bahasa Indonesia, Religion, Pancasila, Civic Education, and Entrepreneurship. These courses are almost all offered in the first two semesters of studies. In total, there are 40 compulsory courses with 108 SKS and 12 elective courses that cover 36 SKS.

Courses on the different subject-specific sciences are offered from the third to the eighth semester. Elective courses can be taken from the third year of study. Students usually choose elective courses that relate to their thesis and/or their individual interests. During the eight semesters, students must also complete the undergraduate thesis (6 SKS) and the community service (2 SKS).

Usually during the last year of studies, students must complete the community service. The peers discuss with the programme coordinators about the content and goal of this course. The programme coordinators explain that community service is compulsory for all Indonesian students. It has a minimum length of four weeks and often takes place in villages or rural areas where students stay and live together with the local people. The course is designed "to allow students to apply their knowledge based on their field in order to empower society." Since the community service usually takes place in remote areas, the students cannot attend any classes during this time. The students work in interdisciplinary teams during the community service in order to advance the society and bring further development about. This course was introduced at all Indonesian Universities in 1971. The assessment of the community service consists of a work plan, programme implementation, and activity report. The peers understand that students should work for the benefit of the community and the Indonesian society during the community service and support this concept.

Bachelor's students with good academic performance (GPA > 3.5) and no grade below B are eligible to directly continue to the Master's degree programme Biology in the so called "Fast Track programme". Undergraduate students have the opportunity to join the Master's programme through the "Fast Track programme", which is designed for a period of five years, namely Bachelor's programme for four years and Master's programme for one year (can be extended for one semester). Bachelor's students can join the "Fast Track programme", if they have a GPA of at least 3.25, have acquired at least 120 SKS, and have a sufficient English test score (Test of English as a Foreign Language/TOEFL) of at least 475 or

an International English Language Testing System/IELTS of at least 5.0. In addition, the topic of the undergraduate thesis must be continued in the Master's programme.

The peers see that the Department of Biology focuses on courses in natural sciences with a concrete application in biology, so the Bachelor's degree programme Biology includes courses in Biophysics, Biochemistry, and Biostatistics. Biostatistics, which is taught in the fifth semester, is an advanced course and Biophysics is not a general introduction to physics but a specialised course focussing on bio-optics, biosensors, and biomaterials. The same applies to chemistry, where an introductory course in organic and inorganic chemistry is missing. However, the peers learn during the audit that Indonesian high school graduates usually have sufficient knowledge in basic natural sciences and mathematics to join study programmes at universities. For this reason, it is not necessary to offer introductory courses at the university, but the courses can build upon the already existing knowledge in natural sciences and mathematics. In the discussion with the peers, the students confirm that they are well prepared in natural sciences and mathematics and that it is not necessary for the Department of Biology to offer basic courses in these areas. Nevertheless, the peers have some concern if the Bachelor's students receive enough education in basic natural sciences (chemistry, physics) and mathematics. For this reason, they ask the Department of Biology to evaluate continuously if students acquire decent basic skills in the natural sciences and mathematics to develop a deeper understanding of and skills to deal with more complex bio-scientific questions.

The peers discuss with the programme coordinators, if it is useful to offer a course in bioethics already in the first semester of the Bachelor's degree programme Biology. Bioethics is a branch of applied ethics that studies the philosophical, social, and legal issues arising in the life sciences and treats ethical questions relating to the nonhuman biological environment. The peers are convinced that bioethics is an important subject, however they also think that the students should first learn about the basic biological sciences, before they are able to discuss the advanced issues treated in bioethics. For this reason, they suggest offering the course on bioethics later than the first semester of the Bachelor's programme.

In the first semester of the Master's degree programme Biology, six compulsory courses (Molecular Biology, Ecology and Ecosystem Conservation, Physiology, Biosystematics and Evolution, Tropical Biodiversity, and Biostatistics) are offered. In the second semester, students can choose between one of the five offered concentrations:

1. Ecology and Ecosystem Conservation
2. Genetics and Molecular Biology

3. Physiology

4. Biosystematics and Evolution

5. Microbiology

Each concentration consists of two compulsory courses. Furthermore, each concentration offers four electives. Each student is required to take at least two electives from their selected concentration and may choose two additional electives from other concentrations.

The curriculum of the Master's degree programme Biology consists of compulsory courses with 33 or 35 SKS and elective courses with 8 SKS. In the final year, Master's students conduct their research activities and write a thesis. In addition, Master's students are required to submit a paper, which is based on their research results, to a national or international journal.

The members of the teaching staff explain on demand of the peers that they offer possible topics for the final projects according to their own research projects. All members of the teaching staff supervise theses. Bachelor's students have to design a research proposal (this proposal is developed in the "Research Proposal Seminar", which usually takes place in the sixth semester) with a time schedule for the project, which is discussed with the academic advisor. If they agree, students apply formally for being allowed to work on the suggested topic. Students can also develop their own concepts for their Bachelor's thesis and it is possible to conduct the Bachelor's thesis outside UNAND. The same applies for the Master's theses.

In the discussion with the peers, the employers suggest better training the students in data science and modelling. These areas become more and more important for Biology students and thus should have a stronger focus in the curriculum. In addition, the employers point out that the graduates lack hands on experience with advanced instruments e.g., in the area of molecular biology and that they have to train them before they are able to use some modern instruments. This goes hand in hand with the peers' observation, that the technical equipment in the laboratories needs to be updated and, additionally, more modern instruments should be available for teachers and students (see criterion 3.3).

After analysing the module descriptions and the study plans, the peers confirm that both degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All practical lab work and internships are well integrated into the curriculum and the supervision by the Department of Biology guarantees for their respective quality in terms of relevance, content, and structure.

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

International Mobility

UNAND provides some opportunities for students to conduct internships and exchange programmes abroad. Students who take part in student exchanges through cooperation programmes can gain recognition of the acquired credits after obtaining approval from their undergraduate programme. The credits acquired abroad are transferable to UNAND, although this transfer of credits is only possible if an agreement exists between UNAND and the involved international university. This agreement regulates the details of the transfer, such as the list of courses that can be transferred, the minimum grade, equivalency of curriculum between universities, etc.. However, students mention that transferring the credits to UNAND takes sometimes rather long. To this end, the Internal Office staff and the advisors could work closely together and be more active in advising students how to speed up the process of credit recognition

The International Office of UNAND is responsible for managing and coordinating the international activities such as coordinating and managing student mobility programmes, developing and maintaining relationships with partner institutions and organisations around the world, recruiting and admitting international students, providing support and assistance to international students during their time at UNAND, such as helping with housing, visa issues, and other practical matters.

Students' international academic mobility is supported by UNAND. For example, through scholarships from UNAND and International Students Mobility Awards (IISMA), a scholarship programme from the Ministry of Education and Culture starting from 2021. In addition, lecturers are encouraged to carry out joint research activities with international partners and to involve students in their projects.

The new policy of the Indonesian government actively supports any activities outside of the university by releasing a regulation on the Merdeka Belajar-Kampus Merdeka (MBKM), which requires the university to promote students who want to spend part of their Bachelor's programme outside UNAND (Minister of Education and Culture Regulation Number 3, Year 2020). UNAND recognizes the courses taken by the students outside UNAND, based on the comparability of the intended learning outcomes. The peers consider this regulation sufficient. However, according to the opinion of the peer group, the academic mobility of the students should be further promoted.

The number of Biology students who participate in international exchange programmes is still low despite students' high interest. For example, every year from 2017 to 2019, the Master's degree programme Biology sent one student to Shizuoka University, Japan. Because of COVID-19 pandemic, student mobility was limited to participating in online programmes. In 2021, one student participated in an online exchange to Malaysia. However, the Department of Biology has several collaborations with foreign and Indonesian universities and research institutions. The collaborations consist of guest lectures, joint seminars, joint research and publications.

The students confirm during the discussion with the peers that some opportunities for international academic mobility exist and that the credits acquired abroad are recognised at UNAND. However, they also point out that they wish for more places and better endowed scholarships for long- and short-term stays abroad. The number of available places in the exchange programmes is still limited and there are restrictions due to a lack of sufficient financial support. UNAND can provide only limited travel grants, while the demand from students is rising. The lack of financial support hinders students from joining the outbound programmes. National scholarships are available, but they are highly competitive, so only a few students receive them.

The peers understand these problems; however, they recommend increasing the effort to further internationalising UNAND by offering more places in international exchange programmes and more scholarships. In addition, the peers see that most of the faculty members have international contacts, which can be used for establishing more international cooperations.

The peers emphasize 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. Furthermore, FMIPA should invite more visiting lecturers, initiate more international exchange programmes, and provide more scholarships for students.

A good starting point for initiating more international cooperations are the numerous personal international contacts of the faculty members and the guest lecturers. It is also possible for students and teachers to apply to international organisations like ERASMUS or the German Academic Exchange Council (DAAD) for receiving funds for stays abroad.

Furthermore, the Department of Biology should try to attract international students, e.g., by organising international summer schools on topics related to tropical rain forest, biodiversity, ecology, and bio-conservation. The peers are convinced that such an offer would appeal to many students, especially from Europe, and this might help to further promoting the internationalisation of UNMUL. In addition, the Department of Biology should make its

degree programmes internationally more visible and make transparent, for example by better advertising the programmes and emphasising that there is an international class in the Bachelor's programme that is taught in English.

In summary, the peers appreciate the effort to foster international mobility and support FMIPA to further pursuing this path. However, with respect to academic mobility there is still room for improvement.

Criterion 1.4 Admission requirements

Evidence:

- Self-Assessment Report
- Homepage UNAND: <https://www.unand.ac.id>
- Homepage Ba Biology: <http://biologi.fmipa.unand.ac.id/en/study-program/bachelor-study-program>
- Homepage Ma Biology: <http://biologi.fmipa.unand.ac.id/en/studyprogram/master-study-program>
- Discussions during the audit

Preliminary assessment and analysis of the peers:

According to the Self-Assessment Report, admission procedures and policies for new students follow the national regulations in Indonesia. The requirements, schedule, registration venue, and selection test are announced on UNAND's webpage and thus accessible for all stakeholders.

There are three different ways by which students can be admitted to a Bachelor's programme at UNAND:

1. National Entrance Selection of State Universities (Seleksi Nasional Masuk Perguruan Tinggi Negeri, SNMPTN), a national admission system, which is based on the academic performance during the high school.
2. Joint Entrance Selection of State Universities (Seleksi Bersama Masuk Perguruan Tinggi Negeri, SBMPTN). This national selection test is held every year for university candidates. It is a nationwide online test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography).
3. UNAND Independent Selection students are selected based on specific criteria (academic merit, special needs etc.) as defined by UNAND for prospective students that haven't been accepted through SNMPTN or SBMPTN.

The entrance requirements are prepared by the universities and then forwarded to the National Testing Agency for State Universities to be accessible to all SNMPTN and SBMPTN applicants. The general requirement for UNAND student admission is presented in the Self-Assessment Report: through SNMPTN a minimum of 20 %, through SBMPTN a minimum of 30 %, and through the independent selection a maximum of 50 %.

The number of available study places is 120 students per year in the Bachelor's degree programme Biology. The quota is based on the number of teachers and the capacity of the available facilities. Since 2015 there is an English class in the Bachelor's degree programme Biology with 20 to 25 students, students need to pass an interview to get admitted to the English class.

Undergraduate students at UNAND have to pay tuition fees. The fees for each study programme vary according to the operational costs of learning. In addition, the fees for each student are also different according to the financial ability of their parents. The lowest fee in 2022 for the biology programmes was IDR 500 000 (EUR 32.25) and the highest IDR 5 000 000 (EUR 322.50) per semester.

The admission for the Master's degree programme Biology is carried out via an independent selection by UNAND. The admission is based on the previous level of academic education and the academic requirements. Applicants need to have a Bachelor's degree in the respective subject, in this case biology. Students can be admitted to the Master's degree programme Biology via regular selection, as Fast Track students, or through international selection.

Acceptance of new students through regular selection is intended for candidates whose funding comes from their own financial resources (self-funding), scholarships (from the Indonesian government or other sources), or directly from UNAND. Prospective new students for the regular selection must have a diploma in an accredited undergraduate programme in the appropriate field of study; (in this case Biology), or in accredited diploma IV programme, who already have a work experience in their field of at least two) years. In addition, they need to have a minimum GPA of 3.00 and a minimum TOEFL score of 475 or an IELTS minimum score of 5.5.

Bachelor's students who demonstrate a high academic achievement with a minimum GPA of 3.25 with the lowest score B until the end of the sixth semester and have a TOEFL score higher than or equal to 450 can choose to take part at the "Fast Track programme". The Bachelor' students are accepted directly into the Master's degree programme and can attend Master's courses already during their Bachelor's studies. The courses are recognised

in the Master's programme, which allows Fast Track students to complete both programmes (Bachelor's and Master's) within five years. In 2021, 15 students and in 2022 21 students were admitted to the "Fast Track programme". According to the programme coordinators, all of the Fast Track students finish both programmes within in the expected five years.

For international selection, the candidates should come from a country that has a bilateral cooperation with Indonesia, have a Bachelor's degree with a minimum GPA of 3.00 that is related to biology, and be able to communicate in English or Bahasa Indonesia. In case of English, they need to have a minimum TOEFL score of 475 or an IELTS minimum score of 5.5.

All candidates for the Master's degree programme Biology have to pass an interview, during which the candidates are asked about their motivation for joining the programme, their academic background, and their research interests.

The capacity of the Master's degree programme Biology is 30 students per year. In 2022, the tuition fees for the Master's degree programme Biology was IDR 6 500 000 (€ 401.26) per semester.

Several grants for students with financial difficulties are available, such as from the government, industries, and foundations. Some senior students work as laboratory assistants to earn some money for financing their studies.

Directly after the audit, UNAND submits statistical data on the number of applications as well as on the average length of studies for the last five years for both programmes and the Fast Track students.

The peers see that the Bachelor's degree programme Biology receives many applications and the demand is much higher than the number of available study places. During the last six years, between 1669 (2016) and 517 (2020) candidates applied for the programme. The acceptance quota was between 7.7 % (2016) and 20.3 % (2020). The low numbers in 2019 and 2020 are due to the COVID-19 pandemic.

In the Master's degree programme Biology, almost all applicants are accepted and the number of available study places (30) is sufficient to meet the demand. On the contrary, the Department of Biology would be happy about more applications.

The submitted data on the average length of studies for both programme is not very detailed and the peers think that UNAND and the Department of Biology should pay more attention to register the exact length of studies for each graduate. This way, they could provide meaningful data and better identify possible weaknesses.

The details of the application process at UNAND and further information on admissions criteria and deadlines can be found in the National Regulation No. 2, 2015 and the Rector Universitas Andalas Decree No 14 year 2021.

In summary, the auditors find the terms of admission to be binding and transparent. They confirm that the admission requirements support the students in achieving the intended learning outcomes.

Criterion 1.5 Work load and credits

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Based on the National Standards for Higher Education of Indonesia (SNPT), both programmes under review use a credit point system called SKS.

For regular classes, 1 SKS of academic load for the undergraduate programme is equivalent to 3 academic hours, which equals 170 minutes. This includes:

- 50 minutes of scheduled contact with the teaching staff in learning activities,
- 60 minutes of structured activities related to lectures, such as doing the assignments, writing papers, or studying literature,
- 60 minutes of independent activities outside the class room to obtain a better understanding of the subject matters and to prepare academic assignments such as reading references.

For lab work, final project, fieldwork, and other similar activities, 1 SKS is equivalent to 3 to 5 hours a week of student's activities. The details and the students' total workload are described in the respective module description.

Bachelor's students with high academic achievement can take more courses (up to 24 SKS) to speed up their studies; the academic advisor must approve this.

According to the Self-Assessment Report, UNAND calculates 30 hours of students' total workload and uses a conversion factor of 1.51 between SKS and ECTS points. The reasoning behind this calculation is that one SKS equals 170 minutes (2.833 hours). As the semester

lasts for 16 weeks $2.833 \times 16 = 45,328$ hours per semester. This total workload is then divided by 30 to get the conversion factor: $45.33 / 30 = 1.51$.

The peers point out that there can be no fixed conversion rate between SKS and ECTS points. Therefore, the ECTS points need to be calculated separately for each course. This is necessary, because the time students need for self-studies is different for each course. Especially the Ba/Ma-theses show, that the students spend much more time on their final projects than is currently reflected in the awarded ECTS points. For example, for the Master's thesis 6 SKS (9.06 ECTS points) are awarded, because a total workload of 272 hours ($2.833 \times 16 / 30$) is assumed. However, Master's students spend almost all of the fourth semester on their thesis, so almost 30 ECTS points should be awarded and not only 9.06. This conversion also explains, why the Master's degree programme Biology only awards between 61.91 and 64.93 ECTS points for the whole programme. Under the assumption that full time programmes should have a workload of 30 ECTS points per semester, the Master's programme should encompass around 120 ECTS point and not only half of this. As a consequence, Master's graduates applying at international universities for a PhD programme might be rejected, because the currently awarded ECTS points do not comply with a four semester long Master's programme. Moreover, exchange students from abroad will have difficulties with transferring their ECTS points back to their home-university.

In addition, the peers point out that it is not useful to have a different workload in the Master's programme. 41 SKS will be achieved if students present their research results in a national seminar and then publish them in a national journal; 43 SKS will be achieved if students present their research results in an international seminar and then publish them in an international journal. The workload for a national publication is not necessarily lower than for an international publication. It is more a question of quality and not of quantity. Therefore, it would be useful to have the same minimum of required credits for all graduates of the Master's programme and not to differentiate just on the basis of the form of publication.

Since the workload of the students was only estimated by the programme coordinators, the peers expect UNAND to re-evaluate the calculation of ECTS points and asking the students about their actual workload, especially the time they need for self-studies, for each course. For example, this could be done by including a respective question in the course questionnaires. By correctly displaying students' workload in ECTS points, UNAND would facilitate academic mobility and better support their graduates if they apply for international programmes.

In any case, UNAND needs to verify the students' total workload and make sure that the actual workload and the awarded ECTS points correspond with each other. This information should be made transparent in the module descriptions and the study plans.

The peers confirm that both programmes have a high but manageable workload. Students can give their feedback on the courses and comment if they think that the workload is too high. However, there should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out each semester.

Criterion 1.6 Didactic and Teaching Methodology

Evidence:

- Self-Assessment Report
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The learning method applied in the Biology programmes is a combination of teacher-centred learning (TCL) such as classroom teaching/tutorials, demonstrations, and laboratory sessions, and student-centred learning (SCL) such as group discussions, case studies, cooperative and project-based learning, field studies, and laboratory work. Each course can use one or a combination of several teaching and learning methods.

The most common method of learning in the Bachelor's degree programme Biology is class session, with several courses having integrated laboratory work. Lecturers generally prepare presentations to support the teaching process. In addition, several courses include teaching practice sessions (i.e., students presenting teaching practice trials in front of their peers). With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre- or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods.

In the Master's degree programme Biology, more student centred learning models are applied in order to improve students' analytical and scientific skills. To this end, in most courses didactic methods such as cooperative learning, case studies, and project based

learning are applied. In general, the focus in the Master's degree programme Biology is on self-organised learning and research oriented teaching and learning methods.

Learning activities are carried out face-to-face in classrooms, laboratories, or during field trips. Assignments are submitted directly to the lecturer during a face-to-face meeting or via e-mail and other digital media systems. Online learning was applied intensively during the COVID-19 pandemic. Restrictions on practical activities during the pandemic have constrained the laboratory work. There were no lab sessions for some time during the COVID-19 pandemic. After teachers and students were vaccinated, the labs were open again, but the student groups for the practical sessions were reduced in numbers.

Since 2015 there is an English class in the Bachelor's degree programme Biology with 20 to 25 students, students need to pass an interview to get admitted to the English class. In addition, English is usually used in lecture materials (PowerPoint slides) and references in most courses of the regular classes.

In the Master's degree programme Biology, the courses are usually taught in Bahasa, however English textbooks and papers are used and if there is an international student, the course is taught in English. However, there has only been one international student (from Myanmar) who joined the Master's programme so far.

In summary, the peer group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concept of both undergraduate programmes comprises a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format. It actively involves students in the design of teaching and learning processes (student-centred teaching and learning).

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

The peers acknowledge that UNAND has established a "Curriculum Revision Team", which has the task to verify if Bachelor's students receive the necessary education in basic mathematics, basic physics, and basic chemistry. The peers will wait for the respective results.

The peers appreciate that UNAND supports their point of view that further promoting international mobility both for students and lecturers is an important task. Initiating more cooperations, providing more grants will improve the students and teachers opportunities for spending some time abroad. Hosting an international workshop for primate conservation is certainly one step in the right direction.

The peers support UNAND plan of conducting a survey for verifying the students' total workload for each course in the Master's programme, which is especially necessary for the Master's thesis. The peers expect that adjustments will be made afterwards and they need to be informed about the implemented changes with respect to workload and awarded credits.

The peers consider criterion 1 to be mostly fulfilled.

2. Exams: System, concept and organisation

Evidence:

- Self-Assessment Report
- Module descriptions
- UNAND Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the peers:

According to the Self-Assessment Report, the students' academic performance is evaluated based on written exams (e.g., multiple choice, essays, quizzes, and calculations), oral exams, presentations, practical work, papers, and reports.

The form of each exam is mentioned in the module descriptions that are available to the students via UNAND's homepage and the MOODLE-based learning management system. Usually, there are two written exams in each course (besides the assignments, homework, and presentations); the mid-term exam is conducted in 8th week of the semester and the final exam in 16th week.

The information about the exam system is submitted by each lecturer at the beginning of the course through a "Course Contract", which contains information about the terms of the course (pre-requisites), learning objectives, learning methods, brief descriptions of classes, assignments, references, assessment processes, and passing standards. Exam criteria and requirements & remedial policy are also explained in the contract.

As stipulated in the academic regulations, students at UNAND need to attend at least 75 % of the classes, otherwise, they may not be admitted to take part at the courses' final exam. Make-up exams are offered for students that could not participate, for example in cases of illness or other eligible reasons.

The most common type of evaluation used are written examinations; however, quizzes, laboratory work, assignments (small projects, reports, etc.), presentations, seminars, and discussions may contribute to the final grade. Written examinations, either closed-book or open-book, typically include short answers, essays, problem-solving or case-based questions, and calculation problems. Some lecturers also give multiple choice or true-false questions in examinations or quizzes. The grade from laboratory work usually consists of laboratory skills, discussions, reports, and oral exams. The grading system is different for the internship, the community service, and the final project. The details, which assessment forms are used in these courses and how they contribute to the final grade, are described in the respective module descriptions and the course contract. Students are informed about mid-term and final exams via the Academic Calendar. Students can access their results via the digital platform MyFmipa.

The grades for the exams range from A to E, and/or between 4.00 to 0.00. Students with low grades will be given remedial exams, in order to give them the opportunity to improve their academic performance. Undergraduate students need a GPA of at least 2.00 to graduate, while master's students need a minimum GPA of 3.00. If students fail a course - even after remedial - they need to re-sit the course again in the following semester. Students who object to the final grade of their courses are allowed to make a complaint. The details of the procedure are described in the academic regulations.

The course "Research Methodology", which is offered in the fifth semester of the Bachelor's degree programme Biology, is designed to introduce students to scientific methods and research activities. Students conduct research activities in the laboratories under the guidance of a supervisor, including proposal preparation, implementation of laboratory research, and report preparation. In addition, the study programmes provide briefings on scientific writing materials and latest research materials. Moreover, when a thesis supervisor has been appointed, students can further discuss their research proposals with the supervisor.

If a student fails, she or he usually has to repeat the entire module in the following semester; it is usually not possible to retake just parts of the course or to just retake the final exam. However, mid-term exams can be repeated (remedy) but if a student fails the final exam, she or he has to retake the whole course in the next semester. The absence of students in the midterms and finals due to illness or otherwise is remediable by taking the exam later. Students, who cannot attend practical courses for acceptable reasons, can repeat the practicum later; the lecturers are responsible for the arrangement. Students with special needs are provided with support to enable them to participate in the academic activities and exams. There is a fixed period after the announcement of the final grades, during which students can ask for explanations and can appeal their grades.

Every student in the Biology programmes is required to do a final project (Bachelor's or Master's thesis). The Bachelor's thesis is a scientific work report written by students in the Bachelor's programme that focuses on a specific and usually consists of literature study, practical research, data analysis and presentation in figures or tables, and writing the thesis under the supervision of a teacher. Both the student and his /her supervisors might decide the topic and content of the project. In many cases, the lecturers offer particular topics connected to their research. The students have to present their results and defend them in an open presentation (with audience) in front of the Thesis Examiner Team.

The Master's thesis is an academic paper, which includes an independent in-depth study of a scientific topic and which creates innovation or provides new contributions to the scientific or technological development of respective scientific area, in this case biology. The Master's thesis is conducted with the guidance of the thesis advisor.

In order to graduate, Master's students need to publish the results of their thesis either in a national or in an international journal (the article at least needs to be accepted).

The students appreciate that there are several short exams instead of one big exam and confirm that the exam load is appropriate and they are well informed about the examination schedule, the examination form, and the rules for grading.

The peers also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples.

In summary, the peers confirm that the different forms of examination used are competence-oriented and are suitable overall for verifying the achievement of the intended learning outcomes as specified in the respective module descriptions. The form of examination is determined individually for each course and published in the respective module description. The forms of examination are based on the main content of the modules and the level is appropriate for the respective degree programme.

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

UNAND does not comment on this criterion in its statement. The peers consider criterion 2 to be fulfilled.

3. Resources

Criterion 3.1 Staff and Development
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Evidence:

- Self-Assessment Report
- Staff Handbook
- Study plans
- Module descriptions
- Discussions during the audit

Preliminary assessment and analysis of the peers:

At UNAND, 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 or an associate 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.

According to the Self-Assessment Report, the teaching staff in the Department of Biology employs 39 teaching staff with various functional positions and academic degrees. Currently there are eight professors, 11 associate professors, and 20 assistant professors. All of them are acting as lecturers in the Bachelor's degree programme Biology. The teaching staffs consist of 31 (79 %) doctors (with PhD degrees from international universities e.g., Japan, USA, Germany, Australia, or from Indonesian universities), while 8 (21 %) have a Master' degrees. All staff members with a PhD degree are qualified to act as teachers in the Master's degree programme Biology.

Through the Institute of Research and Community Services (Lembaga Penelitian dan Pengabdian pada Masyarakat, LPPM), UNAND awards doctoral research grants for staff members that enrol in PhD programmes outside UNAND so that they can finance their living expenses. Aside from taking advantage of full grants provided by the university, the staff members can seek additional funding from the Indonesian government as well as from institutions abroad.

The teaching staff in the Department of Biology belongs to six scientific fields:

1. Ecology and Ecosystem Conservation
2. Genetics and Molecular

3. Physiology

4. Biosystematics and Evolution

5. Microbiology

The teacher to student ratio is 1:16 in the Bachelor's degree programme Biology and 1:3 in the Master's degree programme Biology. The peers especially appreciate the large amount of qualified teachers in the Department of Biology.

Details of the academic qualifications of the teachers are described in the staff handbooks, which are accessible via the respective department's webpage. All fulltime members of the teaching staff are obliged to be involved in (1) teaching/advising, (2) research, and (3) community service. However, the workload can be distributed differently between the three areas from teacher to teacher. In addition, there are non-academic staff members consisting of librarians, technicians and administrative staff.

The peers point out, that it would also be useful to invite guest lecturers from national and international universities as well as professionals to give classes and act as keynote speakers in seminars. The purpose of inviting domestic and foreign guest lecturers is to provide students with a different learning experience, and to improve standard of lectures at UNAND.

The peers discuss with UNAND's management how new staff members are recruited. They learn that every year the faculties and departments announce their vacancies to UNAND's management, which subsequently announces the vacancies on UNAND's webpage. One way to recruit new teachers is to send promising Master's students from UNAND abroad to complete their PhD and then to hire them as teachers when they are finished. Nevertheless, UNAND also hires graduates from other universities. Vacancies are announced nationally, so UNAND gets applications from other universities.

During the audit, the peers inquire how high the teaching load is and if enough opportunities are offered to the academic staff members to conduct research activities. They learn that teachers at the Department of Biology have a teaching load of around 18 hours per week and a total workload of 12 to 16 credits; the national maximum is 16 credits. One credit is equivalent to 170 minutes of work per week with about one hour contact time. How much time staff members actually devote to research is different from teacher to teacher, because working hours are spent flexibly for teaching, research, and community service.

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

Staff Development

UNAND encourages training of its academic and technical staff for improving the educational abilities and teaching methods. As described in the Self-Assessment Report, faculty members attend courses in English language training, Information and Communications Technology (ICT), laboratory safety and instrumentation, writing publications, and e-learning. Furthermore, Applied Approach (PEKERTI-AA) is a compulsory training for all staff members that focuses on advancing pedagogical knowledge. It is designed particularly for junior faculty members to introduce various teaching methods, learning strategies, preparation of assessments, class management, as well as syllabus and course content development. All teachers at UNAND are obligated to attend the lecturer certification programme held by the Directorate General of Higher Education (Direktorat Jenderal Pendidikan Tinggi Ditjen, DIKTI). An official teaching certificate is issued after the faculty member has completed the certification process. In addition, the study programmes organise trainings to upgrade lecturers' pedagogical content knowledge on a regular basis.

Young staff members with a Master's degree are encouraged to pursue doctoral studies (usually abroad). To support this policy, UNAND provides foreign language training and organises seminars presenting scholarships from various sources.

At UNAND, the Institute for Research and Community Service (Lembaga Penelitian dan Pengabdian kepada Masyarakat, LPPM) conducts mentoring for lecturers in the fields of research and community service. Moreover, the Institute for Learning Development and Quality Assurance (Lembaga Pengembangan Pendidikan dan Penjaminan Mutu, LP3M) is responsible for improving the teachers' pedagogical and didactic skills by providing training programmes.

During the audit, the peers inquire if the teaching staff has the opportunity to spend time abroad and to participate in international projects. They learn that UNAND and FMIPA provide funds for joining international conferences. Moreover, teachers have the opportunity to receive funding from the Ministry of Research, Technology and Higher Education. The funding covers conference and publication fees, and expenses for accommodation and traveling. The teachers are satisfied with the existing opportunities and the available financial support.

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 UNAND, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars; even a sabbatical leave is possible.

In summary, the auditors confirm that UNAND offers sufficient support mechanisms and opportunities for members of the teaching staff who wish for further developing their professional and teaching skills.

Student Support

UNAND offers a comprehensive advisory system for all undergraduate students. At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for several students from her/his classes. He/she is the student's first port of call for advice or support on academic or personal matters.

The role of the academic advisor is to help the students with the process of orientation during the first semesters, the introduction to academic life and the university's community, and to respond promptly to any questions. They also offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. During the semester, counselling activities are usually offered three times, namely at the beginning of the semester (before the courses start), mid-semester, and at the end of the semester. The students confirm during the discussion with the peers that they all have an academic advisor, whom they can approach if guidance is needed.

In general, students stress that the teachers are open-minded, communicate well with them, take their opinions and suggestions into account, and changes are implemented if necessary.

Students who prepare their theses have one or more supervisors, who are selected based on the topic of the final project. One supervisor could be an external supervisor, if the student performs the final project outside UNAND. The role of the final project supervisor is to guide students in accomplishing their final project, e.g., to finish their research and complete their final project report.

All students at UNAND have access to the MOODLE-based learning management system. The students' profiles (student history, study plan, academic transcript and grade point average/GPA, lecturer evaluation, course list) are available via this digital platform.

Finally, there are several student organizations at UNAND; they include student's activity clubs, which are divided into arts, sports, religious and other non-curricular activities.

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 sup-

port for all students. 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

Criterion 3.2 Funds and equipment

Evidence:

- Self-Assessment Report
- Visitation of the facilities
- Discussions during the audit

Preliminary assessment and analysis of the peers:

Basic funding of the undergraduate programmes and the facilities is provided by UNAND and FMIPA. The financial sources are government funding which contribute to around 24% to the total budget and which cover the salaries of all employees. The rest of UNAND’s funds are derived from students’ tuition fees and industry funding through cooperations. Additional funds for research activities can be provided by UNAND or the Indonesian government (Bantuan Pendanaan Perguruan Tinggi Nasional, BPPTN), but the teachers have to apply for them.

The annual budget of the Department of Biology is determined at university level. Every year, UNAND’s management will ask the departments to prepare an activity plan and a budget for the next period. The activity and budget planning is presented and discussed during the management meetings at faculty level, and subsequently forwarded to UNAND’s management. The budget of the Department of Biology for the last five years is shown in the following table.

No	Year	Fund		
		Rupiah	USD	Euro
1	2019	587.572.602	38635.72	36328.51
2	2020	488.321.679	32111.64	30192.01
3	2021	488.321.679	32111.64	30192.01
4	2022	792.334.254	52103.27	48993.22
5	2023	705.956.380	46420.37	43652.13

Table 1: Annual Budget of the Department of Biology, Source: SAR UNAND

All teachers have also the opportunity to apply for research funds thorough the Directorate General of higher Education of Education Department of Republic Indonesia (DIKTI). Additional funds are also available from several other foundations and institutions from Indonesia and abroad and also from joint collaborations with third parties.

The provided budget allows the departments to conduct the study programmes as well as some specific activities, including student exchange programmes, student financial assistance for research, and participation in international conferences. The academic staff members emphasise that from their point of view, both undergraduate programmes under review receive sufficient funding for teaching and learning activities.

The Department of Biology is renowned for its reputation in the field of biodiversity and bio-conservation, as depicted from the available supporting facilities for this matter. Such as Biological Education and Research Forest (Hutan Pendidikan dan Penelitian Biologi or HPPB in Bahasa). This educational forest focuses on supporting the application of biological theories learnt at classroom in the form of field practice or becomes a site of research for student thesis, especially those related to the utility of natural resources and its conservation. In addition to this forest, the Department of Biology also manages the Center for Sumatran Nature Study (Pusat Kajian Alam Sumatera in Bahasa) and an Arboretum.

Aside from the facilities (13 laboratories) managed by the Department of Biology, staff members and students can use laboratories managed by UNAND and other faculties, such as Laboratorium Biota Sumatera (LBS), Biomedical laboratory (in Medicine Faculty), Research Center for Plant and Fruits, Veterinary Research Center, Balai Benih Ikan (Fish nursery facilities), and Indonesian Institute for Science (LIPI).

The Department of Biology also has the Green House and the Biological Education and Research Forest (HPPB), which located at Universitas Andalas campus with a total area of 150 ha. This forest research is a mature secondary tropical rainforest where hundreds of plants from Sumatra and enigmatic animals such as siamang, agile gibbon, sun bear and hundreds of bird species can be found.

Furthermore, there is the Career Development Centre at UNAND, which offers help to find suitable internships, announces job vacancies, organises job fairs, and offers courses to develop soft skills. Finally, there are several supporting facilities such as Mosque, University Hospital, Student Dormitory, Cafeteria, Polyclinic, Sport Facilities, Convention Center, Language Center, and Guest House.

During the audit, the peer group visits the laboratories and facilities at the Department of Biology, including the Biological Education and Research Forest (HPPB) and the impressive scientific collections, like the herbarium. They notice that there are no bottlenecks due to a lacking infrastructure. However, the technical equipment in the laboratories needs to be updated and increased in numbers, more modern instruments for conducting research activities should be available. For example, it would be useful purchasing New Generation PCRs and the whole set of modern equipment for biochemistry and molecular biology in-

cluding state of the art analysis tools for comprehensive analysis of cells, metabolic products and sequences (“Omics” technologies) in combination with bioinformatic tools (“in silico” analysis). Moreover, there is an increasing need for classical or/and Confocal Microscopes, and equipment performing outdoor research. With respect to fostering research in the area of ecology, bio-conservation, and biodiversity, it would be very useful to build a research station in the educational forest. A new research station equipped with modern instruments will not only help in the students’ education on-side, but will promote to attract exchange students and research collaborations with international scientist. The last one will support international visibility of the university and create new opportunities to receive money.

The Department of Biology could also reach out to the industries within their network to get an insight about what types of instruments are needed to better prepare students for the job market. For example, in the area of molecular biology the employers mention that they have to train the graduates before they are able to use some modern instruments, because students do not have the opportunity to use them at the university. This kind of feedback from the industry is crucial to consider and if the Department of Biology can communicate well with the industries, there is also an opportunity to get direct support from the industries in providing new instruments for the laboratories.

The peers also learn during the audit, that the new Central Laboratory with some sophisticated instruments to be used by all teachers from UNAND is currently under construction. Finishing this new research facility will hopefully help the teachers to increase their research activities.

The peer group understands that modern research equipment for sophisticated laboratory work, sufficient in terms of quality and quantity, is not readily available and that the funds are restricted. For this reason, the peers expect UNAND to submit a schedule and financing plan on how to update and increase the basic instruments and the technical equipment in the laboratories within the next five years. The first steps towards concrete implementation should be taken as soon as possible.

The peers also see during the audit that students can use and operate the instruments in the laboratories by themselves after being trained and instructed by either senior students or lab technicians. Each laboratory has a lab supervisor; in addition, there are several senior students that work as lab assistants.

The students also express their satisfaction with the library and the available literature there. Remote access via VPN is possible and UNAND offers access to several scientific digital databases such as ScienceDirect and Scopus, so that teachers and students access current scientific papers, e-books, and papers.

In summary, the peer group judges the available funds, the technical equipment, and the infrastructure (laboratories, library, seminar rooms etc.) to comply – besides the mentioned restrictions – with the requirements for adequately sustaining the degree programmes.

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

The peers support that the letter to the Rector regarding the management of the Biological Education and Research Forest (HPPB) and hope that this will lead to the improvement of the facilities there. Best would be the establishment of a new research station equipped with modern instruments, which will help to attract international students and researchers and raise the reputation of UNAND.

The peers consider criterion 3 to be mostly fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-Assessment Report
- Module descriptions
- Homepage UNAND: <https://www.unand.ac.id>
- Homepage Ba Biology: <http://biologi.fmipa.unand.ac.id/en/study-program/bachelor-study-program>
- Homepage Ma Biology: <http://biologi.fmipa.unand.ac.id/en/studyprogram/master-study-program>

Preliminary assessment and analysis of the peers:

The students, as all other stakeholders, have access to the module descriptions via UNAND's homepage.

After studying the module descriptions of the Bachelor's degree programme Biology, the peers point out that they do not include all necessary information. The module descriptions should make transparent what share self-studies and contact hours have and should include information on the awarded ECTS points. In addition, it needs to be transparent, how the different exams (e.g., mid-term, quizzes, final) contribute to the course's final grade. Moreover, the intended learning outcomes are just a list in some module descriptions of the Bachelor's programme (e.g. Evolution, Biophysics). Instead, they should follow a recognised structure e.g., Bloom's Taxonomy. Finally, some module descriptions do not mention any literature references (e.g., Biophysics)

With respect to the Master's degree programme Biology, the peers notice that the module descriptions should include information on the awarded ECTS points and students' total workload including the time needed for self-studies and not only contact hours in classes. In addition, several module descriptions do not mention the awarded SKS and the intended learning outcomes are missing in some module descriptions of the Master's programme (e.g., Research Methodology).

For this reason, the peers expect UNAND to update the module descriptions for both Biology programmes.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-Assessment Report
- Sample Transcript of Records for each degree programme
- Sample Diploma Supplement for the Bachelor's programme

Preliminary assessment and analysis of the peers:

The peers confirm that the Bachelor's students are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all required information about the degree programme. The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, and cumulative GPA.

However, the peers point out that the Master's students only receive a Diploma Certificate and a Transcript of Records; no Diploma Supplement is awarded to them. For this reason, the peers expect UNAND to design a Diploma Supplement for the Master's degree programme Biology and to award it to all graduates.

Criterion 4.3 Relevant rules

Evidence:

- Self-Assessment Report
- All relevant regulations as published on the university's webpage

Preliminary assessment and analysis of the peers:

The auditors confirm that the rights and duties of both UNAND and the students are clearly defined and binding. All rules and regulations are published on the university's website and the students receive the course material at the beginning of each semester.

In addition, almost all relevant information about the degree programmes (e.g., module handbook, study plan, intended learning outcomes) is available on the English homepage of the programmes. The only missing information is the module handbook for the Master's programme.

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

The peers expect UNAND to submit samples of the newly designed Diploma Supplement and the updated module descriptions in the further course of the accreditation procedure.

The peers consider criterion 4 to be mostly fulfilled.

5. Quality management: quality assessment and development

Evidence:

- Self-Assessment Report
- UNAND Academic Guidelines
- Discussions during the audit

Preliminary assessment and analysis of the peers:

The highest academic board at UNAND is the University Senate (University Academic Senates, SAU), which is headed by the Rector and responsible for implementing and supervising all academic processes at UNAND. On faculty level, there is the Faculty Academic Senate (SAF), which is authorized to formulate policies and to monitor all academic activities at faculty level, in this case the Faculty of Mathematics and Natural Sciences (FMIPA). The

Dean is the head of the faculty with the authority and responsibility for administering all teaching and learning activities within the faculty. Finally, for each degree programme there is the Head of Study Programme, who is responsible for implementing all educational activities within the respective degree programme.

The peers discuss the quality management system at UNAND 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 UNAND. 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 Board of Higher Education / Badan Akreditasi Nasional Perguruan Tinggi (BAN-PT). Both degree programmes under review have received the highest accreditation status "A" from BAN-PT.

UNAND has the long term goal of accrediting 50 % of its 137 degree programmes internationally, the focus is on the programmes that have received the highest ranking "A" from BAN-PT. So far, around 10 % of the degree programmes at UNAND have received an international accreditation.

The policy on quality assurance is developed on university level by the Institute of Education Development and Quality Assurance (LP3M), monitored on faculty level by the Quality Control Group (BAPEM), and on department level by the Quality Control Task Force (Gugus Kendali Mutu or GKM in Bahasa). Quality assurance is commenced through the annual Internal Quality Audit (AMI), which is performed collectively by authorities from the study programmes, GKM and LP3M.

Internal assessment 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 each semester. Students assess various aspects such as students' understanding, lecturer's responsiveness, course delivery, lecturer's proficiency, explanation of course objective, and references in each enrolled course. Students' opinion is quantified by means of index 1 (unsatisfactory) to 4 (excellent).

The students' feedback is given through online questionnaires, which are prepared by the Quality Control Task Force of Department of Biology. The questionnaire consists of 22 questions related to the learning and teaching processes in each course. The data generated from students' feedback is then analysed by the Quality Control Task Force, which then forward the results to the Head of Study Programme.

Giving feedback on the classes is compulsory for the students; otherwise, they cannot access their account on the digital platform MyFmipa. The peers point out that there should be a regular and institutionalised survey on students' workload in every course. For example, this could be done by including a respective question in the course questionnaires that students have to fill out at the end of each semester (see Criterion 1.4).

The results of the course questionnaires are discussed during the Management Review Meetings. However, the peers point out that it is necessary to close the feedback cycles and to directly inform the students about the results of the course questionnaires in every course. This way, students can get first-hand information on any issues and on the measures planned to improve the situation.

In addition, each department regularly conducts an alumni tracer study. By taking part at this survey, alumni can comment on their educational experiences at UNAND, their professional career, and can give suggestions how to improve the programme.

During the audit, the peers learn that students are only represented in the university's Board of Trustees but not in any other board on faculty or department level. Thus, students are not directly involved in the decision-making processes. The peers are convinced that it would be very useful to have student members in the different boards. For this reason, they recommend that student representatives should be members of the boards at UNAND at least on department level and be actively involved in the decision-making processes for further developing the degree programmes. For example, it would be useful to make student representatives members of the Quality Control Task Force on department level and to include them in the Management Review Meetings.

The peers discuss with the representatives of UNAND's partners from public institutions, and private companies if there are regular meetings with the partners on faculty or department level, where they discuss the needs and requirements of the employers and possible changes to the degree programmes. They learn that some employers and alumni are invited to give their feedback on the content of the degree programmes in the course of the tracer studies. The peers appreciate that UNAND stays in contact with its alumni and the employers. However, no advisory board exists. As the peers consider the input of external stakeholders to be very important for the further development of the degree programmes, they recommend establishing an advisory board at the Department of Biology in order to discuss regularly with about the needs of the job market and new developments in the area of biology.

The advisory board should consist of a group of professionals, employers, and experts of the relevant fields from outside the university. Including students, professionals, and employers in the different boards will help further developing the degree programmes.

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

The peers confirm that the Biology Department has formed an advisory board comprising alumni, retired lecturers, and current students. This board can provide important input during curriculum revisions for reviewing the findings of the quality control group, and by offering guidance on the department's strategic direction. However, the peers recommend to include employers in the advisory board so that the needs of the job market are also taken into consideration.

The peers consider criterion 5 to be mostly fulfilled.

D Additional Documents

Before preparing their final assessment, the panel asks 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:

- none

E Comment of the Higher Education Institution (27.04.2023)

UNAND provides the following statement:

During the visitation of Peers of ASIIN, UNAND team received important advice for the development and improvement of both study programs through the discussion and verification conducted. Our team agrees that for point 1.1. (Objective and LO) and 1.2 (Name of the Degree Programme) clearly correspond sufficiently with the ASIIN SSC of Technical Committee 10 – Life Science. Objectives and LO have developed referred to Outcome Based Education, and both study programs have developed refers to the national regulation (Decree of Minister of Research, Technology, and Higher Education 57 the Year 2019) regarding the Name of the Study Program in the University. Hence the degree programs correspond with the intended aims and learning outcomes and the main course language (Bahasa Indonesia).

The UNAND team would also appreciate comments and suggestions regarding point 1.3 (Curriculum). Although the curriculum of both study programs has developed referred to the “Curriculum Preparation Guidance for Higher Education in the Industry 4.0 Era to Support Campus Independent-Freedom to Learn” (Directorate General of Higher Education, 2020) as well as the Regulation of Rector of Universitas Andalas No 15 the Year 2020 regarding Curriculum Development in Campus Independent-Freedom to Learn, based on the discussion during the visitation UNAND team has got the point to improve the curriculum to in line with the international qualification (ASIIN criteria). Currently, a “Curriculum Revision Team” in Biology has been assigned to carry out revisions to the ongoing curriculum according to input during discussions in ASIIN visits. A critical point to revise has been noted, such as the necessary for students to be provided with material related to basic mathematics, basic physics, and basic chemistry so that they can better understand biological processes as basic skills in the natural sciences and mathematics and to develop a deeper understanding of and skills to deal with more complex bio-scientific questions. Even though discussions with users and alumni stated that graduates’ knowledge was sufficient, however, we realize this needs to be provided to meet international criteria and provide opportunities for graduates to continue their studies at foreign universities. In line with this process, the Biology Department has formed an advisory board comprising of graduate users, alumni, retired lecturers, and current students. This board serves the purpose of providing input during curriculum revisions, reviewing the findings of the quality

control group, and offering guidance on the department's strategic direction. The curriculum revision will also be directed at providing more opportunities for students to practice using better and modern equipment, as well as perform analysis using scientific data or big data so that they can also carry out analysis using modeling. Since the Laboratorium Dasar dan Sentral (Basic and Central Laboratories) of Universitas Andalas has been used from this semester onward, students will be able to practise by using new and advanced equipment to support the learning and research process and also to increase their competence later. Another point that will be considered in the improvement is related to the bioethics course which was previously applied in the first semester and will be shifted to the fifth semester. This year (2023) Biology department also will improve the competency of graduates in field biology in studying and conserving biodiversity. This program will be conducted by using the grant that received by the Biology Program from the Directorate General Higher Education through Program Kompetisi Kampus Merdeka (Independent Campus Competition Program or PKKMM) entitled "Improving biology graduates' competence in studying, developing, utilising, and preserving tropical biodiversity as a capital to excel in the international job market" worth 1.2 billion rupiah which aims to increase the competence of graduates to carry out student internships and invite lecturers and practitioners from campuses and international institutions and provide advance equipment. By the revision of the curriculum, and improvement of the equipment we are sure to achieve the intended learning outcomes of the respective degree program.

International mobility both for students and lecturers is crucial to providing experience, increasing competency, broadening horizons, and also understanding biology problems comprehensively. Based on this perspective, the Department of Biology has initiated collaboration with overseas universities. Through PKKMM grants, biology will get the opportunity to improve the international atmosphere. However, what is permitted is to bring in lecturers and practitioners from universities or multinational institutions, or foreign students. Meanwhile, students only facilitate domestic mobilization to multinational institutions. In May 2023, Biology will be hosting a workshop for primate conservation in collaboration with Mandai Nature Singapore. In the middle of June 2023 Biology also will conduct the writing workshop in collaboration with University of Western Australia. Another program also has been developed to be conducted in July. We will manage to improve our international collaboration to make more structural and scheduled programmes such as summer schools and student mobility or student exchange in the future. One of the Summer Course Program which has been developed is Primate Behaviour and Conservation. This program develops since Biology has the Expert on Primate and Biodiversity Conservation and also has been implemented as one of courses which can be accessed by students from other universities in Indonesia through the Credit Earning Program and the existence

of Biological Education and Research Forest (HPPB). The acquisition of ASIIN accreditation will be an impetus for biology to further expand the collaboration. Hence, input from ASIIN Peers regarding the website has been communicated to the university and it is targeted that early 2024 the biology website will be available in two languages and in a more interactive form.

Regarding the Admission requirements, the attractiveness index in the Biology Study Program is relatively low. This is not only in UNAND, but is a common problem in Indonesia and internationally. This may be related to the perception that basic science is a field that is not specifically declared in many kinds of job descriptions. Recently, the Minister of Administrative and Bureaucratic Reform of Indonesia is concerning Biological Curators as a specific job for Biology to provide added value and become an attraction to the study program. In addition, the accreditation of ASIIN can be an additional attraction for Bachelor Biology Study Program so that it can increase the attractiveness. Especially for the Master Degree, it is necessary to carry out more stringent acceptance efforts, both through the regular and fast track routes. Although this has been arranged by the university.

In regards to the ECTS of the Biology Master Program, we understand that the SKS of the Master Program (average of 12 SKS per semester) is less than that of a full-time Bachelor program (average of 20 SKS per semester). However, the workload of the Master program may still be equivalent to that of a full-time Bachelor program. Based on ASIIN peers' comments and suggestions, we are conducting a survey of the workload for each course (<https://lpm.unand.ac.id/fakultas-mipa/>) and will review the curriculum accordingly. We are also aware that the SKS for the thesis is much smaller than the actual workload. Your suggestion to calculate the real workload to obtain ECTS number without any adjustment to SKS may not be the best option. We believe that the SKS itself needs to be adjusted if the actual workload is greater than the SKS's allotted minutes, because according to the National Standard, each SKS is equivalent to 170 minutes of both in-class and self-study per week. Furthermore, the National Standard also states that the Thesis SKS is only 6 credit, and the minimum SKS of the Master program is 36 credit. As a result, there are several options to improve workload recognition. One option is to create and recognize the process of creating a thesis as a different course name. For example, we could calculate the course Research Methodology as part of the thesis writing process in the Methods chapter. Another course, such as Literature Review, could be created to accommodate thesis writing in the Literature Review chapter. Additionally, discussions regarding a new National Standard in Indonesia are currently ongoing. One of the draft's points is to increase the number of SKS required for a Master's degree from 54 to 72 credits. In any case, we need to conduct an accurate curriculum review. We have already selected the team (Appendix 1) to evaluate the curriculum.

UNAND team also really appreciate input regarding the importance of inviting foreign professors for lectures, seminars and other scientific activities in Biology. For 2023 this will be conducted through the implementation of the PKKM program which has been received by the Biology Department. The existence of ASIIN certification will be a valuable asset for biology to increase collaboration with universities in Europe in the new future, so that they can invite lecturers and practitioners from Europe to carry out activities at Andalas University. This is also very possible because currently UNAND has a World Class University (WCU) Program which has activities such as inviting Professors, foreign practitioners, providing advanced equipment, even scholarships for foreign students to study at UNAND. Based on the WCU Program, the Biology Department currently just received 25 new optical microscopes that can be used for practice and research at the laboratory in the Biology Department. Our team also will seek the various forms of international grant/scholarship program, so that in the future it can send more students and lecturers to carry out activities throughout the country.

UNAND team is also very thankful for the advice regarding the Biological Education and Research Forest (HPPB). Biology lecturer has submitted a letter to the Rector regarding management and improving the facilities at HPPB. Hope it will be carried out in the shortest possible time so a new research station equipped with modern instruments will not only help in the students' education on-side, but will also promote to attract exchange students and research collaborations with international scientists. The last one will support international visibility of the university and create new opportunities to receive money as advised by ASIIN peer team.

Regarding the Diploma Supplement, recently UNAND has already established an information system for the Diploma Supplement <http://skpi.akademik.unand.ac.id/>. We will provide the database for the Biology Master Program to the information system and publish the Diploma Supplement for next graduation.

We understand that information provided by current Module Description and Modules handbooks are still limited and unclearly. We already discussed and managed the problem. In line with the curriculum revision, all of the information currently on progress, and will be available on the department website soon.

F Summary: Peer recommendations (12.05.2023)

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2028
Ma Biology	With requirements for one year	-	30.09.2028

Requirements

For all degree programmes

- A 1. (ASIIN 1.5) Verify the students' total workload and award the ECTS points accordingly.
- A 2. (ASIIN 3.1) Provide a detailed concept, how the technical equipment in the laboratories can be updated and increased in numbers and how more modern instruments for conducting research activities can be made available for teachers and students within the next five years.
- A 3. (ASIIN 4.2) Rewrite the module descriptions to include information about the students' workload, the awarded ECTS points, the intended learning outcomes, and the contribution of the different exams to the course's final grade.
- A 4. (ASIIN 5) Close the feedback cycles and discuss with the students directly about the results of the course questionnaires.

For the Master's programme

- A 5. (ASIIN 4.2) Award a Diploma Supplement to all graduates.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.3) It is recommended to further promote the students' academic mobility and to establish more international cooperations.
- E 2. (ASIIN 1.3) It is recommended to organise international summer schools.
- E 3. (ASIIN 3.2) It is recommended to invite more international guest lecturers.

- E 4. (ASIIN 3.3) It is recommended to build a research station in the educational forest.
- E 5. (ASIIN 5) It is recommended to make student representatives members of the Quality Control Task Force on department level and to include them in the Management Review Meetings in order to directly involve them in the decision making processes for further developing the degree programmes.
- E 6. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders.

For the Bachelor's programme

- E 7. (ASIIN 1.3) It is recommended to offer the course on Bioethics later than the first semester.
- E 8. (ASIIN 1.3) It is recommend to verify if the education in basic natural sciences (chemistry, physics) and mathematics is sufficient.

For the Master's programme

- E 9. (ASIIN 1.3) It is recommended to adjust the awarded SKS/ECTS points, as there should not be a range of SKS/ECTS points required for finishing the Master's programme.

G Comment of the Technical Committee 10 – Life Sciences (12.06.2023)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee confirms the impression of the experts that these are two study programmes with a clear focus in the field of biodiversity, ecology, and organismal biology. As points of criticism, the TC sees that the academic mobility is low, the ECTS conversion does not fit, the technical equipment of the laboratories should be modernised, and the students should be directly involved in the quality assurance processes. In summary, the TC confirms the overall positive impression of the experts and agrees with the proposed requirements and recommendations.

The Technical Committee 10 – Life Sciences recommends the award of the seals as follows:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2028
Ma Biology	With requirements for one year	-	30.09.2028

H Decision of the Accreditation Commission (23.06.2023)

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

The AC discusses the procedure and decides to follow the suggestions of the experts and the TC 10 – Life Sciences. The proposed requirements and recommendations are accepted without any changes.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Biology	With requirements for one year	-	30.09.2028
Ma Biology	With requirements for one year	-	30.09.2028

Requirements

For all degree programmes

- A 1. (ASIIN 1.5) Verify the students' total workload and award the ECTS points accordingly.
- A 2. (ASIIN 3.1) Provide a detailed concept, how the technical equipment in the laboratories can be updated and increased in numbers and how more modern instruments for conducting research activities can be made available for teachers and students within the next five years.
- A 3. (ASIIN 4.2) Rewrite the module descriptions to include information about the students' workload, the awarded ECTS points, the intended learning outcomes, and the contribution of the different exams to the course's final grade.
- A 4. (ASIIN 5) Close the feedback cycles and discuss with the students directly about the results of the course questionnaires.

For the Master's programme

- A 5. (ASIIN 4.2) Award a Diploma Supplement to all graduates.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.3) It is recommended to further promote the students' academic mobility and to establish more international cooperations.
- E 2. (ASIIN 1.3) It is recommended to organise international summer schools.
- E 3. (ASIIN 3.2) It is recommended to invite more international guest lecturers.
- E 4. (ASIIN 3.3) It is recommended to build a research station in the educational forest.
- E 5. (ASIIN 5) It is recommended to make student representatives members of the Quality Control Task Force on department level and to include them in the Management Review Meetings in order to directly involve them in the decision making processes for further developing the degree programmes.
- E 6. (ASIIN 5) It is recommended to establish an advisory board with external stakeholders.

For the Bachelor's programme

- E 7. (ASIIN 1.3) It is recommended to offer the course on Bioethics later than the first semester.
- E 8. (ASIIN 1.3) It is recommended to verify if the education in basic natural sciences (chemistry, physics) and mathematics is sufficient.

For the Master's programme

- E 9. (ASIIN 1.3) It is recommended to adjust the awarded SKS/ECTS points, as there should not be a range of SKS/ECTS points required for finishing the Master's programme.

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's degree programme Biology:

“In accordance to the department’s vision, the bachelor study program formulates Education Objectives (EO) of undergraduate program in Biology as follow:

- EO-1. Graduates will have the ability to be researchers in research institutions of biology, environment, forestry and agriculture.
- EO-2. Graduates will be able to be consultants in genetics, environment, park and landscape planning.
- EO-3. Graduates will be able to be staffs in plantation, forestry, coastal and fishery, and ecotourism sectors.
- EO-4. Graduates will have ability to be analyst in laboratories, biodiversity curator, quality control, anatomy pathology, and environmental quality inspection.”

“In order to achieve those EO above, a series of Intended Learning outcomes (ILO) of undergraduate program in Biology have been defined, as seen below:

- ILO-1 Having the University’s value, ethical codes, and biological ethics.
- ILO-2 Building-up the spirit of entrepreneurship
- ILO-3 Mastering and applying the concept and principle of biological theory along with its uniqueness in biodiversity and bio-conservation
- ILO-4 Comprehending the basic concepts of chemistry, physics, and mathematics which support biological sciences
- ILO-5 Being able in using instruments and related methods in observing and measuring biological objects
- ILO-6 Being able in planning and conducting studies in order to utilize and conserve biological resources
- ILO-7 Possessing domain of soft skills in team-work, communication, critical, creative and analytical thinking
- ILO-8 Being able to process learning sources into learning materials and scientific Information”

The following **curriculum** is presented:

1st Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
MWU60101	Religion	2	3.02	26.67	64.00
MWU60104	Indonesian Language	2	3.02	26.67	64.00
BIO61105	English	2	3.02	26.67	64.00
BIO61104	Bioethics	2	3.02	26.67	64.00
BIO61101	Basic Biology	3	4.53	40.00	96.00
BIO61102	Animal Structure and Development	3	4.53	40.00	96.00
BIO61103	Plant Structure and Development	3	4.53	40.00	96.00
Sub-Total		17	25.69	226.67	544.00

2nd Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
BIO62104	Biophysics	3	4.53	40.00	96.00
BIO62105	Biochemistry	3	4.53	40.00	96.00
BIO62101	Cell and Molecular Biology	2	3.02	26.67	64.00
MWU60102	Pancasila (State Ideology)	2	3.02	26.67	64.00
BIO62102	Animal Taxonomy	4	6.04	53.33	128.00
BIO62103	Plant Taxonomy	4	6.04	53.33	128.00
Sub-Total		18	27.20	240.00	576.00

3rd Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
BIO61106	Biosystematics	2	3.02	26.67	64.00
BIO61107	Animal Physiology	4	6.04	53.33	128.00
BIO61108	Plant Physiology	4	6.04	53.33	128.00
BIO61112	Basic Analytical Chemistry	2	3.02	26.67	64.00
BIO61109	Microbiology	4	6.04	53.33	128.00
BIO61110	Introduction to Biotechnology	2	3.02	26.67	64.00
BIO61111	Omics science	2	3.02	26.67	64.00
Sub-Total		20	30.22	266.67	640.00

4th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
BIO62109	Biodiversity	3	4.53	40.00	96.00
BIO62110	Biogeography	3	4.53	40.00	96.00
BIO62106	Animal Ecology	4	6.04	53.33	128.00
BIO62107	Plant Ecology	4	6.04	53.33	128.00
BIO62108	Genetics	4	6.04	53.33	128.00
MWU60103	Civics Education	2	3.02	26.67	64.00
Sub-Total		20	30.22	266.67	640.00

5th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
BIO61114	Biodiversity Assessment	2	3.02	26.67	64.00
BIO61117	Bioinformatics	3	4.53	40.00	96.00
BIO61115	Conservation Biology	3	4.53	40.00	96.00
BIO61119	Biostatistic	3	4.53	40.00	96.00
BIO61113	Evolution	2	3.02	26.67	64.00
BIO61116	Research Methodology	2	3.02	26.67	64.00
BIO61118	Perspective on Biodiversity	2	3.02	26.67	64.00
....	Elective 1	3	4.53	40.00	96.00
Sub Total		20	30.22	266.67	640.00

6th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
AND60102	Entrepreneurship	3	4.53	40.00	96.00
BIO62111	Scientific Writing	2	3.02	26.67	64.00
BIO60101	Research Proposal Seminar	1	1.51	13.33	32.00
....	Elective 2	3	4.53	40.00	96.00
....	Elective 3	3	4.53	40.00	96.00
....	Elective 4	3	4.53	40.00	96.00
....	Elective 5	3	4.53	40.00	96.00
....	Elective 6	3	4.53	40.00	96.00
Sub-Total		21	31.73	280.00	672.00

7th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
AND60101	Community Service Program	4	6.04	53.33	128.00
....	Elective 6	3	4.53	40.00	96.00
....	Elective 8	3	4.53	40.00	96.00
....	Elective 9	3	4.53	40.00	96.00
....	Elective 10	3	4.53	40.00	96.00
....	Elective 11	3	4.53	40.00	96.00
....	Elective 12	3	4.53	40.00	96.00
Sub-Total		22	33.24	293.33	704.00

8th Semester

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
BIO60103	Comprehensive Biology Review	1	1.51	0.00	45.33
BIO60102	Research Result Seminar	1	1.51	13.33	32.00
BIO60104	Undergraduate Thesis	4	6.04	53.33	128.00
Sub-Total		6	9.07	66.67	205.33

Total : 144 SKS = 217.60 ECTS

According to the Self-Assessment Report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Master's degree programme Biology:

“Education Objective (EO) of master program in Biology are:

- EO-1. Graduates of the biology master Program will be able to be researchers at various public and private research institutions and universities.
- EO-2. Graduates of the biology master program will be able to be analysts of biology laboratories.
- EO-3. Graduates of the biology master program will be able to be environmental consultants and conservationists in non-governmental organizations (NGOs), environmental impact analysis companies and various companies that require environmental analysis and audits.
- EO-4. Graduates of the biology master program will be able to be biological curators at public and private research institutions.”

“Intended Learning outcomes (ILO) of magister program in Biology are:

- ILO1. Internalize academic honesty, open-mindedness, agility, and concern for saving biodiversity.
- ILO2. Having the capacity to work in a group and independently, communicate in written and oral, analytical thinking, creative and innovative.
- ILO3. Deepen theory and concept of molecular, physiology, biosystematics, ecology, and microbiology
- ILO4. Be able to apply principal and concepts of measurement by using hardware and software to analyze data of molecular, physiology, biosystematics, microbiology, and ecology
- ILO5. Be able to identify and solve problems related to tropical biodiversity through induction and deduction approach
- ILO6. Be able to disseminate research results of tropical biodiversity in indexed journal”

The following curriculum is presented:

Code	Course Name	Credit	ECTS*	Workload**	
				Hours in class	Hours Self-Study
1st Semester					
BIO81101	Molecular Biology	2	3.02	26.67	64
BIO81102	Ecology and Ecosystem Conservation	2	3.02	26.67	64
BIO81103	Physiology	2	3.02	26.67	64
BIO81104	Biosystematics and Evolution	2	3.02	26.67	64
BIO81105	Tropical Biodiversity	2	3.02	26.67	64
BIO81106	Biostatistic	2	3.02	26.67	64
Sub-Total		12	18.12	160.00	384
2nd Semester					
BIO8....	Compulsory subject I in concentration	2	3.02	26.67	64
BIO8....	Compulsory subject I in concentration	2	3.02	26.67	64
BIO82101	Research methodology	2	3.02	26.67	64
BIO8....	Elective 1	2	3.02	26.67	64
BIO8....	Elective 2	2	3.02	26.67	64
BIO8....	Elective 3	2	3.02	26.67	64
Sub-Total		12	18.12	160.00	384

Code	Course Name	Credit	ECTS ⁺	Workload ⁺⁺	
				Hours in class	Hours Self-Study
3rd Semester					
BIO8....	Elective 4	2	3.02	26.67	64
BIO81107	Scientific Writing	2	3.02	26.67	64
BIO80101	Research Proposal Seminar	1	1.51	13.33	32
Sub-Total		5	7.55	66.67	160
4th Semester					
BIO80103	Research Result Seminar	1	1.32	13.33	32
BIO80102	Thesis	6	9.06	80.00	192
BIO80105 / BIO80106	National Scientific Seminar / International Scientific Seminars	2 or 3	3.02 or 4.53	0	90.67 or 136
BIO80108 / BIO80109	Accredited national scientific Journal / Indexed International Scientific Journal	3 or 4	4.53 or 6.04	0	136 or 181.33
Sub-Total		12 - 14	18.12 - 21.14	93.33	450.67 - 541.33
Total		41 - 43	61.91 - 64.93	480	1378.67 - 1369.33