



ASIIN Seal

Accreditation Report

Bachelor's Degree Programmes

Biology

Environmental Engineering

**Bachelor's Degree and Professional Degree
Programme**

Apothecary Education

Master's Degree Programmes

Fisheries and Marine Biotechnology

Provided by

Universitas Airlangga – Surabaya, Indonesia

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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
S1 Biologi	Bachelor of Biology	ASIIN	ASIIN until 30.09.2023 LAMSAMA Superior; valid until 29.09.2028	10
S1 Teknik Lingkungan	Bachelor of Environmental Engineering	ASIIN	BAN-PT A; valid until 01.04.2025	10, 03
Pendidikan Apoteker	Apothecary Education Programme	ASIIN	ASIIN until 30.09.2023 LAM-PTKes Excellent; valid until 17.12.2025	09
S2 Bioteknologi Perikanan dan Kelautan	Master of Fisheries and Marine Biotechnology	ASIIN	BAN-PT Excellent; valid until 20.08.2024	10,08
Date of the contract: 18.09.2023 Submission of the final version of the Self-Assessment Report: 04.04.2024 Date of the audit: 12.06. – 13.06.2024 At: Universitas Airlangga, Surabaya				

¹ ASIIN Seal for degree programs

² TC: Technical Committee for the following subject areas: TC 10: Life Science, TC 03: Civil Engineering, Geodesy and Architecture; TC 08: Agriculture, Forestry and Food Sciences and TC 09: Chemistry.

Assessment panel: Prof. Dr. Friedhelm Meinhardt, University of Münster Prof. Dr. rer. Nat. Werner Kloas, Leibniz Institute of Freshwater Ecology and Inland Fisheries Prof. Dr. rer. nat. habil. Andreas Link, University of Greifswald Dr. Arinafril Arinafril, Universitas Sriwijaya Dr. Bayu Priyambodo, Lombok Marine Aquaculture Development Center Ms. Ilya Azka Maulida, student at Gadjah Mada University	
Representative of the ASIIN headquarter: Dr. Emeline Jerez	
Responsible decision-making committee: Accreditation Commission for Degree Programs	
Criteria used: European Standards and Guidelines as of 15.05.2015 ASIIN General Criteria as of 28.03.2023 Subject-Specific Criteria of Technical Committee 10 – Life Sciences as of 28.06.2019 Subject-Specific Criteria of Technical Committee 03 - Civil Engineering, Geodesy and Architecture as of 26.06.2020 Subject-Specific Criteria of Technical Committee 09 – Chemistry as of 29.03.2019 Subject-Specific Criteria of Technical Committee 08 - Agriculture, Forestry and Food Sciences as of 27.03.2015	

B Characteristics of the Degree Program

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF ³	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Bachelor of Biology	Sarjana Sains (S.Si.)/Bachelor of Science		Level 6	Full time	No	8 semesters	144 credits equivalent to 230.4 ECTS	Annually in August First offered in 1982
Bachelor of Environmental Engineering	Sarjana Teknik/ Bachelor of Engineering		Level 6	Full time	No	8 semesters	144 credits equivalent to 230.4 ECTS	Annually in August First offered in 2008 (as Environmental Science and Technology)
Apothecary Education Programme	Sarjana Farmasi /Bachelor of Pharmacy Apoteker / Pharmacist		Level 6	Full time	No	8 semesters for Bachelor and 2 semesters for Professional degree	144 credits equivalent to 230.4 ECTS + 37 credits equivalent to 59.2 ECTS	Annually in August First offered in 1963
Master of Fisheries and Marine Biotechnology	Magister Sains (M.Si.)/Master of Science		Level 7	Full time	M.Si., M.Sc.	4 semesters	44 credits equivalent to 132 ECTS	Biannually in August and January First offered in 2010

³ EQF = The European Qualifications Framework for Lifelong Learning

The ASIIN experts acknowledged and considered the contextual framework within which the Bachelor's, Apothecary Education and Master's programs under review are offered:

Universitas Airlangga (UNAIR) is a public higher education institution located in Surabaya, Indonesia. It was officially established in 1954.

UNAIR comprises 15 faculties and 2 schools encompassing diverse fields such as science, technology, engineering, mathematics, medicine, arts, and social sciences. The university offers a wide range of educational programs, including vocational and undergraduate studies, as well as postgraduate programs such as specialist, professional, master's, and doctoral studies.

The University's vision is "to become an independent, innovative, leading university at the national and international levels, a pioneer in the development of science, technology, humanities and arts, based on religious morality". In the 2025 QS World Universities Ranking, the university is ranked 4th in Indonesia and 308th in the world.

The Faculty of Science and Technology

Fakultas Sains dan Teknologi's roots can be traced back to the Institute of Basic Natural Sciences established as part of the Faculty of Medicine in the 1970s. It was formally inaugurated as an independent Faculty in 1982. The educational offer includes bachelor's, master's and doctoral study programs. The Faculty's vision is "to become a faculty that is superior and innovative as well as a pioneer of science and technology development at the international level based on religious morals".

The Faculty has presented the following mission statement on its website:

- "Organizing and developing academic education with world-class excellence based on national values and religious morals.
- Organizing innovative basic and applied research to support the development of education and community service.
- Devoting expertise in the field of science and technology to society and being able to compete at the international level.
- Managing the faculty efficiently with good governance through quality-oriented institutional development based on aspects of transparency and accountability".

The Faculty of Science and Technology pursues ASIIN accreditation for the Bachelor of Biology and Bachelor of Environmental Engineering study programs, also referred as to BoB and BoEE within the documentation. The programs are introduced with the following objectives:

i. Bachelor of Biology

"PURPOSES

1. Have graduates who are able to solve community problems in health, food, renewable energy, and the environmental fields.
2. Produce research related to the health and environmental fields.
3. Carry out community service related to health and the environment fields as a result of teaching and research in a sustainable manner to resolve problems in society.
4. Provide provision for graduates who are able to learn throughout life.
5. Create entrepreneurial spirit in graduates".

ii. Bachelor of Environmental Engineering

"Objectives

1. Producing highly competent graduates in the field of science and technology environment.
2. Producing graduates who are sensitive and able to solve environmental problems in society.
3. To produce graduates with noble personalities and high academic morals".

The Faculty of Pharmacy

Fakultas Farmasi was founded in 1963 and consists of five departments, the Department of Pharmaceutical Chemistry, Pharmacognosy and Phytochemistry, Pharmaceutics, Community Pharmacy, and Clinical Pharmacy. Currently, the Faculty offers undergraduate, apothecary, master and doctoral-level education, and its vision is "being an innovative and leading faculty on both national and international levels, a pioneer in the development of pharmaceutical science and technology, clinical and community pharmacy, and to generate graduates with excellent competences in pharmaceutical care based on religious morality".

The Faculty has presented its mission statement on its website:

1. "To establish an innovative, accredited academic and professional education at both national and international levels in the development of pharmaceutical science and technology, clinical and community pharmacy, and generate graduates with excellent competence in pharmaceutical care based on religious morality.
2. To develop pharmaceutical science and technology and clinical and community pharmacy through basic and applied researches in order to increase the value of Indonesia's natural resources.
3. To conduct community service programmes in the field of pharmacy as a social responsibility to empower and improve health and quality of life.

4. To implement effective, efficient and sustainable collaboration with various stakeholders in education, research, and public services on both national and international levels for the development of education.”

The Faculty of Pharmacy is seeking ASIIN accreditation for the Apothecary Education study program, which is introduced with the following objectives:

iii. Apothecary Education

“Objectives

1. To produce graduates who are devout and pious, innovative, and adaptable to every change and development, particularly in pharmaceutical matters encompassing both services and industry. Thus, graduates possess the capability to compete at the national and regional levels, as well as tackle challenges and obstacles in global market competition.
2. To generate graduates who can compete at the national, regional, and global levels, equipped with the ability to integrate, apply, and develop pharmaceutical knowledge and skills to address national issues, contributing significantly to governmental programs aimed at enhancing the health and resilience of the nation.
3. To apply science and technology through research in the field of pharmaceutical and health sciences, with a strong focus on benefiting society and addressing national problems.
4. To develop science and technology by conducting fundamental, innovative, and applied research to harness Indonesia's natural resources, thereby providing competitive value and greater advantages for improving the nation's quality of life.
5. To provide service and dedication to the community, utilizing all relevant resources and capacities to achieve various objectives aligned with societal needs and to address national issues.
6. To foster collaborations with educational institutions, research bodies, government entities, industries, and other social organizations through tangible programs that contribute to solving national issues”.

The Faculty of Fisheries and Marine Sciences

Fakultas Perikanan dan Kelautan was established in 2008 and comprises two departments. Currently, the Faculty offers undergraduate and master-level education, and its vision is “to be an independent, nationally and internationally recognized, innovative faculty with excellence in the field of fisheries and marine sciences based on religious morals”.

The Faculty has outlined the following mission statement on its website:

- Conducting academic education based on modern learning technology while implementing quality assurance principles.
- Conducting basic, applied, and innovative research to support the development of education and community service.
- Devoting expertise in the field of fisheries and marine sciences to the community to support development”.

In the context of this accreditation procedure, the Faculty of Fisheries and Marine Sciences aims to achieve ASIIN accreditation for the Master of Fisheries and Marine Biotechnology, which the University refers as to MoFMB in the documentation. The program outlines the following objectives:

iv. Master of Fisheries and Marine Biotechnology

“C. Goals

1. Producing master graduates who are responsive to science and technology in the field of fisheries and marine biotechnology and have concern for the problems faced by the community, especially the fisheries community;
2. Producing master graduates who have the ability to develop professionalism in science in the field of fisheries and marine biotechnology and able to offer analytical and rational solutions toward various problems related to fisheries based on the excellence with morality values in order to build independent and sustainable fisheries;
3. Producing master graduates with tremendous care toward fisheries communities in developing fisheries and marine biotechnology for the economic and welfare improvement.”

The experts note that on several sections of its website, the Faculty is referred to as the "Faculty of Fisheries and Marine". **However, in their view, the term "marine" should always be accompanied by a subject, such as "sciences". As further discussed under Criterion 1.2, it seems that the focus of the master's program is not primarily on the marine sector. It might be better for the Faculty to avoid using the adjective "marine" altogether because with "Fisheries and Biotechnology" both freshwater and marine organisms are covered.**

As per the discussion held with the representatives of the Rector's Office, UNAIR's strategic priority is to attain international recognition. Pursuing international accreditation aligns with this institutional goal. The assessment team commends the University for its

dedicated efforts and allocation of resources to improve its international ranking position and increase its international profile further.

C Accreditation Report for the ASIIN Seal

1. The Degree Program: Concept, content & implementation

Criterion 1.1 Objectives and learning outcomes of a degree program (intended qualifications profile)

Evidence:

- Self-assessment report
- Outcomes-Module-Matrices, as part of the self-assessment report
- BoB website: <https://biologi.fst.unair.ac.id/en/>
- BoEE website: <https://tl.fst.unair.ac.id/>
- Apothecary Education website: <https://pspa.ff.unair.ac.id/?lang=2>
- MoFMB website: <https://fpk.unair.ac.id/en/programs/master-of-fisheries-and-marine-biotechnology/>
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The experts refer to the Subject-Specific Criteria (SSC) of the Technical Committee Life Sciences and general ASIIN Criteria for the Accreditation of Degree Programmes as a basis for judging whether the intended learning outcomes of the Bachelor's degree programs in Biology and Environmental Engineering, Apothecary Education and Master's degree program in Fisheries and Marine Biotechnology as defined by UNAIR correspond with the competences as outlined by the criteria. They come to the following conclusions:

i. Learning Outcomes

At the program level, the experts observe two tiers of development for the educational objectives of the programs under review:

- **Program-specific Objectives**, which establish the program's purposes based on the defined vision and mission statements (see section B).
- **Learning Outcomes (LO)**, which derive from the study program objectives and guide the design and assessment of the curriculum (see Appendix).

LOs are developed based on each program's objectives, a process involving stakeholders, internal (students and lecturers) and external (alumni, associations, government and

private agencies), and benchmarking against pertinent national and international standards and references. The programs' LO align with the Indonesian National Qualification Framework, the National Higher Education Standards, UNAIR's vision and mission, and the mandates of the respective Faculties.

Based on the Indonesian National Qualification Framework (*Kerangka Kualifikasi Nasional Indonesia, KKKNI*), the LO of the programs are distinguished as aspects of Attitude (*sikap*), Knowledge (*pengetahuan*), General Skills (*kemampuan umum*), and Special Skills (*kemampuan khusus*).

Within the provided documentation, the University presents tables with the association between graduate profiles, learning outcomes and courses for the four programs under review. The auditors also verified and confirmed that the learning outcomes are published on the program websites.

At the module level, course learning outcomes (CLO) are defined in the respective Semester Learning Plan. Each course has a Semester Learning Plan as a curriculum tool where the relationship between CLO and LO is further documented.

In the course of their assessment, the expert team believes that the objectives of the programs are well-established and the intended learning outcomes are, in general, coherent with these objectives. The team attests that the learning outcomes of the programs correspond to level 6 (Bachelor of Biology, Bachelor of Environmental Engineering and Apothecary Education) and level 7 (Master of Fisheries and Marine Biotechnology) of the European Qualification Framework (EQF), respectively.

The experts stress, nonetheless, the importance of focusing more on attributes such as lifelong learning, leadership, and high ethical standards. Graduates should be equipped to succeed in their professional and technical careers by possessing competency and integrity in all aspects of their discipline, as well as effective communication skills and the universal value of humanity.

ii. Graduate Qualification Profiles

Concerning the graduate profiles, representatives of the Rector's office informed the experts that these are shaped through analysis of job market demands in government, business, and industry. Emphasis is placed on mapping the needs of stakeholders to bridge the gap between program offerings and stakeholder requirements.

Drawing on this stakeholder process, the Bachelor of Biology focuses on developing students' attitudes, knowledge and skills as analysts in the field of health and

environmental biology, research assistants in biology and entrepreneurs in the field of biology.

The Bachelor of Environmental Engineering prepares students for careers as analysts and consultants in environmental engineering, focusing on water supply, waste treatment, and natural resource management. Graduates can work as experts in environmental engineering, specializing in water supply, waste treatment, and environmental management. They may also become decision-makers and implementers of environmental policies in engineering and management, or choose to become entrepreneurs, fostering innovation and job creation with a commitment to environmental sustainability.

Graduates of the Apothecary Education program are expected to contribute their knowledge and skills as caregivers, interacting professionally with individuals and communities, decision-makers, communicators, leaders, and managers. They may also become lifelong learners, teachers, and researchers in all aspects relevant to pharmaceutical issues.

The Master of Fisheries and Marine Biotechnology prepares students for roles as decision-makers, researchers, managers, and planners in Fisheries and Marine Biotechnology. They are equipped to assess the health of aquatic biota and environments, explore fisheries resources for biotechnology-based products, and conduct research to enhance the quality of fisheries products. Additionally, they can develop concepts and plans to optimise biotechnology applications in fisheries and aquatic environments.

Several lines of evidence indicate that students are well-prepared for entering the job market, and employers are satisfied with the knowledge and technical skills of the graduates, as well as their attitude. During the discussion with the experts, representatives from various companies confirmed their willingness to take in student interns and graduates, emphasising their strong academic abilities, proactive nature, and commitment to learning continuously. Likewise, students and alumni expressed their satisfaction with the programs under review, the learning experience, and future job and academic prospects.

As a result of their assessment, the experts confirm that students, alumni and employers are satisfied with the programs under review. They gained the overall impression that the imparted qualification profiles satisfy expectations on all sides and allow the students to take up an occupation corresponding to their qualifications after graduation.

However, the experts identify opportunities for enhanced collaboration with industrial partners across all four programs. This would offer students and graduates improved

prospects in local, regional, national, and international job markets, providing an additional benefit.

iii. Review of Learning Outcomes

As documented in the self-assessment report, program objectives, learning outcomes, and curricula undergo a major review every five years to remain aligned with advancements in science and technology as well as emerging trends. These reviews include consultation with internal and external stakeholders, benchmarking processes, and graduate data through tracer studies. They also adhere to the guidelines set by Indonesian professional and scientific associations and the government's higher education framework.

Moreover, evaluation of learning outcomes, structured courses in the curriculum, and input from internal and external stakeholders are materials for conducting curriculum evaluation every year (minor review).

When asked during the audit if the University seeks feedback on the competences of its graduates, industry representatives confirmed their participation in various online and offline meetings to provide insights. The university invites them to share their input through surveys. Additionally, they confirmed that the university follows up based on the results from these questionnaires.

From the provided documentation, their exchanges during the audit, as well as the further discussion about the University's quality assurance mechanisms under Criterion 1.3 and Criterion 5, the experts gained the impression that appropriate, recurring review mechanisms concerning the learning outcomes of the programs under review are in place.

In summary, the assessment team believes that the degree programmes are designed in such a way that they meet the objectives set for them and judge the objectives and learning outcomes of the programs as suitable to reflect the intended level of academic qualification. They correspond with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 10 – Life Sciences and suffice the ASIIN Criteria for the Accreditation of Degree Programmes. The team appreciate that UNAIR aims for high standards as to give their students good chances in the national job market as well as a good starting point to transfer to higher academic levels. Further discussion of the curricula will follow under Criterion 1.3.

Criterion 1.2 Name of the degree program

Evidence:

- Self-assessment report
- BoB website: <https://biologi.fst.unair.ac.id/en/>
- BoEE website: <https://tl.fst.unair.ac.id/>
- Apothecary Education website: <https://pspa.ff.unair.ac.id/?lang=2>
- MoFMB website: <https://fpk.unair.ac.id/en/programs/master-of-fisheries-and-marine-biotechnology/>
- Curriculum Documents, all programs under review
- Sample Diploma, all programs under review

Preliminary assessment and analysis of the experts:

The naming of the degrees awarded follows the regulation of the Minister of Education, Culture, Research and Technology No 32/2021 concerning the Naming of Study Programs in Higher Education.

Graduates of the Bachelor of Biology program receive the title *Sarjana Sains (S.Si)* or Bachelor of Science (B.Sc.) and graduates of the Bachelor of Environmental Engineering program are awarded the title *Sarjana Teknik (S.T.)* or Bachelor of Engineering.

Graduates of the Apothecary Education program are conferred the degree *Sarjana Farmasi (S.Farm.)* or Bachelor of Pharmacy, and the title *Apoteker (apt.)* or Pharmacist. **The experts discussed with the program coordinators about using the international term "pharmacy" in the program information for prospective students, especially those from abroad. They suggest that the term "Apothecary" is not commonly used worldwide. Therefore, they recommend that the University add "Licensed Pharmacist" and "1-year program (based on a 4-year B.Sc. in Pharmacy)" for international applicants.**

Meanwhile, graduates of the Master of Fisheries and Marine Biotechnology are awarded the title *Magister Sains (M.Si.)* or Master of Science. **During the audit, the experts also discussed with the program coordinators about the use of the term "marine biotechnology" in the program's name. The experts were uncertain as to why the university was only focusing on marine biotechnology when the program actually covers much more. In their view, using "marine" limits the scope of the program, therefore they believe that the University should reconsider the use of this term in the study program's name.**

Additionally, the assessment team had access to several pieces of information regarding the programs and noticed that the programs were identified as Ba Biology or Ma Fisheries

and Marine Biotechnology. The team believes that for the purposes of international harmonization, the University should change the nomenclature from Ba to B.Sc. and Ma to M.Sc. when referring to the bachelor's and master's programs.

Aside from this, the experts confirm that the English translation and the original Indonesian names of the four study programs under review are appropriate and correspond to the programs' intended objectives and learning outcomes.

Criterion 1.3 Curriculum

Evidence:

- Self-assessment report
- BoB website: <https://biologi.fst.unair.ac.id/en/>
- BoEE website: <https://tl.fst.unair.ac.id/>
- Apothecary Education website: <https://pspa.ff.unair.ac.id/?lang=2>
- MoFMB website: <https://fpk.unair.ac.id/en/programs/master-of-fisheries-and-marine-biotechnology/>
- Curriculum Documents, all programs under review
- UNAIR Academic Calendar 2023/2024: <https://pendidikan.unair.ac.id/v2/index.php/kalender-akademik-2/>
- Airlangga Global Engagement website: <https://global.unair.ac.id/>
- Discussions during the audit

Preliminary assessment and analysis of the experts:

The curricula, structure, and composition of the study programs under review are presented in the University's provided "Curriculum Documents", including the academic guidelines and module handbooks. According to the self-assessment report, the programs are aligned with the Indonesian Qualification Framework and the National Standards for Higher Education. Moreover, the programs were developed based on consultations with experts and relevant associations, including the Committee of Indonesia Biology Study Programme for the Bachelor of Biology. The Bachelor of Environmental Engineering refers to the Environmental Engineering Cooperation Agency and the Apothecary Education program adheres to the Indonesian Pharmacist Education Standards.

i. Structure of the Programs

Each semester is equivalent to 16 weeks, including 14 weeks of learning activities and 2 weeks for midterm and final exams. The odd semester starts in August and ends in

December, and the even semester lasts from January to July. The mode of study for the four programs under review is full-time.

The Bachelor's degree programs in Biology and Environmental Engineering comprise a minimum of 144 Indonesian Credits (SKS) and have an expected duration of 8 semesters. The curricula consist of modules in the categories of general skills, specific skills, elective skills, including the integration of the Independent Learning-Independent Campus (*Merdeka Belajar - Kampus Merdeka, MBKM*) program.

The Apothecary Education program has two levels of education, namely the undergraduate level (Bachelor of Pharmacy) and the professional level (Pharmacist) with an integrated curriculum consisting of a minimum of 144 and 37 SKS, respectively. The expected total duration is ten semesters (eight semesters + two semesters, respectively). The Bachelor's curriculum comprises modules in the categories of compulsory general scientific skills, compulsory specific scientific skills and elective courses. Whereas the professional program involves only compulsory courses.

The Master of Fisheries and Marine Biotechnology involves a total of 44 SKS, with a duration of four semesters of study. It involves compulsory courses and elective courses.

ii. Contents

Bachelor's programs in Biology and Environmental Engineering

The curricula are structured around the following content (see Appendix):

1. **General-specific skills courses** covering basic knowledge of natural sciences, mathematics, languages and social/character development include *Religion, English, Calculus, General Physic, General Chemistry, Practical Work of General Chemistry, General Biology, Practical Work of General Biology, Indonesian, Pancasila, Civics, Logic and Critical Thinking, Introduction to Scientific Collaboration, Communication and Self-Development and more*.
2. **Scientific-specific skills courses** comprising subject-specific knowledge in Biology and Environmental Engineering, respectively, are introduced from the first semester.
3. **Elective studies courses** are offered from the third semester.

MBKM courses to learn new skills and participate in activities outside the university curriculum are also integrated into the curricula (more in the Internship/Mobility sections). The final *Thesis* in the eighth semester is preceded by a *Research Proposal Seminar* where students learn how to write a research plan.

During the visit, the experts discussed with the program coordinators the possibility of incorporating more engineering-focused subjects into the Bachelor of Environmental Engineering curriculum. This was because the current curriculum contains a higher number of subjects related to Environmental Sciences and Environmental Technology aspects. The program coordinators explained that the study program was originally named Environmental Science and Technology before being changed to Environmental Engineering. **The experts observed that out of the 3 Working Groups, only one is related to Environmental Engineering, while the other two pertain to Environmental Science and Technology. Therefore, they suggested increasing the coverage of engineering aspects in the curriculum.**

During the visit to the Black Soldier Fly House and Compost Pile, the experts learned that Bachelor of Environmental Engineering students are planning to market and commercialise the end-product or compost they have produced. **The experts believe that the students need to be equipped with more soft and hard skills, such as knowledge in marketing and promoting the products, to scale up production for commercialisation.**

Apothecary Education program

1. **Compulsory general scientific skills** courses in the first two semesters of the Bachelor's stage provide foundational knowledge in natural sciences, mathematics, and languages (Indonesian and English), along with social and character development.
2. From the first semester, **compulsory specific scientific skills** courses address key topics and skills directly relevant to all pharmaceutical disciplines. During the professional stage, compulsory courses focus on expanding student knowledge and practical skills in three areas:
 - Pharmacy Industry:** Quality Management, Production Management, and Pharmacist Professional Fieldwork Practice: Pharmaceutical Industry.*
 - Hospital Pharmacy:** Applied Pharmacokinetics, Applied Pharmacotherapy, Pharmacist Professional Fieldwork Practice: Hospital Pharmacy*
 - Community Pharmacy:** Specialities for Drugs and Medical Devices, Accounting, Pharmacist Professional Fieldwork Practice: Community*
3. **Elective courses** during the academic program stage are offered starting from the fourth semester.

The final *Thesis* in the eighth semester is preceded by a *Research Proposal* course in which students learn how to design a research project according to scientific research principles.

Master of Fisheries and Marine Biotechnology

The curriculum is organised based on the following content:

1. **Compulsory** courses consist of modules, such as:

Physiology of Aquatic Biota, Advanced Biochemistry, Fish and Shrimp Immunology, Cellular and Molecular Biology, Research Methodology, Aquaculture Engineering, Environmental Biotechnology, Fisheries Industrial Biotechnology, Exploration of Aquatic Biota, Genetic Engineering of Aquatic Biota, Seminar, Fish Nutritional Biotechnology, Proposal and Seminar, and Thesis

2. **There are four elective** courses in the areas of:

Biosafety and Biosecurity, Cell and Embryo Culture, Biotechnology of Fish Health and Bioinformatics.

Students prepare for research from the first semester through the *Research Methodology* course. Upon completing the *Research Proposal Seminar* in the third semester, students present their findings orally and document their research in a *Thesis*.

For the four study programs, the experts asked the program coordinators to provide insights into how students' soft skills are fostered in relation to the curriculum and modules. They explained that in the Biology and Environmental Engineering programs, there are dedicated courses focused on developing soft skills such as communication and self-confidence, along with opportunities for community engagement activities. The programs also use rubric assessments to evaluate soft skills, particularly communication. The Master of Fisheries and Marine Biotechnology emphasises the development of soft skills through research and community service. Additionally, the Apothecary Education program incorporates project-based learning in multiple courses to promote independence and requires mandatory internships for professional degrees.

Upon reviewing the structure and content of the curricula for the four programs under review, along with the discussions held during the audit, the experts confirm that these programs are suitable to adequately prepare students for the labour market.

iii. Internship

The internship is integrated into the Bachelor's curriculum through the MBKM program. Fifth-semester students in the Bachelor's programs are encouraged to join this scheme. As part of MBKM, students can choose one of eight learning activities:

1. Student exchange,
2. Internship/practical work in industry or other workplaces,

3. Teaching assistant in education units,
4. Research,
5. Humanitarian projects,
6. Entrepreneurship activities,
7. Independent study/project, and
8. Community service/development program.

Students participating in MBKM are required to produce activity outputs, including a report that must be consulted with their respective supervisors.

The Apothecary Education program incorporates internships or residential training during the professional stage to provide students with hands-on experience and the opportunity to establish connections with the field. According to the self-assessment report, students can spend up to 12 weeks in community pharmacies, community health centres, hospitals, and pharmaceutical industries.

Upon reviewing the list of partners provided, the experts confirm that the Faculties maintain cooperation agreements with a diverse array of institutions. During the audit, industry representatives confirmed that their companies have received students as interns. They view these internships as opportunities to collaborate with the University. Additionally, these representatives confirmed the existence of agreements with the University and expressed satisfaction with hosting students from its programs.

iv. Mobility

At UNAIR, Airlangga Global Engagement (AGE) oversees outbound and inbound student mobility. Among the outbound mobility schemes is IISMA (Indonesian International Student Mobility Award), a government scholarship that funds Indonesian students participating in mobility programs at overseas universities. Inbound mobility opportunities include AMERTA, an international semester exchange program, which allows international students to study for one semester at UNAIR.

At the level of Faculties, concerted efforts are being made to support AGE's initiatives and facilitate international student exchanges.

Bachelor's programs in Biology and Environmental Engineering

The MBKM program enables the participation of Bachelor's students in various learning opportunities based on their individual goals and interests. Students at the Faculty of Science and Technology can participate in student exchange, global talent internship programs and international seminars. International students similarly engage in

collaborative programs to enrich their understanding, experience, and future collaborations.

Apothecary Education program

Similarly, students have the chance to participate in student exchange programs with partner universities, aiming to enrich their life experiences beyond campus and expanding their knowledge beyond their field of study. This initiative is complemented by credit transfer or credit-earning options through internships, research projects, joint degrees, and double-degree programs.

Master of Fisheries and Marine Biotechnology

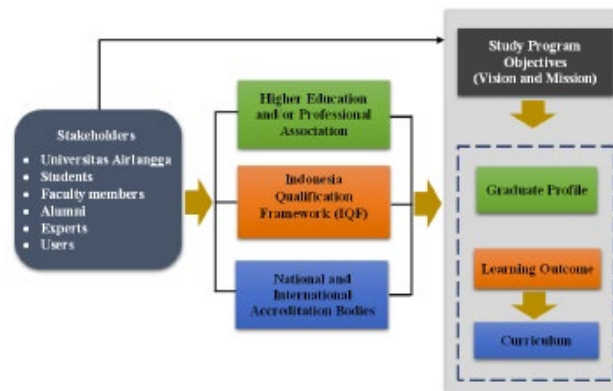
The study program collaborates with the National Pingtung University of Science and Technology (NPUST), Taiwan, to offer a double degree program. Students in this program spend their first year at UNAIR and their second year at NPUST, where they engage in research, publish papers and undergo thesis examinations under a joint supervision arrangement.

During the audit, the students confirmed to the experts that UNAIR promotes student mobility in their student journey. An Apothecary Education student shared their experience participating in student mobility with ISMA financial support, emphasising the University's assistance during the application process. Biology students mentioned collaborations with institutions in Malaysia, Thailand, and Singapore.

In terms of credit recognition for study performance achieved abroad, several students confirmed to have successfully converted credits after mobility, indicating a seamless process (more under [criterion 1.5](#)).

v. Curriculum review

The learning outcomes and curricula of the four programs undergo review every five years. The University has developed a mechanism for graduate profiles, learning outcomes and curriculum. This mechanism illustrated in the figure below is based on the Indonesian Qualification Framework and the Minister of Education and Culture regulations No. 73/2013 and No. 3/2020, which pertain to the implementation of KKNI in the higher education sector and national higher education standards.



*Design Mechanism of Graduate profiles, learning outcomes, and curriculum.
Source: Self-assessment report, UNAIR.*

To ensure the curriculum aligns with the intended learning outcomes, the program-level Quality Assurance Unit, in collaboration with the Faculty-level Quality Assurance Unit, conducts evaluations of the learning process every semester. These evaluations utilise instruments provided by the University-level Quality Assurance Unit (more in [Criterion 5.](#)).

In the course of their assessment, the experts acknowledged the Faculties' commitment to conducting regular curriculum reviews in consultation with both internal and external stakeholders. They specifically commend the highly motivated teaching staff for their dedication to improving the curricula.

However, in the assessment team's opinion, upcoming curricular review cycles should prioritise expanding the curriculum to include international standards. This strategic improvement will not only broaden the scope of the students' expertise but also enhance their graduate profile, fostering greater versatility and competitiveness at the international level.

Criterion 1.4 Admission requirements

Evidence:

- Self-assessment report
- UNAIR website: <https://www.unair.ac.id/>
- UNAIR admission websites: <https://ppmb.unair.ac.id/>
- UNAIR Academic Calendar 2023/2024:
<https://pendidikan.unair.ac.id/v2/index.php/kalender-akademik-2/>
- Admission-related regulation as part of the self-assessment report
- Statistical data about the progress of studies, all programs under review

- Discussions during the audit

Preliminary assessment and analysis of the experts:

At UNAIR, the Student Admission Center (PPMB) is an independent unit established by the Rector's decree No. 322/HK/KR/2009. It is responsible for overseeing the admission process for new students, ensuring compliance with non-discrimination, equal opportunity and affirmative action laws, orders and regulations. The admission requirements, procedures, schedules, and steps are published and announced on the PPMB website and are thus accessible to all stakeholders.

Bachelor of Biology, Bachelor of Environmental Engineering, and Apothecary Education program

The admission and selection process for prospective Bachelor's students is limited by the Regulation of the Minister of Research, Technology and Higher Education No. 48/2020 about Student Admission of Undergraduate Programs in State Universities. There are three pathways for admission:

1. SNBP—National Selection Based on Merit (former SNMPTN): This mechanism is based on the academic achievement of students during their secondary school studies.
2. SNBT—National Selection based on Tests: This mechanism is based on reasoning and problem-solving abilities. It measures cognitive potential, mathematical reasoning, literacy in Indonesian, and literacy in English.
3. University's selection method: This mechanism is based on independent tests and collaborative tests through a consortium of institutions, utilising scores from the test-based national selection and/or other required assessment methods.

Intake is possible annually, with studies starting in August. The Biology and Apothecary Education programs have an international class. The intake capacity is 90 students for the Bachelor of Biology and 100 students for the Bachelor of Environmental Engineering. The Apothecary Education program admits 250 students for the regular class and 10 students for the international class. The University provided the following numbers:

Table 1.1: Annual Student Intake for the Bachelor's Programs.

Source: Appendix Self-assessment report, UNAIR.

Program	Year of Entry	Intake		
		Number of applicants	Number of admitted	Number of registered
BoB	2022	981		89
	2021	702		89
BoEE	2022	952	103	
	2021	1,244	101	
	2020	1,583	94	
	2023	4050	307	

Program	Year of Entry	Intake		
		Number of applicants	Number of admitted	Number of registered
Apothecary	2022	4069	265	
Education	2021	4160	260	

Master of Fisheries and Marine Biotechnology

Applicants for the Master's program must fulfil several prerequisites. These include having a Bachelor or Applied Bachelor in Fisheries and Marines, Husbandry, Veterinary, or Biology, and an undergraduate GPA ≥ 2.75 .

Eligible candidates are required to have a pre-proposal plan. As noted before, the Master's program offers a double-degree program with the National Pingtung University of Science and Technology (NPUST), Taiwan. To take part students are required to have 24 credits in the first year and a minimum English proficiency TOEFL score of 545. **Regarding this double-degree program, the experts notice that it appears to be not reciprocal. UNAIR students take all 2nd year subjects at NPUST, whereas NPUST students have a brief stay at UNAIR. Moreover, many subjects are not equal or comparable between the two universities, raising the need for clarification.**

Admission is possible every semester, with studies starting in August and January and a capacity of 20 students. Acceptance of new students can also be through the UNAIR Fast Track program for undergraduate students. The University has provided the following numbers:

Table 1.2: Annual Student Intake for the Master's programs.

Source: Appendix Self-assessment report, UNAIR.

Program	Year of Entry	Intake	
		Number of applicants	Number of new students
MoFMB	2022-2023	19	19
	2021-2022	16	13
	2020-2021	18	17

During the discussion with the Rector's office representatives, the experts asked about the origins of the student body, learning that the majority come from East Java, with increasing representation from other Indonesian regions and abroad. Many international students come from Malaysia, and there is a notable presence of degree-seeking students from the Middle East under scholarship programs. The University's goal is to further diversify the international student profile, particularly from universities in Australia and Europe.

Tuition fees vary for the Bachelor's programs from 500,000 to 15,000,000 IDR (28 to 850 Euro) per semester depending on the parent's income. For the Master's program, the tuition fee is 10,000,000 (570 Euro) per semester for Indonesian citizens and 17,500,000 (1,000 Euro) per semester for international students.

The experts also inquired about opportunities for students with disabilities or from disadvantaged socioeconomic backgrounds. The University representatives emphasised their disability-friendly approach and explained that UNAIR is among the Indonesian universities with the highest percentage of students from poorer backgrounds. Financial aid is provided to students facing economic hardship, aligning with the Rector's policy to ensure no student leaves due to financial hardship.

In assessing this criterion, the experts find the admission rules to be binding, transparent, and based on decrees by the Ministry of Research, Technology, and Higher Education and on UNAIR's written regulations.

The assessment team also saw evidence that the University is tracking its students' progress and achievements. However, for the Bachelor's programs, they believe that the University should also assess whether the admission test is predictive of success. The team propose conducting an evaluation to determine if the best-performing applicants are among the most successful students after one year.

Criterion 1.5 Workload and Credits

Evidence:

- Self-assessment report
- Curriculum Documents, all programs under review
- Sample Student's Workload Survey Reports; all programs under review
- Airlangga University Credit Transfer System (ACTS):
<https://pendidikan.unair.ac.id/en/index.php/acts/>
- Discussions during the audit.

Preliminary assessment and analysis of the experts:

Study programs at UNAIR must follow the Indonesian credit system (SKS) regulations. Each credit point is distributed between guided and independent learning activities, as well as between face-to-face activities, laboratory activities/practicum, and project and field practice. According to the Airlangga University Credit Transfer System (ACTS), 1 SKS of learning activity consists of 50 minutes of structured and scheduled meetings (teaching), 60 minutes of structured but unscheduled activity (assignments) and 60 minutes of unstructured and unscheduled activity. While 1 SKS of laboratory work or practical work consists of 100 minutes of structured and scheduled meetings (teaching) and 70 minutes of unstructured and unscheduled activity. Independent learning activities (2720 minutes

per semester) refer, among others, to literature studies, reports, colloquium, surveys, experiments, data analysis and internships.

Bachelor's programs in Biology and Environmental Engineering

The Bachelor's programs require a minimum study load of 144 credits (230.4 ECTS). Bachelor of Biology students must complete 35 credits of general-specific skills courses (56 ECTS), 83 credits of scientific-specific skills courses (132.8 ECTS), and 26 credits of elective studies courses (41.6 ECTS). While, Bachelor of Environmental Engineering students need to fulfil the requirement of 108 credits of compulsory courses (172.8 ECTS), and 36 credits of elective studies courses (57.6 ECTS). Fifth-semester students are offered the option to participate in the MBKM Program. For the Bachelor of Biology, MBKM activities can be converted into 20 credits, whereas for the Bachelor of Environmental Engineering, 29 credits must be completed outside the study program. The maximum time to complete the programs is 14 semesters.

Upon a closer look at the Bachelor of Environmental Engineering, the experts note that some subjects have high credits but no lab and field work, while others include lab work. Examples include "Air Pollution Prevention and Control" (LKT 340), with 3 SKS but no lab and field work. Whereas "Wastewater Processing Building Planning" (no code provided) allocates 3 SKS and lab work 1 SKS. Furthermore, some subjects have similar codes for lab work but different credit values, as seen in LKT 309. In addition, the experts believe that some subjects should have lab and field work in order to develop students' practical skills. For instance, "Ecotoxicology" (LKB 205), "Hazardous Waste Management" (LKT 307), "Industrial Waste Treatment" (No Code), and "Management and Quality of Water Resources" (LKT 342), among others.

Apothecary Education program

The Bachelor's stage requires a minimum study load of 144 credits (230.4 ECTS). Students must complete 134 credits of compulsory courses (214.4 ECTS) and 10 credits for elective courses (16 ECTS). To obtain the Professional degree, a minimum of 37 credits (59.2 ECTS) are required.

The maximum study period in the Apothecary Education program is 14 semesters for the bachelor's degree and 4 semesters for the professional degree.

For all Bachelor's programs, the semester GPA determines the maximum number of credits students can take the following semester, with a maximum of 24 SKS if the GPA range is 3.00-4.00.

Master of Fisheries and Marine Biotechnology

The Master's program curriculum requires a minimum study load of 44 credits (132 ECTS). Students are required to complete 40 credits of compulsory courses, and 4 credits of elective courses. The Master's programs can be completed within the standard period of study (2 years), and a maximum of 8 semesters.

After reviewing the information on the Master's program website, it is noticed that a different formula is used to convert Indonesian Credits to ECTS. The curriculum map on the website specifies that the program involves 44 Indonesian Credits or 70.40 ECTS, rather than the 132 ECTS indicated in the self-assessment report. The experts ask the University for clarification and remark upon the importance of presenting the program in a consistent manner.

For all programs, each semester, a student workload evaluation survey assesses the allocation of weekly face-to-face time to cover materials. It also evaluates the time allocated for assignments, quizzes, and exams, adequacy of weekly self-study time, accessibility and availability of facilities for accessing and completing tasks, and clarity of assignment instructions within the course. According to the presented results, the perception of students is generally good for all measured parameters.

These results were confirmed to the experts during the audit. The students did not highlight any significant imbalance or excessive workload. They reported having enough time to do other activities outside study. **However, concerns were raised regarding time management throughout the stages from research topic preparation to thesis completion, sometimes involving adjustments in methodology and research parameters. The experts believe that the university should improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.**

Furthermore, for the four programs under review, the University provided key performance indicator data in its self-assessment report, including metrics such as withdrawals and average study period. Analysis of the 2020–2023 cohorts shows that among students enrolled in the Bachelor of Biology program, 6% had withdrawn. An examination of the 2019–2015 cohorts in the Bachelor of Environmental Engineering reveals that 13 students had discontinued their studies. This data indicates that most students complete the programs. The numbers provided also show that students complete within the expected duration, averaging 3.94 years for the BoB in 2021/2022 and 3.92 years for the BoEE.

For the Apothecary Education program, the drop-out rate for the period 2019-2016 reached 9.7%. This suggests that most students persist in their studies with an average completion time standing at 4.02 years for the Bachelor's degree and 1 year for the professional degree in 2018/2019.

According to the statistical data, there were no dropouts in the Master's program between 2019 and 2022. The data also indicates that students complete the program slightly exceeding the expected duration, averaging 2.2 years during the 2021/2022 academic year.

In general, the data show that almost all students complete the study programs, with relatively low dropout rates reported for the four programs. These numbers suggest that the programs under review can be successfully completed.

The experts confirm that regulations for the transfer of credits obtained outside of UNAIR exist (<https://pendidikan.unair.ac.id/en/index.php/academic-regulation-2/>). The experts as well as attest that the program's module handbooks clearly distinguish between credits given for various forms of supervised studies and self-study time.

All in all, the experts confirm that a credit system centred on student workload is in place, that this workload encompasses both contact hours and self-study time and that credits are granted in accordance with the associated workload.

Criterion 1.6 Didactic and Teaching Methodology
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Evidence:

- Self-assessment report
- Academic Guidelines, all programs under review
- Discussions during the audit

Preliminary assessment and analysis of the experts:

In the self-assessment report, UNAIR records that appropriate didactical instruments and methods are implemented for the four programs under review. The variations in learning methods and tools are adjusted to the level of knowledge, skills, and competences set in each module. Learning methods are listed in each course's Semester Lesson Plan (RPS), compiled and evaluated by a teaching team. RPS serves as a roadmap for both lecturers and students during the learning process. Methods and approaches to learning can be enhanced through the use of the UNAIR Learning Management System, known as HEBAT e-learning. This platform facilitates the distribution of educational materials, and assignments, and supports distance learning activities.

The university's approach to learning is student-centred and involves teaching methods that prioritise the student's involvement in the learning process. Government regulations and internal curricula have recently focused on increasing project-based learning. This approach helps students explore, assess, interpret, and synthesise information to produce various learning outcomes. The MBKM policy has been integrated into the Bachelor's curricula to give students more flexibility in achieving their goals. With MBKM, students can learn from different institutions and communities, allowing for a more student-centred approach to learning. Furthermore, the availability of laboratory facilities, including education, research, advanced labs, and field labs, will enable students to conduct independent research.

Moreover, the Faculty of Science and Technology, Faculty of Pharmacy and Faculty of Fisheries and Marine Sciences expose all students to relevant external parties through initiatives such as inviting guest lecturers and visiting professors, promoting student exchanges and internships, and establishing partnerships with international institutions.

According to the self-assessment report, the diverse array of teaching methods employed within each program, include but are not limited to lecturers, tutorials, laboratory work, presentations and discussions, e-learning, case-based, project-based and problem-based learning. The module handbooks state the teaching methods applied in each learning unit, providing instructions for laboratory work, learning resources, and the learning plan and assessment.

The four programs have courses on research methodology. Depending on their academic level, these courses guide students in developing, writing, and publishing papers and theses. In the discussions with students, the experts learn that they are generally satisfied with the quality of teaching and learning in the programs under review.

In summary, the expert group considers the range of teaching methods and instruments suitable to support the students in achieving the intended learning outcomes. They confirm the study concepts of all programs under scrutiny comprise a variety of teaching and learning forms as well as practical parts adapted to the respective subject culture. Finally, they attest that the imparting of academic research skills is sufficiently ensured. **Nevertheless, for a student-centred approach to be effective, the experts emphasise the crucial role of actively involving students in the design of the teaching and learning processes.**

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

The experts thank the University for the provided statements and additional documentation concerning criterion 1.

(ASIIN 1.1) Focus on attributes (lifelong learning, leadership and high ethical standards) – All programs (Response No.1)

The experts commend UNAIR for its commitment to advancing graduate attributes. They recognise the University's ongoing efforts across the four programs to enhance student leadership, lifelong learning, and communication skills. These efforts are evident in the integration of dedicated content into the curriculum, the inclusion of guest lectures by both industry practitioners and international scholars and the adoption of case studies and problem-based learning approaches. The experts appreciate these initiatives and advocate for sustained support to ensure students are well-prepared for success in their future careers.

(ASIIN 1.1) Enhanced collaboration with industrial partners – All programs (Response No.2)

The experts also commend UNAIR for recognising the significance of collaborating with industry partners to expand opportunities for students. They acknowledge the role of the Directorate of Career Development, Entrepreneurship Incubation, and Alumni (DPKKA) in providing resources and support for entrepreneurship and career development. The experts reviewed the list of institutions partnering with the study programs, as detailed in Appendix 1. The experts support these initiatives and recommend pursuing further collaborations with industrial partners to enhance opportunities for students and graduates in local, regional, national, and international job markets.

(ASIIN 1.1) Presentation of Learning Outcomes – Bachelor of Environmental Engineering (Response No.12)

Regarding the presentation of the Learning Outcomes, the experts reviewed the program's website but did not observe any revisions. The experts reiterate that the University should ensure consistency and uniformity in the presentation of this information.

(ASIIN 1.2) Using "pharmacy" in the program's information – Apothecary Education (Response No.3)

The experts appreciate that the Apothecary Education program has taken into account their recommendation. They take note of the fact that the program will use the name "Licensed Pharmacist Programme" and indicate that it is a "1-year program (based on a 4-year Bachelor of Pharmacy)" in the media accessed by prospective international applicants. With this additional information, the audit team does not see a need to issue further recommendations on this matter.

(ASIIN 1.2) Reconsideration of the use of "marine" in the program's name - Master of Fisheries and Marine Biotechnology (Response No.3)

The audit team appreciates the program's consideration of the suggestion to rename the study program. They understand that any change in the program's nomenclature must undergo a formal assessment following the Decree of the Director General of Higher Education, Ministry of Education and Culture No 85/E/Kpt/2020. Since no action has yet been taken in this regard, the experts reaffirm their initial recommendation, viewing the proposed name change as advantageous for the program.

The experts point out, once again, that in several parts of its statement, the Faculty is referred to as the "Faculty of Fisheries and Marine". They believe that the term "marine" should always be accompanied by a subject, such as "sciences". It might be better for the Faculty to avoid using the term "marine" altogether, as "Fisheries and Biotechnology" covers both freshwater and marine organisms.

(ASIIN 1.2) Change in nomenclature for international harmonisation – Bachelor's and Master's programs (Response No.3)

The experts recognise the program's efforts to adjust its nomenclature for better international harmonization and to enhance the employability of graduates on an international scale. As a result, the experts believe no further recommendations are necessary regarding this issue.

(ASIIN 1.3) Increased coverage of engineering aspects within the curriculum – Bachelor of Environmental Engineering (Response No.4)

The experts appreciate the program's acknowledgement that the engineering aspect of the curriculum can still be improved. They take note of the plans to change the names of several courses and adjust their content. These changes include renaming courses such as Air Pollution Prevention and Control to Air Pollution Engineering, Solid Waste Management to Solid Waste Engineering, Hazardous Waste Management to Hazardous Waste Engineering, and Fluid Mechanics to Engineering Fluid Mechanics. The updates also involve field study activities and experiments. Similar changes will be made to other engineering courses as part of the curriculum redesign at BoEE.

However, the experts believe that any changes to the course names should be accompanied by corresponding updates to the course content. Each course must have clear distinctions in focus, scope, and objectives. The statement provided did not include the syllabi or content for the new courses, and in the Appendix 3 (BoEE Revised Module Handbook), no changes to the new course names have been applied as observed on p.29 Fluid Mechanics; p.53 Solid Waste Management; p.54 Air Pollution Prevention and Control and p.61 Hazardous Waste Management.

The team suggests that all courses mentioned above should be more specialized and focused, for example on the design, development, operation of technologies and systems. Therefore, since actions are yet to be implemented, the experts reaffirm their initial recommendation.

(ASIIN 1.3) More soft and hard skills (marketing and product promotion) – Bachelor of Environmental Engineering (Response No.4)

In the experts' view, the program is making significant efforts to foster students' entrepreneurial abilities. They note the inclusion of the sixth-semester course "Technopreneurship," which equips students with the knowledge and skills necessary to create, promote, and sell products. The experts commend the inclusion of this course in the curriculum. However, upon reviewing Appendix 3 (BoEE Revised Module Handbook, p. 65), they found that it did not include any information about the course content. Recognising that entrepreneurship development is a continuous challenge requiring ongoing enhancement, they reaffirm their initial recommendation for continued improvement in this area.

(ASIIN 1.3) Inclusion of international standards in upcoming curricular reviews – All programs (Response No.4)

The assessment team values the programs' attention to the suggestion of considering international standards in the review of the curricula. The experts note that the 2021 curriculum redesign for the Bachelor of Pharmacy involved a benchmarking process with universities in Australia, as well as the ASEAN PharmNET 2024 and the US-Thai Pharmacy Consortium. They also acknowledge the MoFMB's plans to prioritise expanding the curriculum by incorporating international standards in the future and further enhancing the graduate profile following UNAIR's Sustainable Education for All strategy. Additionally, they recognise that BoB and BoEE strive to continuously improve the curriculum to include international standards. The experts endorse these actions and recommend that future curricular reviews continue placing emphasis on incorporating international standards.

(ASIIN 1.4) Reciprocity in the double-degree with NPUST - Master of Fisheries and Marine Biotechnology (Response No.5)

The experts thank MoFMB for clarifying the structure of the Double Degree program, which allows UNAIR students to complete their first year at MoFMB and their second year—focused on research and thesis work—at NPUST, and vice versa. They note that UNAIR students earn 11 credits by their second year at NPUST, compared to 10 credits if they complete the second year at UNAIR. The experts also appreciate the clarification that while the names of the first-year courses at each university may differ, the course goals and outcomes are aligned. However, there is no explanation provided for the absence of NPUST students participating in the Double Degree program at UNAIR. Based on this information, the audit team believe that the Double Degree program should have mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.

(ASIIN 1.4) Assessment of the admission test's predictive validity – All Bachelor's programs (Response No.5)

The experts are pleased to learn that the University agrees with their suggestion. They have examined the information on the Airlangga Assessment Center (AAC) website. In 2023, an assessment in the form of a Potential Academic Ability Test (TPKA) was conducted to evaluate the academic capabilities of prospective undergraduate students. This assessment considered the different entrance test paths for new students and was conducted in multiple waves corresponding to these paths. While the experts appreciate this effort, they

stand by their recommendation, hoping for a presentation of the data specific to each program under review.

(ASIIN 1.5) Inclusion of practical work in relevant modules – Bachelor of Environmental Engineering (Response No.6)

The audit team acknowledges that the program incorporates activities outside the classroom, such as industry field trips and appreciates the examples. They recognise that these activities help students gain practical insights. However, in the experts' opinion, field trip differs from lab and field work, and should not be considered equivalent. Field trip is conducted only for a short time, is inherent to lectures, and has no credit(s). Lab and field work have credit(s) and are being conducted throughout the semester. Lab and field work are designed to improve student's skills both individually and in groups.

Without further comments or relevant additional evidence, the experts confirm their preliminary assessment and ask the University to evaluate whether some subjects should have lab and field work to develop students' practical skills. These subjects include but are not limited to "Ecotoxicology" (LKB 205), "Hazardous Waste Management" (LKT 307), "Industrial Waste Treatment" (No Code), and "Management and Quality of Water Resources" (LKT 342).

(ASIIN 1.5) Consistency in the program's information – Master of Fisheries and Marine Biotechnology (Response No.6)

After reviewing the program website, the experts confirm that the University has made corrections in the conversion from SKS to ECTS. They take note of the study load of MoFMB, which consists of 44 SKS equals 132 ECTS (where one-course credit/SKS is converted to 3 ECTS). The experts appreciate the effort to ensure consistency in the presentation of the program and believe there is no need to issue additional recommendations in this regard.

(ASIIN 1.5) Time management throughout the thesis stages – All programs (Response No.6)

The experts appreciate the measures taken by the four programs to ensure time management at thesis completion. To enhance writing quality, students are encouraged to participate in lecturer projects including library data literacy, article writing, and thesis work. The BoB aims to boost confidence and readiness through various courses before students start their thesis. Efforts have been made in the BoEE to involve students in lecturer research, resulting in the effective completion of final projects. Students take Research Methods and Thesis Proposal courses, consult with their supervisor at least 6 times and present a research proposal to ensure timely completion of their thesis. The Apothecary Education program sets a proposal course one semester before the thesis and prevents major changes in research methodology during the thesis by establishing a research roadmap. The experts endorse these initiatives and recommend further enhancements to boost students' confidence and readiness, ensuring they meet their academic requirements within the standard study period.

(ASIIN 1.6) Active involvement of students in the learning process – All programs (Response No.7)

The experts commend UNAIR for its dedication to fostering student involvement in their learning process. They recognise that in the BoB and BoEE programs, students actively participate in designing and evaluating teaching and learning processes through feedback mechanisms and student-centred approaches. The Apothecary Education program also incorporates student input through regular meetings and has implemented improvements based on student suggestions, such as providing class materials in advance. Similarly, the MoFMB study program engages students in evaluating lecturer performance and enhancing the learning process through feedback and communication of the Semester Learning Plan and Lecture Contract. Based on this information, the assessment team concludes that no further recommendations are necessary on this matter.

The experts consider criterion 1 to be partially fulfilled.

2. Exams: System, Concept and Organization

Criterion 2 Exams: System, concept and organization
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Evidence:

- Self-assessment report
- Module descriptions, all programs under review
- Academic Guidelines, all programs under review
- UNAIR academic calendar <https://pendidikan.unair.ac.id/v2/index.php/kalender-akademik-2/>
- Examination-related procedures and regulations
 - Rector's regulation No. 27/2018 about Study Regulations on Airlangga University
 - Dean of The Faculty of Pharmacy's decree No 80/Un3.1.5/2020 on Determination of Academic Regulations Bachelor of Pharmacy (S1) study program.
- Samples of student's work (projects, exams and thesis)
- Discussions during the audit.

Preliminary assessment and analysis of the experts:

- i. Forms of Examinations and Exam Schedule

According to the self-assessment report, formative and summative assessments evaluate students' academic performance. Exams measure students' learning outcomes (attitude, knowledge, skills and competence) according to a predefined grading scale reference. The Semester Learning Plan specifies the course's intended learning outcomes (CLO) and identifies the types of examinations used to assess the achievement of these learning objectives. This information is also available in the module description. Types of assessments or examinations used and marking systems of each course are informed by the course coordinator to students at the beginning of each course in the form of a learning contract.

Based on the academic calendar, 14 weeks of the semester are dedicated to lectures, and there are two exam periods. The first half of the module is evaluated through the midterm exam, conducted in week 8th/9th, while the final half is evaluated on the final exam at the end of the semester.

Bachelor of Biology and Bachelor of Environmental Engineering

According to the self-assessment report, both programs fall under the same department and have similarities in their examination and assessment system. Assessment methods employed include assignments in the form of papers or presentations on reported cases or real-life problems conducted individually or in groups. Quizzes are used to gauge student readiness and comprehension on specific learning objectives. Seminars involve presentations and discussions. For practicum subjects, assessment is done through midterm and final exams, pre-tests, weekly reports, and final reports. Assessment for activities outside the University curriculum is also regulated.

Apothecary Education program

Assessment methods comprise written, oral, and practical assessments. Written assessments include pre-tests to evaluate readiness, post-tests to measure knowledge absorption, individual or group assignments, as well as midterm and final exams. Oral assessments encompass group discussions and seminars, facilitating peer discussion. They also include Thesis defense for bachelor's degree students and oral comprehensive exams for professional degree students. Practical assessments can include reports or portfolios and practical exams using an objective structured clinical examination.

In conjunction with the University's general examination system, the Faculty sets specific criteria for assessments in the Professional degree. These regulations adhere to guidelines established by the Pharmacist Board Examination, the Indonesian Pharmacist Association, and the National Pharmacy Committee. The final examinations consist of a computer-based test and an objective clinical structure examination.

Master of Fisheries and Marine Biotechnology

Several types of evaluation measure student ability in accordance with the CLO, including written examinations through the preparation of papers, oral examinations, scientific writing, journal review presentations, a research proposal and thesis writing.

All in all, the experts confirms the programs use various forms of examination, which are competence-oriented. These examinations are overall suitable to verify the achievement of the intended learning outcomes as specified in the respective module descriptions. The examination form is determined individually for each course based on the main content and published in the respective module description.

ii. **Grading and Graduation Requirements**

The final grade of each module is a combination of the scores of the individual types of assessment. The final grade required to pass the module is given in the module handbook. The exam grade is presented in an absolute numeric value with a range of 0-100. The final grade of the course is given as a quality letter and quality score as follows:

Table 2.1: Grading reference.

Source: Appendix Self-assessment report, UNAIR.

Score	Letter Score	Quality Score
86-100	A	4.0
78 - < 86	AB	3.5
70 - < 78	B	3.0
62 - < 70	BC	2.5
54 - < 62	C	2.0
40 - < 54	D	1.0
< 40	E	0.0

Students at the Bachelor's level pass if they obtain at least a D grade, while an E is considered a fail. For the Professional and Master's programs, the minimum limit for passing a course is grade B.

Based on the regulation, for Bachelor's students to be eligible to join the exam, they need to fulfil 75% of class attendance for class-based lectures, and 100% for practicum-based lectures. For MoFMB students, they must attend lectures at least 75% of the 14 meetings.

To graduate from the Bachelor of Biology, Bachelor of Environmental Engineering and Bachelor stage of the Apothecary Education program, students must have completed the required 144 credits, scored a minimum GPA of 2.0 and no grade of E with a maximum of 20% D grades. They are also required a minimum ELPT (English Language Proficiency Test) score of 450. The maximum study period for undergraduate students is 14 semesters, except for students who get an extension of their studies.

To graduate from the Master's program, students must have completed the required study load and meet several conditions that are required before conducting results seminars: students must pass all courses with a minimum GPA of 3.00, have a ELPT score of at least 450, and publication of scientific work in accredited national journals (indexed Sinta 1 – 5) or international journals or indexed proceedings with a status of at least accepted.

In case a student is unable to attend examinations schedule due to a valid excuse, the student has a right to re-sit or reschedule the examination. If a student fails or earns an unsatisfactory final mark, they have the opportunity to register for remedial exams. The highest achievable mark for remedial exams is a "B". If the student still receives an unsatisfactory final mark in the remedial exam, they can retake the course in the following semester.

Final grades can be accessed by students via their Cyber campus account. When students have objections to their exam results, they have the chance to appeal to the course coordinator, usually within one week of being notified of the results. The students confirmed during the audit that an appeal mechanism exists if they perceive their grades as unfair.

UNAIR has a policy on academic integrity in all student activity, including examinations and assignments. If students engage in plagiarism, they will face sanctions that correspond to the severity of their actions, which may range from academic penalties and suspension to expulsion. To help prevent plagiarism, the university offers teachers and students access to anti-plagiarism software (Turnitin), which can be used to check for similarities in written work.

iii. Thesis

In accordance with academic guidelines, Bachelor's and Master's students are required to complete a research project as their final assignment before graduation. This project involves creating and presenting a research proposal, conducting research, analysing and interpreting data, and writing a thesis. After finishing the research and thesis writing, students must defend their thesis in front of a panel of examiners, which includes their supervisor, co-supervisors and nominated lecturers related to the field of science of the research topic.

In assessing this criterion, the expert group finds that appropriate university-wide and Faculty-specific rules and procedures govern the examination systems. These rules and procedures are adequately communicated and transparently published. The students in the interviews confirmed that they were aware of all necessary information regarding

examination schedules, forms, and grading rules. They are reportedly given sufficient time to prepare for the exams.

Lecturers in the discussion report that a variety of exam forms are used to check the attainment of the respective learning outcomes, including a mix of oral and written exams. The experts acknowledge that forms and assessment rubrics to assess the quality of the student's work are available for the four programs under review.

The expert group also examined a selection of final theses and determined that they were of an appropriate academic level. **However, it is strongly encouraged that the Master's thesis is written in English in alignment with the internationalisation aspirations of the program.**

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

The experts thank the University for the provided statements and additional documentation concerning criterion 2.

(ASIIN 2) Master's Thesis in English – Master of Fisheries and Marine Biotechnology (Response No.8)

The audit team appreciates the program's consideration of their suggestion. The experts take note of the graduation requirement for final year students to produce scientific articles in English, which should be published in either National (SINTA 1-5) or international indexed journals. The team also acknowledges that foreign and double-degree students write their thesis in English. However, regular students are still instructed to write it in Indonesian. The experts retain their recommendation and suggest expanding the requirement of writing the thesis in English for all students in the Master's program.

The experts consider criterion 2 to be mostly fulfilled.

3. Resources

Criterion 3.1 HR Resources, Staff Development and Student Support
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Evidence:

- Self-Assessment Report
- Staff Handbooks and Lecturer Profiles, all programs under review
- Staff-related regulation and procedures
- Discussions during the audit

Preliminary assessment and analysis of the experts:

i. Staff

The programs are facilitated by a team comprising teaching and educational support staff. Academic positions within the university encompass professors, associate professors, assistant professors, and lecturers. Each faculty member's academic position is determined by their research contributions, publications, educational background, student supervision, and other supporting activities. Furthermore, the specific responsibilities and duties related to teaching, research, and supervision vary according to the academic position.

Based on the self-assessment report, the Bachelor of Biology program has a total of 28 teaching staff members: 8 full professors (29%), 8 associate professors (29%), 10 assistant professors (36%), and 2 lecturers (7%). 79% hold a doctoral and 21% a master's degree.

The Bachelor of Environmental Engineering program has 14 teaching staff members: 1 full professor (7%), 9 assistant professors (64%) and 4 lecturers (29%). 36% hold a doctoral and 64% a master's degree.

The University also provides information on the academic staff for the Apothecary Education program, which consists of 80 teaching staff members: 24 professors (30%), 17 associate professors (21%), 33 assistant professors (41%) and 6 lecturers (8%). Among them, 70% hold a doctoral degree and 30% a master's degree.

While the Master of Fisheries and Marine Biotechnology program is supported by a team of 20 teaching members, including 9 professors (45%), 6 associate professors (30%), and 5 assistant professors (25%), all holding doctorate degrees.

The Indonesian government has set specific in-service lecturers to active students ratios for universities, which are outlined in the Directorate General of Higher Education's regulation. The ideal ratio of staff to active students is 1:20. Currently, the BoB has a ratio

of 1:13, while the BoEE has a ratio of 1:23. The ratio at the Apothecary Education program stands at 1:15.

The expert team confirms that the ratio of lecturers to students for the Bachelor's programs is appropriate to fulfil the current needs of the programs. They appreciate the university's efforts to maintain this standard.

In regards to the MoFMB program, it reports 45 active students, resulting in a lecturer-student ratio of 1:2.25. **This ratio raises several questions. Does this mean that the teaching staff is exclusively dedicated to MoFMB, resulting in an exceptional teacher-student ratio of 1:2.25? Or is teaching staff also involved in other teaching commitments, such as for undergraduate programs? If so, this should be acknowledged in order to accurately compare the workload of lecturers with other programs. If not, what is the rationale behind employing such an extensive teaching staff for a relatively small number of students? Could the high number of publications in indexed international journals be an indication that the MoFMB program places more emphasis on research than teaching? Having over 100 publications in indexed international journals by 20 lecturers (equating to 5 international papers per lecturer per year) seems unusually high. It is essential to provide more information about the reason or rationale behind having such a large number of lecturers. It appears that this program is a special case and should be promoted as such.**

The university centralises the staff recruitment process, setting minimum academic qualifications. Lecturers in bachelor's programs must hold at least a master's degree, while those in master's programs are required to have a doctoral degree. The recruitment process encompasses three main avenues: the Public Officers Employment system, the hiring of full-time university staff, and the appointment of honorary/contract personnel.

Regarding promotion, lecturers who are public servants must follow the system regulated by the government. The teaching staff's promotion to a higher academic position is based on several factors, such as achievement in teaching, research, and community service activities (*Tri Dharma Perguruan Tinggi*). In order to be promoted to the position of a full professor, the applicant must hold a doctoral degree and demonstrate robust scientific production.

ii. Job Conditions and Performance Review of Staff

UNAIR has established evaluation methods based on staff performance targets in the so-called *Tri Dharma* activities (education, research, and community service). Monitoring and evaluation involves an annual performance index, SKP, and a biannual performance evaluation, BKD.

The SKP outlines the annual plan and target *Tri Dharma* activities for each lecturer. The BKD records the achievements of lecturers in the three categories. The evaluation process is overseen by the head of the respective department, the Vice Dean, and the Vice-Rector for Resources and Finance. Monitoring and evaluation of research and community service activities are also carried out by the University's Institute for Research and Community Service. The workload of lecturers in *Tri Dharma* each semester ranges from 12 to 16 credits.

Additionally, at the end of every semester, students are required to evaluate the lecturer's performance on Cyber Campus through a student satisfaction surveys. These evaluation results are used as feedback for lecturers to enhance the learning process (more under [Criterion 5](#)).

In terms of research, academic staff of the degree programs under review conduct their research projects collaboratively in research groups. Most research projects are supported by grants from the university, the government, private companies, and international institutions. The students are reportedly involved in research activities in order to support the completion of their final projects. Some researchers are also engaged in collaboration with other domestic and overseas universities as well as research centres and other institutions specifically for industry-related research. The academic staff is requested to disseminate research results at national and international conferences and [publish](#) them in reputable national and international journals. Staff members who have demonstrated exceptional accomplishments are rewarded.

iii. [Staff Development](#)

The formal recognition of the quality of academic staff within the study programs is achieved through the 'Certification of Lecturers', which is a process overseen by the government in accordance with Regulation No. 37/2009 on Lecturers.

To support this process, UNAIR offers a range of training opportunities. The Directorate of Innovation and Education is responsible for improving the quality of education and teaching provided by the University. The Directorate facilitates programs designed to enhance pedagogic skills, such as Basic Technical Instructional Skills Training (PEKERTI) for junior lecturers and the Applied Approach (AA). Another area of training is the use of online learning media such as e-learning and AULA HEBAT and Cyber campus, as well as writing teaching materials. Additionally, academic staff can improve their skills through degree and non-degree training programs from Indonesian universities and abroad.

Financial resources are available for staff members to go abroad for a limited time and to participate in conferences or other events to stay up to date with the scientific

development in their area of expertise. In addition, the Faculty promotes the internationalisation process at UNAIR by hosting international scientific events and inviting international guest lecturers. **However, based on the evidence presented, the experts believe that lecturers should further enhance their active engagement in international activities, including teaching and collaborative research with foreign partners.**

The experts discuss the opportunities to develop their skills with the members of the teaching staff and learn that the teachers are satisfied with the internal qualification program at UNAIR. This provides them opportunities to improve their didactic abilities, spend time abroad to attend conferences and participate in workshops and seminars.

In their appreciation of this criterion, the experts come to the following conclusions:

In the experts' opinion, the teaching staff's composition, scientific orientation and qualification are suitable for successfully implementing and sustaining the programs under review.

The teaching staff expressed satisfaction with their working conditions for the *Tri Dharma* activities and professional development chances and exhibited a strong commitment to their students. As regards the students, they are equally satisfied with the approachable, enthusiastic, and motivated teaching staff as well as with the learning environment. Overall, the experts attest that students and alumni were highly satisfied with the programs and happy to have joined UNAIR.

Criterion 3.2 Funds and equipment
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Evidence:

- Self-assessment report
- University website: <https://www.unair.ac.id/>
- List of projects with external funding, all programs under review
- List of partners, all programs under review
- Library website: <https://lib.unair.ac.id/wplib/>
- Visitation of participating institutes and laboratories
- Discussions during the audit.

Preliminary assessment and analysis of the experts:

i. Funds

According to the self-assessment report, the Faculty of Science and Technology, the Faculty of Pharmacy and the Faculty of Fisheries and Marine Sciences secure funding from two primary sources: the Indonesian government, allocated through salaries and government assistance, and other sources such as student tuition fees, research grants, *Tri Dharma* collaborations, and business units. As discussed with the program coordinators, there is basic funding for operational activities consisting of teaching, laboratory work, research, community service, and other routine tasks. **Although, as discussed in section iii below, the audit identified certain resource deficiencies that warrant attention.**

The experts also learned that the research groups in the Faculties collaborate to secure research funding from various sources. The teaching staff explained to the experts that they should include students when applying for research grants. The experts appreciate the involvement of students and particularly commend the personal initiative of research groups to acquire external funding. **However, during the audit, there was some discussion about Master's students having to pay for expenses related to their research projects, even though they were working under their supervisor's research funds. The experts believe that is important to ensure that all expenses are covered by the project's budget.**

ii. Collaborations

As part of its self-assessment report, a list of local and international partners was presented. The Faculties collaborate with universities, government agencies, industries, non-governmental organisations, and businesses through the implementation of agreements and memorandum of agreement at national and international levels to support the implementation of the curriculum and *Tri Dharma* activities. The collaborators attending the discussion during the on-site visit expressed satisfaction with their partnership with the University. This was further demonstrated by their willingness to participate in the accreditation meeting.

However, as noted under Criterion 1.1, the experts highlight prospects for stronger collaboration with industrial partners across all four programs. Moreover, they also noted during the visit that some pieces of equipment need to be upgraded, such as analytical tools, to achieve accurate results. Limitations lead to students having to wait in line to use the equipment while others are still using it. In view of this, the experts suggest establishing strong collaborations with other laboratories from different faculties or research institutes that possess such instrumentation.

iii. Infrastructure and technical equipment

During the audit, the expert group visited the listed facilities in order to evaluate whether the four programs under review are committed to supporting both practical work and research, with well-equipped facilities designed for extensive laboratory and field activities. Due to time constraints, the expert group was divided into four groups

Group 1 BoB	Group 2 BoEE	Group 3 Apothecary Education	Group 4 MoFMB
1. Airlangga Research Hub. 2. Histology lab. 3. General Lab (226/227) 4. Plant Physiology Lab. 5. Molecular Genetic Lab.	1. Environmental Engineering Lab (PERTAMINA 303) 2. Workshop of Solid Waste Management 3. Unit Operation Lab (NANIZAR 10)	1. MPDL-1 (Multipurpose Dry Lab - Computational lab/CBT center) 6th Floor 2. MPDL-2 (Multipurpose Dry Lab - Care Simulation) 7th Floor 3. MPL-4/5 (Multipurpose Lab - Manufacturing) 8th Floor 4. MPL-3 (Multipurpose Lab - Pharmaceutical Material/Product Analysis) 9th Floor 5. Research Lab 1 (center for in vitro study) 10th Floor	1. Biotechnology 2. Food and Chemistry 3. Microbiology

In their appreciation of the quality of infrastructure and equipment, the experts come to the following conclusions:

Bachelor of Biology

1. Laboratories:

The laboratories are satisfactory for enabling students to perform practical work necessary to gain the required knowledge and skills. Laboratories meet expedient and desirable conditions. Labs are designed for 20 students which are routinely supervised by two members of the teaching staff supported by two research assistants.

2. Instruments:

In general also satisfactory, however, phase contrast microscopes are not available. The procurement of such devices is required to ensure solid education in the field of prokaryotic biology.

3. General Infrastructure:

The infrastructure is in general on a high level. **There is, however, some concern about safety measures both, organisational and physical, such as marking of emergency exits, choice of presented microorganisms, safety instructions, and the mandatory proficient use of the biological material.**

The use of pathogenic microorganisms should be avoided, or students as well as staff members must protect themselves extremely carefully from germs, which then again needs more safety equipment. This includes, for example, a sufficient number of laminar airflow cabins with user protection. In the experts' opinion for a B.Sc. Biology study program, biological specimens without any pathogenic potential constitute the preferred means of teaching.

Bachelor of Environmental Engineering

1. During the visit to the **Mini Water Treatment Plant**, the experts observed the following:
 - Lack of information on plant entry protocols (Guidelines, Standard Operating Procedures, Hazards and Safety Signs, Symbols and Meanings).
 - The water treatment plant is small and situated on campus, adjacent to the campus road (parallel to the Rectorate Building), and is distant from discharged water bodies (river and lake).
 - The plant has a daily wastewater treatment capacity of 40 cubic meters.
 - Unclear information about whether the effluent is discharged through the underground pipe to the lake in front of Rectorate Building or whether it flows to the river.
 - Chlorine is utilised for water disinfection
 - There is no fishpond with fish for toxicity and water quality testing.
 - BOD, COD and TSS are used as water quality parameters and analysed in another lab.
 - The study program's laboratory cannot be used for complete analysis due to limited chemical analytical equipment.
 - The equipment is still limited, especially for analytical purposes.
 - The effluent reservoir shows signs of eutrophication with algae growth, indicating nitrogen-rich water.
 - Volatile chemicals are released directly into the atmosphere.
 - All treatment processes are conducted by technicians.
 - The plant's establishment budget is sourced from the university's budget.

Based on these observations, the experts believe that the current water treatment plant is not a plant to treat the wastewater for all campus areas but is fine for teaching field lab purposes only, although with consideration of safety and security. Safety issues have been noted, recommending the relocation of the plant to ensure compliance with water treatment establishment standards and regulations.

To guarantee the quality of discharged water, it is imperative to conduct a toxicity test prior to its release into water bodies. Additionally, the provision of exhaust equipment to condense volatile chemicals is necessary.

Considering alternative treatment methods such as Biological Treatment, Physical Treatment, or even advanced technologies (Membrane Bioreactor, Reverse Osmosis, Oxidation Process, Nano- or Ultrafiltration, Electrocoagulation or Flocculation, Phytoremediation, Bioelectrochemical Process, and Graphene-based Process) should be explored.

For a large university like UNAIR, prioritising the use of Artificial Intelligence (AI) and the Internet of Things (IoT) for monitoring systems, optimising plant operations, predicting maintenance needs, and detecting potential issues early on is crucial. Developing an operation manual, Standard Operating Procedure, and safety regulations should be a priority.

The study program must adhere to local, regional, and national regulations and standards while staying updated on any changes. Regular maintenance schedules, including routine inspections and repairs, must be planned.

Exploring energy-efficient options for pumps, machines, motors, and other equipment should also be considered. Furthermore, the university should provide the necessary equipment for chemical analysis. In cases where in-house operations are not feasible, involving third parties in water treatment activities or outsourcing operations to a third-party provider should be involved. Lastly, it is advised that the plant be located close to the water source (when using surface water) and near a suitable drainage system for treated wastewater.

2. The experts noted the following observations during their visit to the **Compost House or Pile**:

- The compost house or pile is located very close to the parking lot.
- This house was constructed as compensation for the demolished greenhouse.
- Raw materials consist of plant waste (water hyacinth), fresh plant debris, particularly leaves, and leftovers (vegetables) from university canteens.
- Sources for compost are placed on cemented floors, and all composting processes are conducted on cemented floors.
- Water used for the composting process, such as for moistening, is sourced from groundwater.
- Mixing and turning of the pile are performed in the compost house or pile to aerate it and speed up decomposition.
- The compost produced is exclusively used for university purposes and is not commercialised.

Drawing from these observations, the experts are of the opinion that the compost house or pile should be built in a suitable open area, well-drained, and easily accessible for

transportation or mobility. It is important that the compost origin is placed in an area with direct sunlight or a shaded area with enough sunlight. Water should be sourced from a water-harvesting reservoir or non-polluted water from a water treatment plant discharge. It is essential for the compost to be contamination-free from hazardous chemical substances and pathogenic microorganisms. Lastly, the compost nutrition contents should be measured.

3. Concerning the **Black Soldier Fly (BSF) House**:

Since lecturers, students and technicians just explained BSF and pointed to a house in the distance, no impression or feedback can be proposed. The experts were also informed that the Composting and BSF House will be relocated soon. The university plans to construct a large parking lot to replace the existing facilities at a new location, although the exact relocation site remains uncertain.

As a general observation for the Environmental Engineering program, it operates two laboratories with a restricted capacity for students and lecturers to carry out lab work, experiments, and research. Additionally, there are shared laboratories used jointly with other study programs for teaching and research purposes. **In connection with this, the experts believe that access to an ICP-OES or ICP-MS instrument would be highly recommended. This could be realised in conjunction with the Faculty of Pharmacy.** The study program has proposed acquiring additional analytical equipment, including an Ultraviolet Visible Spectrophotometer (UV-vis-Spectrophotometer) and Graphite Furnace Atomic Absorption Spectrometry (GF-AAS).

Apothecary Education Program

The visited drug testing laboratory is functional and well-equipped **but might be too small for 65 students working simultaneously**. There are enough modern digital analytical balances ($d = 10^{-4}$) allowing to weigh samples not smaller than 82 mg with the necessary accuracy and precision for pharmacopoeial analyses, which is sufficient for routine work. For small samples of less than 82 mg, there is one additional micro balance in an extra cabinet available, which is sufficient as well, because this task is only occasionally performed.

The fundamentals of quantitative analysis are taught using HPLC instruments from leading manufacturers, and classical volumetric burettes. In the latter case, every student can work on his analyses individually and install the necessary glass burette on a laboratory bench for use and store it in nearby closets when other experiments are performed. This is practical and well-suited to teach the basic operations necessary to perform quantitative pharmacopoeial assays for the content of drug substances. **However, because the use of**

classical glass burettes is time-consuming and requires manual handling, other types of titration systems, mainly automatic systems, are used in the pharmaceutical industry, instead. Thus, it would be necessary to have at least one such state-of-the-art automatic titration system available in the lab. This is to demonstrate the differences in handling and use and to teach the integration of the resulting analytical data via software in a Good Laboratory Practice (GLP)-setting like it is standard in pharmaceutical manufacturing.

For other active pharmaceutical ingredients, where the national Indonesian Pharmacopoeia or the United States Pharmacopoeia (USP) contains assays based on HPLC analyses, there is an array of state-of-the-art HPLC systems available in a quality testing lab. Because of the high price and maintenance costs of HPLC systems, it seems plausible, that the students work in groups of six. **While this might very well be a necessary concession, it would still be advisable to aim to reduce the group size to 4 because the individual learning outcome could assumingly be improved in this way.**

GC-MS systems are important for niche applications such as control of residual solvents and one system is installed in a small lab adjacent to the main laboratory. Because standard TLC analyses can be performed individually, there is no bottleneck in TLC analyses with UV detection in the lab. For advanced densitometric evaluation of TLC/HPTLC chromatograms, there is one CAMAG-system available which is sufficient as well.

The mainstay of qualitative drug testing or pharmacopoeial identity control is FTIR analysis in transmission and alternatively via attenuated total reflectance (ATR). This demand is fully met by the availability of a) an FTIR transmission instrument equipped with a 10 t hydraulic press where the students can prepare the KBr disks of their samples and b) a second FTIR instrument with a diamond single ATR sampling module, where the students can record FTIR spectra using attenuated total reflectance spectroscopy. Other instrumentation includes UV/Vis spectrometers and a brand new UV/Vis/NIR instrument which will be a valuable addition for testing drug adulterations etc. While near-infrared spectroscopy (NIR) is seldom a requirement in pharmacopoeial analysis, this instrumentation is well-suited to develop methods for the identification of finished products and detection of adulterations for example in liquid formulations that could illegally contain toxic diethylene glycol. Tableting and other manufacturing processes are taught in a lab equipped with basic and very old tableting machines that are outdated for industry standards but well suited to demonstrate the mechanical aspects of tablet formulation. The quality control can be performed by means of a state-of-the-art paddle apparatus for dissolution testing available next to the tableting machines.

Thus the technical equipment in the laboratories is in general sufficient for teaching and research. One point worth mentioning is that due to scientific progress, ICH (International

Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use) guidelines suggest to replace established tests for toxic heavy metals by advanced instrumental methods. International pharmacopoeias (USP, Ph. Eur., and JAP) have implemented these guidelines and thus replaced classical heavy metal detection based on addition of sulfide ions by much more sophisticated instrumental techniques, inductively-coupled plasma-optical emission spectroscopy (ICP-OES) and mass spectrometry (ICP-MS), recently. The scientific reason for this progress is, that these instruments can as well detect and quantify minute amounts of elemental impurities such as platinum or palladium which are used as catalysts during drug synthesis and would not be detectable by the classical methods. **Because of this newly installed demand, there is a deficiency in the education of the students of the Apothecary program with regard to these new pharmacopoeial techniques. Although this instrumentation is expensive, the Faculty should discuss, if such instruments could be bought in case they could be used for research as well, or if not, cooperation with an industry partner could be sought, where the students could learn to perform tests for elemental impurities according to industry standards.**

Besides the wet laboratories, the students are taught practical dispensing skills in a mock pharmacy or apothecary shop where they can practice dispensing in a realistic environment. In addition, a very large PC laboratory is available as a multi-purpose dry lab, where the students can practice all kinds of software applications ranging from computational chemistry, simple visualisation of ligand-protein-interactions using PDB codes, calculations of ADME parameters, to dry lab applications for analytical purposes.

The general working conditions in the lab are good, **however canisters with non-flammable solvent disposal are currently stored on the floor. Thus, a fire-proof locker for such non-heat-resistant disposal containers is lacking and should be installed in order to avoid canisters in the hallways that could cause a safety issue in case of fire.**

Both the wet and dry laboratories used for the Apothecary Education program are adequately equipped. Despite of the fact that some of the basic instruments are old and should be replaced in shorter intervals, there is no severe limitation for sufficient practical education other than outlined above.

Master Fisheries and Marine Biotechnology

After visiting the labs and facilities for the Master's program, **the experts believe that there is a need to modernise and implement more advanced biotechnological approaches. One key area that requires attention is the implementation of closed recirculation aquaculture systems (RAS). Additionally, there is an opportunity to modernise aquaponics systems by transitioning them from coupled (aquaculture and plant hydroponics within one circulation system) into on-demand coupled systems**

(aquaculture and plant hydroponics comprise a double recirculation system being coupled only on demand to get a higher yield in both parts by fostering sustainable production).

The marine station of the MoFMB could not be visited due to time restrictions. However, **the group requests more info about the research facilities and infrastructure of the marine station. The program is focusing on “marine biotechnology” but no additional information has been provided and therefore, it remains unclear how that focus on marine organisms is supported by relevant infrastructure.**

General comment for all programs

In relation to facilities for people with disabilities, upon observing various areas on campus, it is noted that there is a lack of adequate facilities to meet their special needs. Specifically, there are insufficient ramps, wheelchair-accessible parking spaces, and accessible restrooms available.

The experts also see that the University should increase its efforts to provide sufficient ICT bioinformatics platforms.

As regards the central library, as stated on its website, it offers services to UNAIR faculty members, administrative staff, and students. Operating hours are from 7:30 am to 10 pm on weekdays, and 8:00 am to 4 pm on Saturdays, with continuous access to online resources. The services encompass lending physical and e-books, as well as access to diverse scientific databases. E-Resources services that can be accessed in the library are Science Direct, ACS Publications, EBSCO, ProQuest, Scopus, Sage Journal Online, Emerald Insight, Springer Nature, and Clarivate Web of Science. During the discussion, the experts learned that the Library’s online system is appreciated by the students as it gives them 24/7 access to bibliographical resources.

In their assessment of this criterion:

Apart from the abovementioned issues, the experts find no severe bottlenecks due to missing equipment or a lack of infrastructure., facilities are in general sufficient for guaranteeing the sustenance of the four programs under review.

iv. Supporting resources for staff

Lecturers can apply for staff exchange abroad in their area of research, publication, or as guest lecturers or reviewers. In general, staff exchange is under the coordination of Airlangga Global Engagement (AGE). Lecturers involved usually go to universities that have

a Memorandum of Understanding (MoU) with UNAIR or a Letter of Agreement (LoA) with the Faculty.

The experts are provided with the list of staff exchange abroad. They can confirm that lecturers have been sent to partner universities in countries such as South Korea, Japan, Malaysia, Taiwan, Thailand, India and the United Kingdom, to name a few. In terms of research, funding is obtainable through various sources, including the University, government, and national and international institutions. Asked by the experts, the teaching staff confirmed the existence of these opportunities.

v. Supporting resources for students

As mentioned previously, UNAIR utilises online platforms serving academic and administrative purposes. Via the University Learning Management System “HEBAT E-learning”, lecturers provide students with learning material and conduct examinations. “Cyber campus” allows students access to all their academic information, including course contracts, schedules, scholarships, and academic performance. During the auditors’ interactions with students on-site, the students expressed their satisfaction with these online platforms

Every student is assigned to an academic advisor lecturer who is responsible for student activities from beginning to end. The students confirmed during the discussion with the expert group that they all have an academic advisor, that they meet regularly, and that they can always contact their advisor personally and ask for help or advice.

Besides the above, students can rely on an early introductory program at the start of their studies, as well as on several dedicated support units, such as the Library, Mental Health Clinic, Directorate of Career Development and sport, transport and accommodation facilities. Additionally, there are various events and developmental programs available for students to participate in outside of the classroom, including student organisations and clubs.

The experts noted a strong and trustful relationship between the students and the teaching staff; characterised by remarkably good communication. Enough resources are available to provide individual assistance, advice and support for all students. The support system helps students adjust to the university environment, achieve the intended learning outcomes and complete their studies successfully. The students are well-informed about the services available to them.

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

The experts thank the University for the provided statements and additional documentation concerning criterion 3.

(ASIIN 3.1) Clarification of lecturer-student ratio – Master of Fisheries and Marine Biotechnology (Response No.9)

The assessment team appreciates the program's clarification that the 20 teaching staff members reported are not exclusively dedicated to MoFMB but also participate in other study programs at the Faculty of Fisheries and Marine Biotechnology. The experts acknowledge the information that the workload of teaching staff is stated in Full Teaching Time Equivalence, with a regular lecturer's workload set at 12 - 16 credits, distributed across various institutional tasks as follows:

- Education: 2 - 8 credits
- Research and Development of Science: 2 - 6 credits
- Community Service: 1 - 6 credits
- Academic Community Development: 1 - 4 credits
- Administration and Management: 0 - 3 credits

The experts also note the report on Lecturer Workload through the Integrated Resource Information System, SISTER, from the Ministry of Research, Technology and Higher Education. Based on this additional information, the experts find no need to issue further recommendations on this matter.

(ASIIN 3.1) Increased teaching staff engagement in international collaboration – All programs (Response No.9)

The experts have reviewed Appendix 2 and noted that there has been an extensive effort by UNAIR and the Faculties to engage in international activities. These activities include staff and student exchanges, joint research, and collaborative educational initiatives with various international universities. These efforts, facilitated by the Airlangga Global Engagement (AGE), have contributed to promoting international mobility, as well as providing teaching, and research opportunities for both staff and students. The experts appreciate that UNAIR actively seeks international collaboration opportunities and endorse the programs' plans to increase international activities and incorporate hybrid collaboration events in the future, to further enhance student and staff mobility.

(ASIIN 3.2) Funding of student research projects – Master of Fisheries and Marine Biotechnology (Response No.10)

The experts appreciate the statement that students involved in lecturer research will be funded by lecturer research funds. However, since actions are yet to be implemented, they maintain the recommendation in this regard.

(ASIIN 3.2) Enhanced cross-faculty collaboration to address equipment shortages – All programs (Response No.10)

The experts commend UNAIR for offering a resource-sharing scheme that allows students from the programs under review to conduct research at various specialised laboratories, such as the Institute of Tropical Disease (ITD) and the Airlangga Research Hub (ARH). The team takes note of the collaborations with external research centres with which the Faculties have special agreements to fulfil instrumentation needs. The experts appreciate the ongoing efforts to ensure cross-faculty and external collaboration and believe there is no need to issue additional recommendations in this regard.

(ASIIN 3.2) Improvement in instruments and general infrastructure – All programs (Response No.10)

Bachelor of Biology

Instruments

The experts appreciate the request submitted to the Faculty for procuring the phase contrast microscopes through the 2025 Annual Budget Planning. The positive response is a crucial step to address the issue. However, since this action is to be implemented in the near future, the experts maintain the requirement.

General infrastructure

The experts appreciate the measures taken, including:

- Marking of Emergency Exit and Glass Breaker in the Laboratory
- Replacement of Pathogenic Microbes
- Procurement of a laminar airflow cabin to faculty through 2025 Annual Budget Planning.

They, nonetheless, reiterate their requirement as some of the actions are yet to be implemented.

Bachelor of Environmental Engineering

Mini Water Treatment Plant

The experts acknowledge the list of aspects for further improvement and the actions already implemented, such as the newly placed safety signs on the WTP facility door. The experts believe that the University needs to outline an action plan with defined milestones to address the outlined improvements in collaboration with DITSARPRAS, with particular emphasis on standard operation procedures covering safety issues in the WTP.

Composting Site

The experts appreciate the program's recognition of the need to improve the Compost House and Black Soldier Fly (BSF) facility. The program will coordinate these improvements with the infrastructure section of UNAIR. However, since no action plan with clear milestones has been presented, the experts reiterate the need for one

General observations

The experts acknowledge the program's plan to acquire additional equipment. The plan involves procuring a UV-vis-Spectrophotometer in 2025 and an ICP with the Faculty of Pharmacy in 2026-2027. Considering that these are future actions, the experts strongly recommend equipping the program with these instruments.

Apothecary Education

Drug testing laboratory

The experts appreciate the additional information on how lab work is distributed both within the lab and throughout the semester to serve 65 students while preventing them from working in the same section at the same week/meeting. They take note of the schematic figure of Multipurpose Laboratory 3 focusing on pharmaceutical raw material and product identification/analysis. Based on this information, the team still strongly believes that lab space utilisation should be monitored proactively to prevent overcrowding.

Automatic titration system

The experts commend the Faculty of Pharmacy for planning the acquisition of an automatic titration system in 2024. However, as this action has not yet been implemented, the experts continue to emphasise its importance.

HPLC practical work

Regarding the group size of 6 during HPLC experiments, the experts take note of the clarification that students are divided into small groups to facilitate in-depth discussions during the learning process. The course is structured in a way that requires each student to work independently with their own sample. Therefore, each student experiences the sample preparation and HPLC analysis process individually. Based on this explanation, the experts have determined that no further recommendations are necessary.

ICP-OES and ICP-MS instruments

The experts take note of the Faculty of Pharmacy's plan to acquire an ICP-MS in 2024. However, since this acquisition has not yet been completed, they continue to emphasise the importance of obtaining both the ICP-MS and ICP-OES instruments.

Fire-proof locker for non-heat-resistant disposal containers

The experts appreciate the program's responsiveness to their suggestion and acknowledge that the Faculty of Pharmacy plans to address this in the 2024 procurement. They also endorse the relocation of waste canisters from the hallway to a separate storage room, pending the acquisition of a fire-proof locker. However, since these actions have not yet been fully implemented, the experts continue to strongly emphasise the critical importance of adhering to safety regulations concerning the storage of laboratory waste.

Master of Fisheries and Marine Biotechnology

The experts thank the program for the pictures of the UNAIR's Marine Station located at Cemara Beach, Banyuwangi. They acknowledge that this station can be used as a research facility for lecturers and students of the MoFMB program. The experts also appreciate the information about the collaboration with the Department of Marine and Fisheries Affairs of East Java Province, which facilitates resource sharing across all Technical Implementation Units (UPT) and Installation Units in the region. This partnership enables MoFMB program students and lecturers to conduct advanced marine biotechnological research and use government facilities for research or sample collection. The list of UPT and Installation Units focusing on marine sector research is provided. The experts believe,

nonetheless, that there is room to modernise and implement more advanced biotechnological approaches as described in the evaluation report.

General comments for all programs:

Students with disability

The experts commend the university for its efforts to improve accessibility for individuals with disabilities, noting enhancements such as accessible restrooms, wheelchair ramps, and elevators. They have reviewed UNAIR's Inclusive Learning program and are aware of the support services available for students and staff with disabilities. However, recognising that accessibility remains an ongoing challenge, the experts continue to recommend further measures to create a more disability-friendly campus.

ICT bioinformatics platforms

The experts are pleased to learn that UNAIR provides a range of resources for bioinformatics research, including open-source software, dedicated hardware, and access to research centres such as the PUI-PT Bio-Molecule Engineering (BIOME). They acknowledge the value of these resources to enable both students and lecturers to conduct bioinformatics research and participate in training programs. However, they maintain their recommendation to continue increasing the students' access to these resources and that this access be consistent across all study programs.

The experts consider criterion 3 to be partially fulfilled.

4. Transparency and documentation

Criterion 4.1 Module descriptions

Evidence:

- Self-assessment report
- UNAIR Learning Management System (cyber campus):
<https://unairsatu.unair.ac.id/site/login>
- BoB website: <https://biologi.fst.unair.ac.id/en/>
- BoEE website: <https://tl.fst.unair.ac.id/>
- Apothecary Education website: <https://pspa.ff.unair.ac.id/?lang=2>
- MoFMB website: <https://fpk.unair.ac.id/en/programs/master-of-fisheries-and-marine-biotechnology/>
- Module Descriptions, all programs under review

Preliminary assessment and analysis of the experts:

After studying the module descriptions the experts confirm that they include all necessary information about the persons responsible for each module, the teaching methods and workload, the awarded credit points, the intended learning outcomes, the content, the applicability, the admission and examination requirements, and the forms of assessment and details explaining how the final grade is calculated.

These module description files are stored in the digital platform cyber campus, which ensures students' accessibility. The module description is explained to class participants during the first week of lectures. The expert team also attest that the module descriptions are available on the respective program's website, ensuring access to all interested stakeholders.

However, one area of concern identified by the experts is the outdated literature recommendations. They, therefore, request updating the bibliographical references in the module descriptions as some of them are more than 10 years old. Additionally, the experts indicate that it is necessary to re-write the module descriptions to provide clearer and more precise information about the qualification objectives and content of each module, ensuring clarity on what is being taught.

Moreover, the audit team observed differences in how the same module is named in different documents such as the curriculum map, module handbook, and others. They suggest revising the documentation provided to stakeholders to ensure consistency in how the study programs are presented.

In specific for the Bachelor of Environmental Engineering, the experts note that many subjects have no codes. Moreover, together with being outdated, many references are written in Indonesian and lack the year of publication. References with the newest editions should be provided to ensure students have access to the most current and relevant information.

Criterion 4.2 Diploma and Diploma Supplement

Evidence:

- Self-assessment report
- Sample Transcript of Records, all programs under review
- Sample Diploma/Degree Certificate, all programs under review
- Sample Diploma supplements, all programs under review

Preliminary assessment and analysis of the experts:

According to the information provided in the self-assessment report, Bachelor's and Master's students receive upon graduation a Diploma Certificate and an Academic Transcript. The issuance of Diploma certificates is the university's authority and is signed by the Rector and Dean of the respective Faculty, according to the Minister of Education and Culture Regulation No. 81/2014.

Along with these documents, the graduates receive a Diploma Supplement, an official statement letter issued by each Faculty. It contains information about the Indonesian higher education system, and the degree program, including graduate profile, learning outcomes, acquired soft skills and student achievement in academic, co-curricular, extracurricular, or non-formal education.

The ASIIN experts are provided with samples of these documents. They confirm that the students of the degree programs under review are awarded a Diploma Certificate, as well as a Transcript of Records and a Diploma Supplement. The Transcript of Records lists all the courses the graduate has completed, the achieved credits, grades, cumulative GPA, and the seminar and thesis title.

Apothecary Education program

At the professional level of the program, students who pass the Indonesian Pharmacist Competency Exam (*Ujian Kompetensi Apoteker Indonesia, UKAI*), participate in the pharmacist oath ceremony and receive a professional certificate, apothecary registration certificate, competency certificate, and apothecary oath certificate.

Criterion 4.3 Relevant rules**Evidence:**

- Self-assessment report
- University's website: <https://www.unair.ac.id/>
- All relevant regulations as published on the program websites and university's website: <https://pendidikan.unair.ac.id/en/>

Preliminary assessment and analysis of the experts:

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

However, the experts believe that there is a need for the provision of lab and field work manuals for the Bachelor of Environmental Engineering program.

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

The experts thank the University for the provided statements and additional documentation concerning criterion 4.

(ASIIN 4.1) Revision of Module descriptions – All programs (Response No. 11)

After reviewing the revised module descriptions for all study programs provided in Appendix 3, the experts acknowledge the University's efforts to update outdated sources, refine module content, and align module names in the handbook with those in the curriculum map.

Bachelor of Environmental Engineering

However, for the Bachelor of Environmental Engineering, the raised concerns have yet to be addressed. The experts appreciate the program's commitment to reviewing the list of references used in each module during the next curriculum review. However, as this curriculum review will be carried out in the near future, the experts maintain their request for a comprehensive revision. They also emphasise the importance of aligning the information in the Module Handbook with the information presented in the Educational Guide. The program needs to ensure that the revised module handbook is published in full on the respective website for consultation by interested stakeholders.

(ASIIN 4.3) Relevant rules – Bachelor of Environmental Engineering (Response No. 12)

The experts have also reviewed the Bachelor of Environmental Engineering's instruction manual for practicum and fieldwork provided in Appendix 4.

The experts consider criterion 4 to be partially fulfilled.

5. Quality management: quality assessment and development

Criterion 5 Quality management: quality assessment and development

Evidence:

- Self-assessment report
- Quality management regulation, as an appendix to the self-assessment report
- Accreditation status: <https://lamsama.or.id/>, <https://lamptkes.org/>, <https://www.banpt.or.id/>

- Samples Student Workload report, Student Satisfaction Survey Report, Stakeholder Satisfaction Survey Report, Alumni User Survey Report; all programs under review
- Discussions during the audit.

Preliminary assessment and analysis of the experts:

UNAIR quality management system has been institutionalised in compliance with government regulations and undergoes regular evaluation and updating. The self-assessment report indicates that quality is overseen internally by dedicated quality assurance teams/units across the program (GPM), faculty (SPM), and university levels (BPM).

According to the University's Internal Quality Assurance System Policy and associated procedures, the study programs undergo annual internal quality audits. These audits are informed by a range of evaluations, including learning outcomes, learning process, graduate satisfaction with the learning experience, staff performance, and data obtained from external stakeholders through tracer studies and labour market observations.

The student satisfaction surveys with the lecturer's performance in lectures, academic and thesis supervision, educational staff performance, and learning experience surveys are conducted through a Cyber campus account at the end of the semester. These surveys utilise an instrument developed by the University's Quality Assurance Unit.

Feedback from these surveys is analysed to determine overall satisfaction levels, with results reported to the faculty leaders, study program coordinators, heads of departments, and lecturers. If satisfaction levels are below the expected standard, course coordinators are asked to take measures to improve course performance.

During the audit, the program coordinators, students, and lecturers of the respective programs confirmed the existence of such evaluations. The students explained that end-of-semester surveys are compulsory for them to access their final grades. The experts appreciate that regular evaluations are conducted to ensure the quality of the programs.

Overall, students feel that their feedback is valued and taken into consideration. They are actively represented through various bodies, including executive boards at both the faculty and university levels, as well as the Board of Trustees. The latter plays a significant role in decision-making processes regarding regulations and strategic planning.

Aside from internal quality assurance mechanisms, recurring external quality assurance exercises at UNAIR relate to the legal obligation to submit every degree program for accreditation by a recognised agency in addition to the compulsory institutional accreditation. The Bachelor of Biology program has been accredited "excellent" by the Indonesian Accreditation Agency for Education in Sciences (LAMSAMA). Environmental

Engineering has achieved "A" accreditation from the National Accreditation Body for Higher Education (BAN PT). The Apothecary Education program has been accredited "excellent" by the Indonesian Accreditation Agency for Education in Health (LAMPT-KES). Similarly, the Master of Fisheries and Marine Biotechnology has achieved "A" accreditation from BAN PT. The validity period for study programs accreditation is five years. The Bachelor of Biology and the Apothecary Education programs were awarded ASIIN accreditation in 2018.

During the audit, the program coordinators confirmed that tracer studies are conducted after graduation to evaluate the learning process and the graduates' acceptance in the industry field at local or national institutions. Additionally, feedback is sought from industry representatives and other stakeholders.

In discussion with the experts, the alumni confirmed that these tracer studies exist, and the industry representatives also pointed out that the university is open to receiving feedback about new developments and trends that could enhance the employability of its graduates.

Aside from the abovementioned comments, the expert panel has a positive impression of the quality assurance system for the programs under review. Quality management is a high priority within the university, and various functioning structures have been created in this regard. They consider UNAIR and the Faculties to conduct a sufficient number of evaluations to survey the opinions of students, stakeholders, and staff on a regular basis. The results of these processes are incorporated into the continuous development of the programs under review.

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

The experts thank the University for the provided statements and additional documentation concerning criterion 5.

In the absence of further comments or relevant additional evidence by the University, the experts confirm their above preliminary assessment and see this criterion as 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:

- 1. Please provide a description of the strategies that the University use to bring insights into curricula from practical and current industry practices.**
- 2. Please provide a description of the strategies that the University use to strengthen collaboration with professional bodies.**
- 3. For the MoFMB, please provide more info about the research facilities and infrastructure of the marine station.**

E Comment of the Higher Education Institution (13.08.2024)

The institution provided the following additional documents:

No	Comments from ASIIN experts	Programme	Response
1	Criteria 1.1 i. Learning Outcomes The experts stress, nonetheless, the importance of focusing more on attributes such as lifelong learning, leadership, and high ethical standards. Graduates should be equipped to succeed in their professional and technical careers by possessing competency and integrity in all aspects of their discipline, as well as effective communication skills and the universal value of humanity	BoB	The study program guarantees the competence of graduates in a professional career through the involvement of industry partners in providing input into the study program curriculum. Industry partners are also involved in guest lectures that are in accordance with the appropriate Study Program Subjects. Increased integrity in accordance with aspects of linear disciplines with the profile of study program graduates. In terms of communication and humanitarian skills, Universitas Airlangga has provided a Joint Basic Learning Course in the first year such as Data and Literature, Logic and Critical Thinking, Introduction to Scientific Collaboration, Communication and Personal Development. The Study Program also provides communication skills in Capita Selecta, Proposal Seminar, Thesis, and presentation assignments in various courses
		BoEE	Universitas Airlangga equips students through courses that are held together at the beginning of student entry. These courses are designed to prepare soft skills that are needed now and anticipated in the future. These courses include Data and Literature, Logic and Critical Thinking, Introduction to Scientific Collaboration, Communication and Personal Development.
		Pharmacy	The apothecary education programme curriculum is designed to integrate basic sciences in pharmacy from the first year of the study. The courses provide integrative learning in the pharmaceutical sciences, such as drug development and manufacture, and pharmacy practice, such as patient care and safety. Furthermore, the curriculum is equipped with methods that allow the students to improve their skill in leadership, lifelong learning, and communication skills, such as updating their knowledge through guest lectures from practitioners and international academicians, exposing them to real-clinical and manufacture case-

No	Comments from ASIIN experts	Programme	Response
			based learning, providing the course assignments and practical works either individually or in a team/group, and providing individual and group project presentations. The students conduct internships to do applied learning and train their soft skills in professional areas such as pharmaceutical manufacturing, primary care units, pharmacies, hospitals, and drug distribution. To equip the students with the universal value of humanity, the study program brings students closer to society by facilitating the students to do community development programs organized by the faculty or the student organization. The University set a compulsory community attachment program (KKN) in which the student joins other students from diverse disciplines to identify the problems and construct problem-solving ideas and programs for the community. Moreover, the University has set a compulsory Joint Basic Learning Course (PDB) in the first year.
		MoFMB	Thank you for the suggestions, as these suggestions will be an exceptional input for the MoFMB program to further develop its learning methods and models for the sake of graduates' competencies, skills, integrities, and values. We believe that through the implementation of the case study and problem-based learning method, are already sufficient to prepare our graduates with appropriate competencies and professional skills. As through those particular learning methods, MoFMB students are required to learn from cases or problems, read journals or other literature to find solutions, discuss with friends and lecturers, and present their assignments so that students become accustomed to receiving corrections, criticisms, and suggestions as part of the life-long learning attributes. Furthermore, Faculty of Fisheries and Marine support by providing regular guest lectures from foreign partners, international seminars, summer courses exchange, and student involvement in research projects and community service activities that may also boost the graduates' life-long learning attributes.
2	ii. Graduate Qualification Profiles	BoB	We continue to increase collaboration with industry partners to improve the quality of graduates at local, regional, national, and international levels. This is

No	Comments from ASIIN experts	Programme	Response
	However, the experts identify opportunities for enhanced collaboration with industrial partners across all four programs. This would offer students and graduates improved prospects in local, regional, national, and international job markets, providing an additional benefit.		supported in the tracer study achievements of the Biology Study Program in 2023 which increased https://tracerstudy.unair.ac.id . Universitas Airlangga also provided Entrepreneurship and Career Development through https://dpkka.unair.ac.id/ . During the 3 rd year, students participated in an industrial internship program. Internships are carried out at industrial partners who have passed the qualifications in accordance with the competencies expected by the Biology study program. Please refer to Appendix 1 for the list of Biology Study Programme and Industry Cooperation who have partnership with the Biology study program.
		BoEE	Collaboration with industry partners is inevitable. This has many advantages for universities. So far, Universitas Airlangga has facilitated cooperation with partners from industry through “Alumni, Entrepreneurship Incubation, and Career Development Directorate” (DPKKA UNAIR). DPKAA coordinates activities involving students, alumni, and industry partners. Many internships are offered, as well as labour recruitment in various cooperating industries. This has been going on for a long time and is very helpful for both students and alumni in the world of work. In addition, the Study Program also has good access to partners from industry: providing internship places, providing final project places, and employment. Some of the notable corporates that have a strong, proven partnership with BoEE are “Cwasta”, “Properindo Enviro Tech”, and Surabaya Government Environmental Agency (Dinas Lingkungan Hidup Surabaya).
		Pharmacy	The study program has established collaboration with more than 30 cGMP-standardized pharmaceutical industry, 3 referral, and teaching hospitals, and around 50 well-managed pharmacies, including the most extensive government-owned chain pharmacy, more than 80 primary care units, and 20 leading pharmaceutical distributors. The partners have been selected carefully based on their reputation and capability to provide the students with the ideal pharmacy

No	Comments from ASIIN experts	Programme	Response
			practice role model. The pharmaceutical industry comprises several government-owned industries with intense manufacturing activity and internationally well-known pharmaceutical companies such as Meiji, Otsuka, and Pfizer. All industries involved many pharmacists working as supervisors and managers and serving as the internship students' role models. JCI (Joint Commission International) accredits all teaching referral hospital partners. The study program also conducts joint research with these hospitals and industries as part of collaborations. The preceptors and practitioners have been involved in learning through guest lectures and thesis supervision. Please refer to Appendix 1 for the list of institution who have partnership with the study program.
		MoFMB	The study program strives to increase the number of collaborations with industry partners according to expert input accordingly. At the current moment, the Faculty of Fisheries and Marine has collaborated with several industrial partners including PT. Garam (Persero), PT. Ajinomoto Indonesia. We would be delighted to seek other collaborations in order to support our graduates obtaining occupation on various job market levels in local, regional, national, and international.
3	Criteria 1.2 Additionally, the assessment team had access to several pieces of information regarding the programs and noticed that the programs were identified as Ba Biology or Ma Fisheries and Marine Biotechnology. The team believes that for the purposes of international harmonization, the University should change the nomenclature from Ba to B.Sc. and Ma to M.Sc. when referring to the bachelor's and master's programs	BoB, BoEE	In accordance with the Ministry of the Republic of Indonesia number 163/E/KPT/2022, we adjust the nomenclature in order to improve International harmonization and increase the employability of graduates at the International level.

No	Comments from ASIIN experts	Programme	Response
	The experts discussed with the program coordinators about using the international term "pharmacy" in the program information for prospective students, especially those from abroad. They suggest that the term "Apothecary" is not commonly used worldwide. Therefore, they recommend that the University add "Licensed Pharmacist" and "1-year program (based on a 4-year B.Sc. in Pharmacy)" for international applicants.	Pharmacy	The study program fully considers the suggestion. The name "Licensed Pharmacist Programme" and the added "1-year program (based on a 4-year Bachelor of Pharmacy)" will be used in the media accessed by prospective international applicants.
	Meanwhile, graduates of the Master of Fisheries and Marine Biotechnology are awarded the title Magister Sains (M.Si.) or Master of Science. During the audit, the experts also discussed with the program coordinators about the use of the term "marine biotechnology" in the program's name. The experts were uncertain as to why the university was only focusing on marine biotechnology when the program actually covers much more. In their view, using "marine" limits the scope of the program, therefore they believe that the University should reconsider the use of this term in the study program's name.	MoFMB	Thank you for the advice given by the experts as we will consider this matter thoroughly and wisely. The name of our study program is the Master of Biotechnology of Fisheries and Marine Study Program, hereinafter abbreviated as MoFMB. Related to the establishment of our study program nomenclature and the title Magister Sains (M.Si.), we have followed the guideline as stated on the Decree of the Minister of Research, Technology, and Higher Education of the Republic of Indonesia Number 57/M/Kpt/2019 concerning the Name of Study Program. Therefore, the changing of our study program nomenclature also has to undergo formal assessment based on the Decree of the Director General of Higher Education of the Ministry of Education and Culture of the Republic of Indonesia Number 85/E/Kpt/2020. The Faculty of Fisheries and Marine as the Study Program Management Unit understand the importance of this international harmonization to avoid misconception on our already established nomenclature. The Faculty of Fisheries and Marine will ensure to subsequently coordinate with the Quality Assurance Unit and the Directorate of Education at University level regarding the application for a change in the nomenclature of this study program.

No	Comments from ASIIN experts	Programme	Response
4	Criteria 1.3 The experts observed that out of the 3 Working Groups, only one is related to Environmental Engineering, while the other two pertain to Environmental Science and Technology. Therefore, they suggested increasing the coverage of engineering aspects in the curriculum.	BoEE	The engineering aspect is already present in the bachelor of environmental engineering curriculum, according to the suggestions of the experts, this aspect can still be improved. What can be done is to change / adjust the name of the course and the content in it. Some of these courses are: - Air Pollution Prevention and Control to Air Pollution Engineering - Solid Waste Management to Solid Waste Engineering - Hazardous Waste Management becomes Hazardous Waste Engineering - Fluid Mechanics to Engineering Fluid Mechanics This change does not simply change the name, but also includes field study activities and important related experiments. The courses that did not undergo a name change, also sought to increase their technical content, in the same way as the previously mentioned courses. Adjustments and additions to several engineering courses will be made in the future curriculum redesign in BoEE.
	During the visit to the Black Soldier Fly House and Compost Pile, the experts learned that Bachelor of Environmental Engineering students are planning to market and commercialise the end-product or compost they have produced. The experts believe that the students need to be equipped with more soft and hard skills, such as knowledge in marketing and promoting the products, to scale up production for commercialisation.		Bachelor of Environmental Engineering strongly supports the ability of students to become entrepreneurs, therefore there has been a subject called "Technopreneurship". This course provides students with the knowledge and practice to create, promote and sell products. The Technopreneurship (3.2 ECTS) course is given to Environmental Engineering students in the sixth semester.
	Criteria 1.3 However, in the assessment team's opinion, upcoming curricular review	Pharmacy	The study program fully considers the suggestion. The 2021 curriculum redesign has been equipped with the benchmark to Monash University, Bachelor of Pharmacy programme. For example, the improvement in integrated therapeutics

No	Comments from ASIIN experts	Programme	Response
	cycles should prioritise expanding the curriculum to include international standards. This strategic improvement will not only broaden the scope of the students' expertise but also enhance their graduate profile, fostering greater versatility and competitiveness at the international level.		learning has been adopted to develop Pharmacotherapy courses to improve the understanding of the relationship between pathophysiology and the rational design and clinical use of drugs. In July 2024, we recently sent delegates to The ASEAN PharmNET 2024 & The 2024 US-Thai Pharmacy Consortium Conference to elaborate on the possibility of improving the curricular design by looking at the US Pharm.D model. Subsequently, we had Dr. Melody Ryan from the University of Kentucky College of Pharmacy to share the curriculum development for the Pharmacist education program in the US. Thus, these steps will initiate more activities to support the improvement in the curricular design.
		MoFMB	The study program immensely grateful for the expert inputs regarding the coverage of international standards in the curriculum review. Correspond to the issuance of new decision by the Minister of Education and Culture, Research, Technology, and Higher Education of the Republic of Indonesia which issued Decree No. 53 of 2023 concerning Higher Education Quality Assurance, all study programs will redesign their curriculum to align with the new regulations. Therefore, when redesigning the curriculum, the MoFMB study program is committed to prioritize expanding the curriculum by incorporating international standards. Furthermore, UNAIR has an education development program that befitted with the purpose to further enhance graduate profiles, namely Sustainable Education for All, which is listed in the strategic plans of UNAIR 2021-2026. This program is riveted on the development of learning and student affairs based on the keywords: Relevance, Flexibility, Globalization, and Sustainability.
		BoB, BoEE	We continuously improve our curriculum to include International standards to enhance the profile of our graduates, and increase our competitiveness at the International level.
5	Criteria 1.4 The assessment team also saw evidence that the University is tracking its	BoB, BoEE, Pharmacy	We agree with the suggestion. As a concern to knowing student performance, Universitas Airlangga has an institution to find out student learning readiness through https://aac.unair.ac.id/kesiapan-belajar-mahasiswa-unair/ . This test is

No	Comments from ASIIN experts	Programme	Response
	students' progress and achievements. However, for the Bachelor's programs, they believe that the University should also assess whether the admission test is predictive of success. The team proposes conducting an evaluation to determine if the best-performing applicants are among the most successful students after one year		in the form of a Potential Academic Ability Test (TPKA) which is useful for measuring the academic capacity of prospective undergraduate students of Universitas Airlangga. This TPKA is better known as the Academic Potential Test. TPKA is conducted online.
	Eligible candidates are required to have a pre-proposal plan. As noted before, the Master's program offers a double-degree program with the National Pingtung University of Science and Technology (NPUST), Taiwan. To take part students are required to have 24 credits in the first year and a minimum English proficiency TOEFL score of 545. Regarding this double-degree program, the experts notice that it appears to be not reciprocal. UNAIR students take all 2nd year subjects at NPUST, whereas NPUST students have a brief stay at UNAIR. Moreover, many subjects are not equal or comparable between the two universities, raising the need for clarification.	MoFMB	Thank you for the expert comments. This Double Degree program is designed for UNAIR students to take only 1 course, namely Advance Molecular Biology (3 credits) and followed by Seminar (2 credits) and Thesis (6 credits). We believe that this Double Degree program is reciprocal since it is designed for UNAIR students to previously complete their 1 st year at MoFMB program study and undertake 2 nd year which mainly consist of research and thesis at partner university (NPUST), vice versa. UNAIR students who undergo a double-degree program obtain 11 credits by their 2 nd year at NPUST, while they will get 10 credits if completing 2 nd year at UNAIR. Furthermore, the content of 1 st year courses at each university might differ only due to the subject name, but the courses goals and outcomes are compatible with each other. In thesis guidance, Double Degree program students will be guided by one supervisor from the MoFMB Study Program and one from NPUST. However, there have been no NPUST students sent to UNAIR to take the Double Degree program.

No	Comments from ASIIN experts	Programme	Response
6	Criteria 1.5 Upon a closer look at the Bachelor of Environmental Engineering, the experts note that some subjects have high credits but no lab and field work, while others include lab work. Examples include "Air Pollution Prevention and Control" (LKT 340), with 3 SKS but no lab and field work. Whereas "Wastewater Processing Building Planning" (no code provided) allocates 3 SKS and lab work 1 SKS. Furthermore, some subjects have similar codes for lab work but different credit values, as seen in LKT 309. In addition, the experts believe that some subjects should have lab and field work in order to develop students' practical skills. For instance, "Ecotoxicology" (LKB 205), "Hazardous Waste Management" (LKT 307), "Industrial Waste Treatment" (No Code), and "Management and Quality of Water Resources" (LKT 342), among others.	BoEE	Bachelor of Environmental Engineering includes in the course activities carried out outside the classroom such as field trips to industry so that from these activities students can report what is obtained from visiting industry, conducting experiments, designing. For example: - in the Environmental Engineering Process Unit course (LKT 229), BoEE conducted a field trip to the Fecal Sludge Treatment Plant (IPLT) Surabaya to increase students' insight regarding the environmental engineering process unit. - In the Management and Quality of Water Resources course (LKT 342), BoEE conducted a field trip to the Selorejo DAM and the water source of the Brantas River, Batu to increase students' insight regarding the quantity and quality of the water resource in East Java, Indonesia.
	However, concerns were raised regarding time management throughout the stages from research topic preparation to thesis completion,	BoB	Thank you for your concern. To improve the quality of writing, lecturers open opportunities for students to join lecturer projects with activities including library data literacy, article writing, and thesis work that can improve the quality of thesis writing and confidence in preparing for the world of work. Biology study

No	Comments from ASIIN experts	Programme	Response
	sometimes involving adjustments in methodology and research parameters. The experts believe that the university should improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.		programme encourage the achievement of confidence and readiness to fulfil their academic requirements, before students take thesis course, Biology study programme provided capita selecta 2 sks, research methodology 2 sks, seminar 2 sks, and thesis 6 sks.
		BoEE	Bachelor of Environmental Engineering has made efforts so that students complete their studies on time. What has been done is to involve students in lecturer research so that students can complete the final project on time. This effort so far is quite effective when compared to students who work on their own according to their proposed theme independently. There are Research Methods and Thesis Proposal courses that students must take to prepare detailed methods that will be used in their thesis. Students are also required to consult with their supervisor regarding their thesis at least 6 times when working on their thesis. This method helps supervisors to monitor students for finishing their thesis on time.
		MoFMB	For time management at the thesis completion stage, the supervisor according to the thesis topic is given at the end of semester 1. In semester 2 there are courses supporting the thesis, namely the Research Methodology course, and the Seminar course. The output of the Seminar course is a research proposal, so that in semester 3, students can conduct a Proposal Seminar and carry out research.
		Pharmacy	In the apothecary education programme, the curriculum set a proposal course one semester before the student programs thesis. The methodology for the conduction of the research will be evaluated in the proposal examination stage and approved by the supervisors after considering the input from the examiners. The student joins research for final thesis under the research roadmap established research group. Thus, this system prevents the major changes in the research methodology during their thesis research. Moreover, the curriculum provides courses for research methodology during proposal preparation.

No	Comments from ASIIN experts	Programme	Response
	After reviewing the information on the Master's program website, it is noticed that a different formula is used to convert Indonesian Credits to ECTS. The curriculum map on the website specifies that the program involves 44 Indonesian Credits or 70.40 ECTS, rather than the 132 ECTS indicated in the self-assessment report. The experts ask the University for clarification and remark upon the importance of presenting the program in a consistent manner.	MoFMB	Thank you for the correction from the experts. There was a miscalculation on our behalf regarding to the ECTS calculation in the curriculum structure on the website, and have been corrected (https://fpk.unair.ac.id/en/programs/master-of-fisheries-and-marine-biotechnology/). The ECTS calculation is referred to the Rector's Decree Number 350/UN3/2023 concerning the guidelines for the Universitas Airlangga Credit Transfer System (ACTS) to the European Credit Transfer and Accumulation System (ECTS) within the Universitas Airlangga environment. Based on the calculation, the study loads of MoFMB consist of 44 SKS (credits) equals to 132 of the European Credit Transfer and Accumulation System (ECTS) (where one course credit/sks is converted to 3 ECTS).
7	Criteria 1.6 In summary, the expert group considers the range of teaching methods and instruments suitable to support the students in achieving the intended learning outcomes. They confirm the study concepts of all programs under scrutiny comprise a variety of teaching and learning forms as well as practical parts adapted to the respective subject culture. Finally, they attest that the imparting of academic research skills is sufficiently ensured. Nevertheless, for a student-centered approach to be effective, the experts emphasize the crucial role of actively involving	BoB	In the learning process, some courses require project-based learning and case-based learning that involve students to be active and directly present the results of their thinking. Every semester students provide input regarding the competency of the course which becomes one of the direct parts of feedback in the design of teaching and learning through https://cybercampus.unair.ac.id
		BoEE	We acknowledge the importance of a student-centered approach and agree that actively involving students in the design of the teaching and learning processes is crucial for its effectiveness. To this end, we are committed to enhancing student engagement and participation in shaping our educational practices. Moving forward, we will implement mechanisms to increase student involvement in the design and evaluation of our teaching and learning processes. This will include regular satisfactory feedback input every semester.
		Pharmacy	The study program has involved the students in several ways in the teaching and learning design evaluation. All students are invited to join the hearing meeting with the dean's team and program coordinators once a semester. The suggestion from the student regarding the teaching and learning process has been one of the

No	Comments from ASIIN experts	Programme	Response
	students in the design of the teaching and learning processes.		considerations in improving the learning process. For example, the student has ever asked the study program to encourage the lecturers to provide all class presentation material in advance, at least a week before the class starts, so that the student may quickly review the content of the upcoming class. The suggestion has been given full consideration, and the lecturers have been encouraged to upload their presentation in the learning system a couple of days before the class. The change has made a notable impact on student learning motivation.
		MoFMB	Thank you for the experts' recommendations. Actually, students have been involved in designing the teaching and learning process on the MoFMB study program. Student involvements are depicted on Lecturer Performance Instrument, since they are mandated to fill out the instrument at the end of the semester through a cyber campus account that has been synchronized with the quality assurance information system at the website of www.qa.unair.ac.id . The results of the evaluation and suggestions are utilized as an impactful feedback for lecturers to improve the learning process. In addition, at the beginning of the course meeting, lecturers should communicate the Semester Learning Plan and Lecture Contract, so that students can provide input related to the learning model throughout the learning process.
8	Criteria 2. Exams: System, Concept and Organization iii. Thesis The experts acknowledge that forms and assessment rubrics to assess the quality of the student's work are available for the four programs under review. The expert group also examined a selection of final theses and determined that they	MoFMB	Thank you for the advice of the experts and this matter will be considered wisely. The thesis writing has been designed to be completed in English for foreign students and Double Degree program students. Meanwhile for regular students, thesis is instructed to be written in Indonesian. However, all final year students are mandated to produce scientific articles as graduation requirements in English which should be published in either National (SINTA 1-5) or International indexed journals.

No	Comments from ASIIN experts	Programme	Response
	were of an appropriate academic level. However, it is strongly encouraged that the Master's thesis is written in English in alignment with the internationalisation aspirations of the program.		
9	Criteria 3.1 i. Staff This ratio raises several questions. Does this mean that the teaching staff is exclusively dedicated to MoFMB, resulting in an exceptional teacher-student ratio of 1:2.25? Or is teaching staff also involved in other teaching commitments, such as for undergraduate programs? If so, this should be acknowledged in order to accurately compare the workload of lecturers with other programs. If not, what is the rationale behind employing such an extensive teaching staff for a relatively small number of students? Could the high number of publications in indexed international journals be an indication that the MoFMB program places more emphasis on research than teaching? Having over 100 publications in indexed international journals by 20	MoFMB	Thank you for the correction from the assessment team. The 20 teaching staffs of the MoFMB program are not only exclusively dedicated to MoFMB program but are also involved in the other study programs at the Faculty of Fisheries and Marine, Faculty of Veterinary Medicine, Faculty of Pharmacy, Faculty of Public Health, and Faculty of Science and Technology of Universitas Airlangga. The workloads determination of teaching staff at UNAIR is referred to the Decree of the Director General of Higher Education, Ministry of Education and Culture of the Republic of Indonesia No.48/Dj/Kep/1983 concerning the Workload of Teaching Staff at State Universities. The workload of teaching staff is stated in the Full Teaching Time Equivalence (Ekuivalen Waktu Mengajar Penuh/EWMP). EWMP for a regular lecturer is set at 12 - 16 credits which can be spread into various institutional tasks as follows: 1) Education: 2 - 8 credits, 2) Research and Development of Science: 2 - 6 credits, 3) Community Service: 1 - 6 credits, 4) Academic Community Development: 1 - 4 credits Administration and Management: 0 - 3 credits. Every semester, lecturers are required to report their Lecturer Workload through the Integrated Resource Information System (Sistem Informasi Sumberdaya Terintegrasi/SISTER) platform which is a program from the Ministry of Research, Technology and Higher Education.

No	Comments from ASIIN experts	Programme	Response
	lecturers (equating to 5 international papers per lecturer per year) seems unusually high. It is essential to provide more information about the reason or rationale behind having such a large number of lecturers. It appears that this program is a special case and should be promoted as such.		
	iii. Staff Development Financial resources are available for staff members to go abroad for a limited time and to participate in conferences or other events to stay up to date with the scientific development in their area of expertise. In addition, the Faculty promotes the internationalization process at UNAIR by hosting international scientific events and inviting international guest lecturers. However, based on the evidence presented, the experts believe that lecturers should further enhance their active engagement in international activities, including teaching and collaborative research with foreign partners.	BoB	There have been quite many international activities conducted by BoB lecturers in the fields of education and research. Our international research collaborations focus primarily on joint research and joint publications. Our international educational collaborations involve joint courses, exchange of academic materials, joint conferences, adjunct professorships, and student exchange program agreements. From 2020 to 2023, there were 32 staff exchange programs with various universities, including the Korea Advanced Institute of Science & Technology (South Korea), Pukyong National University (South Korea), Salahaddin University (Erbil), Kitakyushu University (Japan), UiTM (Malaysia), and Kanazawa University (Japan); 18 guest lecturers are invited to deliver lectures from Chulalongkorn University (Thailand), Nguyen Tat Thanh University (Vietnam), the Korea Advanced Institute of Science & Technology (South Korea), and the Universiti Malaya (Malaysia). Please refer to Appendix 2 for the detailed information about staff exchange in BoB. From 2022-2024, 16 staff obtained research funding in collaboration with international university partner, including Osaka University (Japan), Gent University (Belgium), Mugla Sitki Kochman University (Turkiye), and National Sun Yat Sen University (Taiwan). Please refer to Appendix 2 for detailed information about research funding in collaboration with international university partner.

No	Comments from ASIIN experts	Programme	Response
			The international activities that have been conducted were adjusted according to the availability of time based on government mandates. In the future, we will increase the number of international activities and incorporate more hybrid international collaboration events.
		BoEE	Universitas Airlangga has made internationalization efforts for student and staff mobility. At the Faculty of Science and Technology, students have the opportunity to do student outbound activities both part time and full time. The same activity is applied for lecturers. So far, cooperation has been established with UTHM Malaysia, UiTM Malaysia, UMS Malaysia, CYCU Taiwan, Pukyong Univ, TU Delft, INSA Rouen, KTH Sweden. Cooperation in the form of giving lectures, students exchange and joint research. Please refer to Appendix 2 for the detailed information about staff exchange in BoEE. Our lecturers are also actively seeking out opportunities for international collaboration. We are committed to fostering an environment that encourages and supports our faculty members in engaging with international teaching and collaborative research projects. To facilitate these efforts, we will leverage the resources provided by Airlangga Global Engagement (AGE). AGE serves as a formal bridge between our lecturers and international partners, offering valuable information and support for establishing and maintaining these collaborations.
		Pharmacy	The Faculty of Pharmacy supports the active involvement of the lecturers in many international forum and visit in teaching, research and community development activities. The sufficient funding has been provided to support the activity. Further, Universitas Airlangga through the Institute of Research and Community Development has provided research grants for international research engagement specifically targeting a high reputation researchers and universities across the world. Airlangga Global Engagement has provided several schemes facilitating inbound visiting researcher and international academic lectures for the existing and prospective foreign partners. From 2022 to 2024, more than 50 staff engaged

No	Comments from ASIIN experts	Programme	Response
			in international event at various universities, including Freie Universität Berlin (Germany), University of Groningen (Netherlands), Hoshi University, Hiroshima University, Osaka University (Japan), Belfast University (United Kingdom), University of Sydney (Australia), National University Singapura (Singapore), Sorbonne University (France). Please refer to Appendix 2 for the detailed information about staff exchange and research collaboration in Pharmacy.
		MoFMB	The Faculty Faculty of Fisheries and Marine supports the active involvement of the lecturers in many international forum and visit in teaching, research and community development activities. The lecturers are provided with enormous opportunities to increase their ability such as collaborate with various abroad partner institutions either in research, teaching process, or community service. Both university and faculty have designed an outbound mobility program for lecturers annually. Overseas collaboration that have been made with abroad partner universities are as follows: 1. Pingtung University, Taiwan, 2. Kasetsart University, Thailand, 3. Hokaido University, Japan, 4. Osaka University, Japan, 5. Universiti Teknologi Mara (UitM), Malaysia, 6. Trengganu University, Malaysia, 7. Mahidol University, Thailand Etc. In addition, Lecturers also has opportunities to obtain professional development carrier. This program come from the Ministry of Education, Culture, Research, and Technology of Republic Indonesia. The ministry has targeted lecturers to perform activities outside of campus at international level (Main Performance Indicator 3/IKU 3) as support from the government for the lecturers to develop their competencies professionally. Moreover, the faculty also facilitates lecturers to obtain professional certification that may help career development.
10	Criteria 3.2 i. Funds The experts also learned that the research groups in the Faculties	MoFMB	Thank you for the input from the experts. Students involved in lecturer research will be funded from lecturer research funds. If students develop the lecturer's research further, the funding will only be for material that is in accordance with the lecturer's research. However, for students who are participating in the lecturer

No	Comments from ASIIN experts	Programme	Response
	others are still using it. In view of this, the experts suggest establishing strong collaborations with other laboratories from different faculties or research institutes that possess such instrumentation.		collaborates with the internal unit, such as the Institute of Tropical Disease and Institute of Life Science and Technology, and the non-UNAIR institutions, such as BRIN/LIPI, BPOM, etc. Furthermore, the faculty of Pharmacy actively submits grants to obtain funding for infrastructure and instrumentation from the government. The faculty policy on the annual budgeting ensures that the portion of the budget is used to complete the instrumentation needed and update existing equipment.
		MoFMB	Thank you for the advice given by the experts. UNAIR has been supported resource sharing which available within UNAIR unit such as the Institute of Tropical Diseases, Teaching Laboratory (educational laboratory) located in the Joint Lecture Building Campus B, the Center for Biomolecular Engineering Research, and testing service laboratories owned by the Faculty of Public Health, Faculty of Science and Technology, Faculty of Veterinary Medicine, Faculty of Pharmacy. MoFMB also has preexisting collaboration with outside laboratories to help our student carried out their research impeccably. Resource sharing with outside laboratories may be carried out with the National Research and Innovation Agency (BRIN), Fish Quarantine Center, Quality Control and Safety of Fishery Products Surabaya I, Brackish Water Aquaculture Center-Situbondo, and Brackish Water Aquaculture Center- Jepara.
	iii. Infrastructure and technical equipment (BoB) 2. Instruments: In general also satisfactory, however, phase contrast microscopes are not available. The procurement of such devices is required to ensure solid education in the field of prokaryotic biology.	BoB	Thank you for your recommendation. We have submitted a request to the faculty and received a positive response regarding the procurement of the phase contrast microscope through 2025 Annual Budget Planning.
	3. General Infrastructure: The	BoB	Thank you for your recommendation. We have reviewed your safety

No	Comments from ASIIN experts	Programme	Response																					
	infrastructure is in general on a high level. There is, however, some concern about safety measures both, organisational and physical, such as marking of emergency exits, choice of presented microorganisms, safety instructions, and the mandatory proficient use of the biological material. The use of pathogenic microorganisms should be avoided, or students as well as staff members must protect themselves extremely carefully from germs, which then again needs more safety equipment. This includes, for example, a sufficient number of laminar airflow cabins with user protection. In the experts' opinion for a B.Sc. Biology study program, biological specimens without any pathogenic potential constitute the preferred means of teaching.		recommendations with the Dean and appreciate your positive feedback. We agree that marking emergency exits is essential for the safety of our students. The Dean is committed to addressing these concerns. We have placed the emergency exit sign and glass breaker in the laboratory (Figure 1).  Figure 1. Marking of Emergency Exit and Glass Breaker in the Laboratory We also agree with you regarding the importance of avoiding the use of pathogenic microorganisms and ensuring the proficient use of biological material. We will replace the pathogenic microbes used in the laboratory with non-pathogenic microbes starting next semester. Please see Table 1 for the detailed information about pathogenic microbes replacement. Table 1. Replacement of Pathogenic Microbes <table><tr><th>No.</th><th>Pathogenic Microbes</th><th>Non-Pathogenic Microbes</th></tr><tr><td>1</td><td><i>Staphylococcus aureus</i></td><td><i>Streptococcus thermophilus</i></td></tr><tr><td>2</td><td><i>Escherichia coli</i></td><td><i>Saccharomyces</i> sp.</td></tr><tr><td>3</td><td><i>Candida albicans</i></td><td><i>Saccharomyces</i> sp.</td></tr><tr><td>4</td><td><i>Saccharomycopsis</i> sp.</td><td><i>Saccharomyces</i> sp.</td></tr><tr><td>5</td><td><i>Serratia</i> sp.</td><td><i>Erwinia</i> sp.</td></tr><tr><td>6</td><td><i>Aspergillus niger</i></td><td><i>Aspergillus oryzae</i></td></tr></table>	No.	Pathogenic Microbes	Non-Pathogenic Microbes	1	<i>Staphylococcus aureus</i>	<i>Streptococcus thermophilus</i>	2	<i>Escherichia coli</i>	<i>Saccharomyces</i> sp.	3	<i>Candida albicans</i>	<i>Saccharomyces</i> sp.	4	<i>Saccharomycopsis</i> sp.	<i>Saccharomyces</i> sp.	5	<i>Serratia</i> sp.	<i>Erwinia</i> sp.	6	<i>Aspergillus niger</i>	<i>Aspergillus oryzae</i>
No.	Pathogenic Microbes	Non-Pathogenic Microbes																						
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No	Comments from ASIIN experts	Programme	Response		
	iii. Infrastructure and technical equipment (BoEE) Although, as discussed in section iii below, the audit identified certain resource deficiencies that warrant attention. However, as noted under Criterion 1.1, the experts highlight prospects for stronger collaboration with industrial partners across all four programs. Moreover, they also noted during the visit that some pieces of equipment need to be upgraded, such as analytical tools, to achieve accurate results. Limitations lead to students having to		7	<i>Pseudomonas aeruginosa</i>	<i>Bacillus subtilis</i>
			In order to improve the equipment related to the safety lab and ensure the student and staff members conduct laboratory activity safely, we have requested the procurement of a laminar airflow cabin to faculty through 2025 Annual Budget Planning. Besides that, students and staff members can use the BSL-2 (Figure 2) in the Airlangga Research Hub, resource-sharing laboratory at the university if they need it.		
					
			Figure 2. BSL-2 in the resource-sharing laboratory		
	iii. Infrastructure and technical equipment (BoEE) Although, as discussed in section iii below, the audit identified certain resource deficiencies that warrant attention.	BoEE	Universitas Airlangga provides an annual budget to the Faculty of Science and Technology which is used to purchase equipment, in addition the university has a policy for resource sharing. There are ITD and LIHTR which have modern equipment that can be used for educational and research purposes by students and lecturers at Universitas Airlangga.		
	However, as noted under Criterion 1.1, the experts highlight prospects for stronger collaboration with industrial partners across all four programs. Moreover, they also noted during the visit that some pieces of equipment need to be upgraded, such as analytical tools, to achieve accurate results. Limitations lead to students having to	BoEE	The Bachelor of Environmental Engineering has made efforts to collaborate with other faculties for the use of equipment, related faculties and agencies include the Faculty of Pharmacy, Faculty of Veterinary Medicine, Institute of Tropical Disease, Institute of Life Sciences, Engineering & Technology (LIHTR).		

No	Comments from ASIIN experts	Programme	Response
	wait in line to use the equipment while others are still using it. In view of this, the experts suggest establishing strong collaborations with other laboratories from different faculties or research institutes that possess such instrumentation.		
	During the visit to the Mini Water Treatment Plant, the experts observed the following: - Lack of information on plant entry protocols (Guidelines, Standard Operating Procedures, Hazards and Safety Signs, Symbols and Meanings). - The water treatment plant is small and situated on campus, adjacent to the campus road (parallel to the Rectorate Building), and is distant from discharged water bodies (river and lake). -The plant has a daily wastewater treatment capacity of 40 cubic meters. - Unclear information about whether the effluent is discharged through the underground pipe to the lake in front of Rectorate Building or whether it flows to the river. -Chlorine is utilised for water disinfection - There is no fishpond with	BoEE	A wastewater treatment unit was built to treat some of the waste from laboratory activities. Some of the waste is managed by a third party. Improvement efforts that will be planned include: -improvement of safety and procedure (installation of safety signs and operational procedures for the use of wastewater treatment units) -the presence of a fish pond before discharging water to water bodies. -refer some of students' final project to take the mini WTP as a subject for research and design, including identifying problems and proposing possible improvement and solutions. While our study program is committed to supporting the monitoring and maintenance of the mini WTP as a learning object for our students, it is important to note that the operations of this facility fall under the authority of DITSARPRAS (Facilities and Infrastructure Directorate) of UNAIR. In response to your recommendations, our study program will engage in close collaboration with DITSARPRAS to develop the necessary operation manual and SOP. This collaboration will also focus on enhancing the overall functionality and safety of the mini WTP facility.

No	Comments from ASIIN experts	Programme	Response
	fish for toxicity and water quality testing. -BOD, COD and TSS are used as water quality parameters and analysed in another lab. -The study program's laboratory cannot be used for complete analysis due to limited chemical analytical equipment. -The equipment is still limited, especially for analytical purposes. -The effluent reservoir shows signs of eutrophication with algae growth, indicating nitrogen-rich water - Volatile chemicals are released directly into the atmosphere. -All treatment processes are conducted by technicians. -The plant's establishment budget is sourced from the university's budget. Based on these observations, the experts believe that the current water treatment plant is not a plant to treat the wastewater for all campus areas but is fine for teaching field lab purposes only, although with consideration of safety and security. Safety issues have been noted, recommending the relocation of the plant to ensure		A photograph of a black metal gate set against a light-colored wall. Several safety signs are posted on the gate, including a yellow triangular warning sign and a red circular prohibition sign. Newly placed safety signs in the WTP facility door. A photograph of a white rectangular sign with a red circle and a horizontal bar across the middle. Below the symbol, the text reads: 'PERHATIAN', 'BAGI YANG', 'TIDAK BERKEPENTINGAN', 'DILARANG MASUK!'. “Authorized personnel only” sign in WTP facility door.

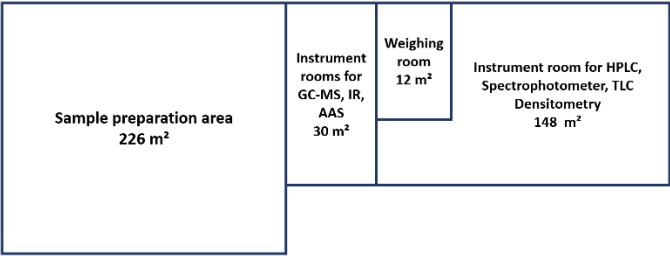
No	Comments from ASIIN experts	Programme	Response
	compliance with water treatment establishment standards and regulations. To guarantee the quality of discharged water, it is imperative to conduct a toxicity test prior to its release into water bodies. Additionally, the provision of exhaust equipment to condense volatile chemicals is necessary. Considering alternative treatment methods such as Biological Treatment, Physical Treatment, or even advanced technologies (Membrane Bioreactor, Reverse Osmosis, Oxidation Process, Nanoor Ultrafiltration, Electrocoagulation or Flocculation, Phytoremediation, Bioelectrochemical Process, and Graphene-based Process) should be explored. For a large university like UNAIR, prioritising the use of Artificial Intelligence (AI) and the Internet of Things (IoT) for monitoring systems, optimising plant operations, predicting maintenance needs, and detecting potential issues early on is crucial. Developing an operation manual,		

No	Comments from ASIIN experts	Programme	Response
	Standard Operating Procedure, and safety regulations should be a priority. The study program must adhere to local, regional, and national regulations and standards while staying updated on any changes. Regular maintenance schedules, including routine inspections and repairs, must be planned. Exploring energy-efficient options for pumps, machines, motors, and other equipment should also be considered. Furthermore, the university should provide the necessary equipment for chemical analysis. In cases where in-house operations are not feasible, involving third parties in water treatment activities or outsourcing operations to a third-party provider should be involved. Lastly, it is advised that the plant be located close to the water source (when using surface water) and near a suitable drainage system for treated wastewater.		
	Composting Site: The experts noted the following observations during their visit to the Compost House or Pile:	BoEE	Bachelor of Environmental Engineering will try to make improvements related to the compost house and BSF facility by coordinating with the infrastructure section of Universitas Airlangga. The Board of Environmental Engineering (BoEE) is committed to resolving these issues in close collaboration with the university. While the current explanation and distant pointing to the BSF House provided little

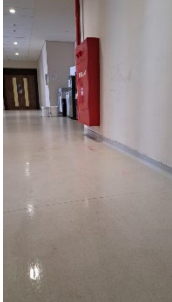
No	Comments from ASIIN experts	Programme	Response
	-The compost house or pile is located very close to the parking lot. -This house was constructed as compensation for the demolished greenhouse. -Raw materials consist of plant waste (water hyacinth), fresh plant debris, particularly leaves, and leftovers (vegetables) from university canteens. -Sources for compost are placed on cemented floors, and all composting processes are conducted on cemented floors. -Water used for the composting process, such as for moistening, is sourced from groundwater. -Mixing and turning of the pile are performed in the compost house or pile to aerate it and speed up decomposition -The compost produced is exclusively used for university purposes and is not commercialised. Drawing from these observations, the experts are of the opinion that the compost house or pile should be built in a suitable open area, well-drained, and easily accessible for transportation or		impression or feedback, we recognize the importance of having a clear and functional facility for composting and BSF activities. We will work closely with the university to ensure that the relocation of the Composting and BSF House is managed efficiently and transparently. Our goal is to support the development of the newly built facility to meet the needs of both academic and practical applications. The composting and BSF facilities have already been moved to a location further from the newly built parking lot, and the new facility has been constructed. This new facility is designed to better serve our educational and research purposes, and we are committed to making it fully operational as soon as possible.  Newly built composting and BSF facility.

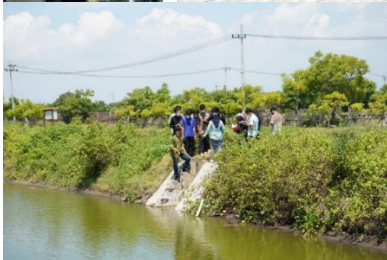
No	Comments from ASIIN experts	Programme	Response
	mobility. It is important that the compost origin is placed in an area with direct sunlight or a shaded area with enough sunlight. Water should be sourced from a water-harvesting reservoir or non-polluted water from a water treatment plant discharge. It is essential for the compost to be contamination-free from hazardous chemical substances and pathogenic microorganisms. Lastly, the compost nutrition contents should be measured. Concerning the Black Soldier Fly (BSF) House: Since lecturers, students and technicians just explained BSF and pointed to a house in the distance, no impression or feedback can be proposed. The experts were also informed that the Composting and BSF House will be relocated soon. The university plans to construct a large parking lot to replace the existing facilities at a new location, although the exact relocation site remains uncertain.		
	As a general observation for the Environmental Engineering program, it operates two laboratories with a restricted capacity for students and	BoEE	The Bachelor of Environmental Engineering has a plan for additional equipment that is carried out in stages to meet the needs: 2025: procurement of UV-vis-Spectrophotometer

No	Comments from ASIIN experts	Programme	Response
	lecturers to carry out lab work, experiments, and research. Additionally, there are shared laboratories used jointly with other study programs for teaching and research purposes. In connection with this, the experts believe that access to an ICPOES or ICP-MS instrument would be highly recommended. This could be realised in conjunction with the Faculty of Pharmacy. The study program has proposed acquiring additional analytical equipment, including an Ultraviolet Visible Spectrophotometer (UV-vis-Spectrophotometer) and Graphite Furnace Atomic Absorption Spectrometry (GF-AAS).		2026-2027: procurement of ICP with the faculty of pharmacy (ICP is considered sufficient to replace AAS).
	iii. Infrastructure and technical equipment (Pharmacy) The visited drug testing laboratory is functional and well-equipped but might be too small for 65 students working simultaneously.	Pharmacy	The drug testing laboratory is designed for the practical work involving 65 students. The laboratory comprises of 2 sections which are the preparative section and the instrumentation section. There are 6 different analytical instrumentations served as the topic of practical works that have to be done by a group of students during semester. The placement of the instrument has been designed to split the students in the class into 2 big groups. The practical work has been designed to prevent all student working in the same section at the same week/meeting. The group of students do a rotation to conduct all topics during the semester mentored by 1 lecturer. Thus, this system prevents a high number of students working with their samples in the same room. The schematic activity arrangement in the laboratory rooms is illustrated as follows.

No	Comments from ASIIN experts	Programme	Response
			Multipurpose laboratory 3 (drug testing laboratory)  Above is the schematic figure of Multipurpose Laboratory 3 focusing on pharmaceutical raw material and product identification/analysis. The scheme illustrates the sufficiency of the practical laboratory spaces to covers 65 students distributed to 6 topics during a meeting in the semester.
	However, because the use of classical glass burettes is time-consuming and requires manual handling, other types of titration systems, mainly automatic systems, are used in the pharmaceutical industry, instead. Thus, it would be necessary to have at least one such state-of-the-art automatic titration system available in the lab.	Pharmacy	The study program fully considers the suggestion. The automatic titration system has been planned in the procurement by the Faculty of Pharmacy in 2024.
	Because of the high price and maintenance costs of HPLC systems, it seems plausible, that the students work in groups of six. While this might very well be a necessary concession, it would still be advisable to aim to reduce the group size to 4 because the individual	Pharmacy	In the HPLC practical work, the students are separated into a small groups (e.g. 6 students in a group) to facilitate an intense discussion during the learning process in which 1 lecturer mentoring 1 group of students. We would like to clarify that the course is designed so that each student works individually, not as a group, with his/her own sample. Each student experiences the sample preparation and HPLC analysis process as an individual. Thus, the exact student : instrument ratio for pharmaceutical analysis practical work and some other practical courses are 1:1.

No	Comments from ASIIN experts	Programme	Response
	learning outcome could assumingly be improved in this way.		
	International pharmacopoeias (USP, Ph. Eur., and JAP) have implemented these guidelines and thus replaced classical heavy metal detection based on addition of sulfide ions by much more sophisticated instrumental techniques, inductively-coupled plasma-optical emission spectroscopy (ICP-OES) and mass spectrometry (ICP-MS), recently. The scientific reason for this progress is, that these instruments can as well detect and quantify minute amounts of elemental impurities such as platinum or palladium which are used as catalysts during drug synthesis and would not be detectable by the classical methods. Because of this newly installed demand, there is a deficiency in the education of the students of the Apothecary program with regard to these new pharmacopoeial techniques. Although this instrumentation is expensive, the Faculty should discuss, if such instruments could be bought in case they could be used for research as well, or if not, cooperation with an industry	Pharmacy	The study program fully considers the suggestion. The ICP-MS has been planned in the procurement by the Faculty of Pharmacy in 2024.

No	Comments from ASIIN experts	Programme	Response
	partner could be sought, where the students could learn to perform tests for elemental impurities according to industry standards.		
	The general working conditions in the lab are good, however canisters with non-flammable solvent disposal are currently stored on the floor. Thus, a fire-proof locker for such non-heat-resistant disposal containers is lacking and should be installed in order to avoid canisters in the hallways that could cause a safety issue in case of fire.	Pharmacy	The study program fully considers the suggestion to provide a fire-proof locker and preventing canisters in the hallways, has been planned in the procurement by the Faculty of Pharmacy in 2024. Currently, the canisters for the waste have been temporarily moved from the hallway to the separated storage room waiting for the procurement of fire-proof locker.  The picture of the hallway previously used for the disposal cannisters storage area.

No	Comments from ASIIN experts	Programme	Response
	iii. Infrastructure and technical equipment (MoFMB) After visiting the labs and facilities for the Master's program, the experts believe that there is a need to modernise and implement more advanced biotechnological approaches. One key area that requires attention is the implementation of closed recirculation aquaculture systems (RAS). Additionally, there is an opportunity to modernise aquaponics systems by transitioning them from coupled (aquaculture and plant hydroponics within one circulation system) into on-demand coupled systems (aquaculture and plant hydroponics comprise a double recirculation system being coupled only on demand to get a higher yield in both parts by fostering sustainable production). The marine station of the MoFMB could not be visited due to time restrictions. However, the group requests more info about the research facilities and infrastructure of the marine station. The program is focusing on “marine	MoFMB	Universitas Airlangga has a Marine Station located at Cemara Beach, Banyuwangi, which can be used as a research facility for lecturers and students of the MoFMB program.  Photo of the Marine Station Building in Banyuwangi   The Faculty of Fisheries and Marine has a collaboration with the Department of Marine and Fisheries Affairs of East Java Province. Through this collaboration, we are permitted to conduct resource sharing on all Technical Implementation Units

No	Comments from ASIIN experts	Programme	Response
	biotechnology” but no additional information has been provided and therefore, it remains unclear how that focus on marine organisms is supported by relevant infrastructure.		(UPT) and Installation Units all across the East Java province so that our students may carry out novel and advance marine biotechnological research and approaches. MoFMB program students and lecturers can use UPT and government installations to conduct research or take research samples. The list of UPT and Installation Units that primarily focus on marine sector research are mentioned as follows: 1. Aquaculture Sector • Brackish Water and Marine Aquaculture UPT Jepara, Situbondo • Marine, Fisheries, Coastal and Small Islands Technical Training UPT • Probolinggo Brackish Water Aquaculture Installation • Lamongan Brackish Water Aquaculture Installation 2. Capture Fisheries and Marine, Coastal and Supervision Sector • Technical Training Unit for Marine, Fisheries, Coastal and Small Islands • Mayangan Coastal Fisheries Port Unit, Probolinggo City • Muncar Coastal Fisheries Port Unit, Banyuwangi • Tamperan Coastal Fisheries Port Unit, Pacitan • Bulu Tuban Coastal Fisheries Port Unit • Bawean Coastal Fisheries Port Installation 1. Marine and Fishery Product Processing and Marketing Sector • UPT Quality Testing and Development of Marine and Fishery Products Surabaya • UPT Technical Training for Marine, Fishery, Coastal and Small Islands. 2. Marine, Coastal and Supervision Sector • Technical Training Unit for Marine, Fisheries, Coastal and Small Islands in Probolinggo.
	iii. Infrastructure and technical equipment	BoB, BoEE	BoB and BoEE is committed to continuously enhancing facilities for people with disabilities. Some of the facilities we have provided are shown in Figure 3.

No	Comments from ASIIN experts	Programme	Response
	General comment for all programs In relation to facilities for people with disabilities, upon observing various areas on campus, it is noted that there is a lack of adequate facilities to meet their special needs. Specifically, there are insufficient ramps, wheelchair-accessible parking spaces, and accessible restrooms available. Universitas Airlangga, UNAIR – Cluster A 39 The experts also see that the University should increase its efforts to provide sufficient ICT bioinformatics platforms.		Universitas Airlangga also supports students with disabilities through the Airlangga Inclusive Learning program (https://ail.pendidikan.unair.ac.id). This program provides accommodation services, accessibility services, tutorials for creating teaching materials for staff with disabilities, volunteer services, mobility services, and book digitalization.  Figure 3. Ramps, restroom and lift for student/staff with disabilities in BoB and BOEE Regarding Bioinformatics platform, student can use open-source software such as MEGA (https://www.megasoftware.net/), Oligo Analyzer Tool (https://sg.idtdna.com/pages/tools/oligoanalyzer?returnurl=%2Fcalc%2Falyzer), The R Project for Statistical Computing (https://www.r-project.org/), and iTOL (https://itol.embl.de/). Besides that, BoB provide laptop (Fig.4) and PC spesifically for bioinformatics analysis in Genetics Molecular Laboratory and provide bioinformatics software such as Geneious (Fig.5) and DNA Baser Sequence Assembler (Fig.6)

No	Comments from ASIIN experts	Programme	Response
			Figure 4. Laptop for Bioinformatics Analysis in BoB Figure 5. Geneious Bioinformatics Software Figure 6. DNA Baser Bioinformatics Software Universitas Airlangga also has a research center called the PUI-PT Bio-Molecule Engineering (BIOME). One of the research group within BIOME is the Bioinformatics. Students and lecturers can conduct research there after obtaining

No	Comments from ASIIN experts	Programme	Response
			the necessary administrative approval. Bioinformatics research that can be conducted at BIOME include designing new bioactive compounds, structure optimization, and molecular docking. Bioinformatics laboratory actively held bioinformatics training for student and staff (Figure 7).  Figure 7. Bioinformatics workshop held by BIOME
		Pharmacy	The Faculty of Pharmacy provides facilities for people with disabilities. There are restrooms for disabled people, and wheelchair access to the building, which prevents the use of stairs, is provided in the basement level. The building is equipped with 4 elevators (12 persons capacity) to access 10 floors from the basement level. The faculty of pharmacy is committed to improve the facilities for people with disabilities. 
		MoFMB	Thank you for the advice from the experts. The Faculty of Fisheries and Marine has attempted to provide accessible facilities for people with disabilities as shown in

No	Comments from ASIIN experts	Programme	Response
			the Figure below. However, we would be delighted to add more accessible facilities in the future. In addition, the university also supports a program to support disabilities student and staff by Airlangga Inclusive Learning (AIL). Please see this link for the evidence: https://ail.pendidikan.unair.ac.id and support funding and policy: https://bpp.unair.ac.id/support-services-for-people-with-disabilities/ 
11	Criteria 4.1 However, one area of concern identified by the experts is the outdated literature recommendations. They, therefore, request updating the bibliographical references in the module descriptions as some of them are more than 10 years old. Additionally, the experts indicate that it	All study programmes	The module handbook has been updated to include the following improvements: 1. We have revised and updated the references, removing outdated sources and adding the latest references. 2. The module content has been rewritten for greater clarity, ensuring that readers can easily understand the material covered in the course. 3. We have ensured consistency by matching the module names in the handbook with those in the curriculum map.

No	Comments from ASIIN experts	Programme	Response
	is necessary to re-write the module descriptions to provide clearer and more precise information about the qualification objectives and content of each module, ensuring clarity on what is being taught. Moreover, the audit team observed differences in how the same module is named in different documents such as the curriculum map, module handbook, and others. They suggest revising the documentation		Revised module for all study programmes can be seen in the Appendix 3 .
	In specific for the Bachelor of Environmental Engineering, the experts note that many subjects have no codes. Moreover, together with being outdated, many references are written in Indonesian and lack the year of publication. References with the newest editions should be provided to ensure students have access to the most current and relevant information	BoEE	Bachelor of Environmental Engineering have done revisions as experts suggested for module handbook and code for courses. Regarding the outdated literature recommendations, we acknowledge the need for updating the bibliographical references in the module descriptions. We commit to reviewing the references used in each subject during the next curriculum review. Updated references, including the newest editions, will be incorporated to ensure that students have access to the most current and relevant information. This review will also include verifying the language and publication year of each reference to ensure clarity and accuracy.
12	Criteria 4.3 Comments 1: However, the experts believe that there is a need for the provision of lab and field work manuals for the Bachelor of Environmental Engineering program.	BoEE	Responses 1: Bachelor of Environmental Engineering has an instruction manual for practicum and fieldwork that can be seen in Appendix 4.

No	Comments from ASIIN experts	Programme	Response
	Comments 2: The experts note that BoEE names LO as LO1, LO2, etc., whereas the other three programs refer to each LO using the first or second letter of aspect (AT-1, AT-2, GS-1, etc). They believe that the University should ensure uniformity in the presentation of the information.		Responses 2: Bachelor of Environmental Engineering have done revisions as experts suggested.
	• Please provide a description of the strategies that the University use to bring insights into curricula from practical and current industry practices. • Please provide a description of the strategies that the University use to strengthen collaboration with professional bodies.	UNAIR	Please find detailed information in the additional documents: • University strategies to bring insights into curricula from practical and current industry practices • University strategies to Strengthen Collaboration with professional bodies

The experts also reviewed the following additional information that was integrated into the University's statement:

1. Appendix 1 List of industry cooperation
 - a. [Apothecary]List of partnership
 - b. [BoB]List of Industry Cooperation
 - c. [MoFMBB]List of cooperation industry and government
2. Appendix 2 Staff international activities
 - a. [BoB]Research Funding in Collaboration with an International Partner
 - b. [BoB]Staff Exchange
 - c. [BoEE]Staff Exchange
 - d. [MoFMB] List of staff global recognition
 - e. [Pharmacy]List of staff outbound 2022-2024 R0
3. Appendix 3 Revised module handbook
 - a. [BoB]Revised module handbook
 - b. [[BoEE]Revised module handbook
 - c. [MoFMB]Revised module handbook
 - d. [Pharmacy]Revised module handbook
4. Appendix 4 Guidebook of BoEE
 - a. BoEE - Practical Module of Environmental Chemistry
 - b. BoEE - Practical Module of General Ecology
 - c. BoEE - Practical Module of Solid Waste Management
 - d. BoEE - Practical Module of Unit Operations
 - e. fieldwork guidelines of BoEE
 - f. theses guidelines of BoEE
5. The Research Facilities and Infrastructure of the Marine Station
6. University strategies to bring insights into curricula from practical and current industry practices
7. University strategies to Strengthen Collaboration with professional bodies

F Summary: Expert recommendations (26.08.2024)

Taking into account the additional information and the comments given by the University the experts 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements

For the Bachelor's degree programme Biology

- A 1. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.
- A 2. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.
- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.
- A 5. (ASIIN 3.2) Develop an action plan, with clear milestones and timelines, for the improvements outlined in this evaluation report.
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.
- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.

- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.
- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.2) It is recommended that the University reconsider the use of the term "Marine" in the name of the study program, as it restricts the program's scope.
- E 16. (ASIIN 1.2) It is recommended that the Faculty avoid the designation "Faculty of Fisheries and Marine," as the term "marine" should be paired with a specific subject. Instead, the Faculty could consider adopting a name such as "Faculty of Fisheries and Biotechnology", which appropriately encompasses both freshwater and marine organisms.
- E 17. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 18. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 19. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.
- E 20. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

G Assessment and analysis for the award of the ASIIN seal:

Technical Committee 09 – Chemistry, Pharmacy (06.09.2024)

Assessment and analysis for the award of the ASIIN seal:

The Technical Committee discusses the requirements and recommendations proposed by the expert group. These relate to improving the practical skills of the students, complying with safety standards in the laboratories, revising the module handbooks and improving the laboratory equipment. The Technical Committee discusses the procedure, in particular requirement A5, which is worded in very general terms. In order to make it clear that it is primarily about improving the infrastructure and technical equipment, the TC suggests rewording the requirements. Otherwise, it agrees with the proposed requirements and recommendations.

The Technical Committee 09 – Chemistry, Pharmacy 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements

For the Bachelor's degree programme Biology

- A 1. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.
- A 2. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.

- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.
- A 5. (ASIIN 3.2) Develop an action plan with clear milestones and timelines for the improvement of the facilities and the technical equipment
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.
- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.
- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.
- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.2) It is recommended that the University reconsider the use of the term "Marine" in the name of the study program, as it restricts the program's scope.
- E 16. (ASIIN 1.2) It is recommended that the Faculty avoid the designation "Faculty of Fisheries and Marine," as the term "marine" should be paired with a specific subject. Instead, the Faculty could consider adopting a name such as "Faculty of Fisheries and Biotechnology", which appropriately encompasses both freshwater and marine organisms.
- E 17. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 18. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 19. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.

- E 20. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

Technical Committee 10 – Life Sciences (11.09.2024)*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee discusses the requirements and recommendations proposed by the expert group. These relate to improving the practical skills of the students, complying with safety standards in the laboratories, revising the module handbooks and improving the laboratory equipment. The Technical Committee discusses the procedure, in particular condition A5, which is formulated in very general terms. In order to make it clear that the primary aim is to improve the infrastructure and technical equipment, the Technical Committee proposes a rewording of the requirement. In addition, it is proposed that requirements A1 and A2 be swapped in the list so that it is clear that requirement A2 is much more important. Otherwise, the TC 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements**For the Bachelor's degree programme Biology**

- A 1. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.
- A 2. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.
- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.

- A 5. (ASIIN 3.2) Develop an action plan with clear milestones and timelines for the improvement of the facilities and the technical equipment
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.
- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.
- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.
- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.2) It is recommended that the University reconsider the use of the term "Marine" in the name of the study program, as it restricts the program's scope.
- E 16. (ASIIN 1.2) It is recommended that the Faculty avoid the designation "Faculty of Fisheries and Marine," as the term "marine" should be paired with a specific subject. Instead, the Faculty could consider adopting a name such as "Faculty of Fisheries and Biotechnology", which appropriately encompasses both freshwater and marine organisms.
- E 17. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 18. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 19. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.

- E 20. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

Technical Committee 03 – Civil Engineering, Geodesy and Architecture (09.09.2024)*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee discusses the requirements and recommendations proposed by the expert group and changes the wording of the requirement A 5 to underline its focus. Apart from that, the TC follows the assessment of the experts without any changes.

The Technical Committee 03 – Civil Engineering, Geodesy and Architecture 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements**For the Bachelor's degree programme Biology**

- A 1. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.
- A 2. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.
- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.
- A 5. (ASIIN 3.2) Develop a concept on how to improve the infrastructure as well as the equipment.
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.
- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.

- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.
- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.2) It is recommended that the University reconsider the use of the term "Marine" in the name of the study program, as it restricts the program's scope.
- E 16. (ASIIN 1.2) It is recommended that the Faculty avoid the designation "Faculty of Fisheries and Marine," as the term "marine" should be paired with a specific subject. Instead, the Faculty could consider adopting a name such as "Faculty of Fisheries and Biotechnology", which appropriately encompasses both freshwater and marine organisms.
- E 17. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 18. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 19. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.
- E 20. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

Technical Committee 08 - Agriculture, Forestry and Food Sciences (16.09.2024)*Assessment and analysis for the award of the ASIIN seal:*

The Technical Committee discusses the recommendations proposed by the expert group, which are accepted without making any changes.

Technical Committee 08 - Agriculture, Forestry and Food 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements**For the Bachelor's degree programme Biology**

- A 1. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.
- A 2. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.
- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.
- A 5. (ASIIN 3.2) Develop an action plan, with clear milestones and timelines, for the improvements outlined in this evaluation report.
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.
- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.
- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.

- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.2) It is recommended that the University reconsider the use of the term "Marine" in the name of the study program, as it restricts the program's scope.
- E 16. (ASIIN 1.2) It is recommended that the Faculty avoid the designation "Faculty of Fisheries and Marine," as the term "marine" should be paired with a specific subject. Instead, the Faculty could consider adopting a name such as "Faculty of Fisheries and Biotechnology", which appropriately encompasses both freshwater and marine organisms.
- E 17. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 18. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 19. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.
- E 20. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

H Decision of the Accreditation Commission (24.09.2024)

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

The Accreditation Commission discusses the requirements and recommendations suggested by the expert group and the Technical Committees 03, 08, 09, and 10. After careful consideration, the Commission endorses the proposal by Technical Committee 10 to swap requirements A1 and A2 to highlight the importance of ensuring compliance with biosafety regulations.

Furthermore, the Accreditation Commission agrees with the Technical Committees 03, 09, and 10 on rewording requirement A5, as it is formulated in very general terms. Consequently, the Commission follows the amendment suggested by Technical Committee 09 to clarify that this requirement primarily refers to improving infrastructure and technical equipment.

The Accreditation Commission also discusses recommendations E15 and E16 and decides to exclude E15 from the list entirely. As for E16, the Commission determines that it will not be included as a recommendation, but rather as a separate notice to be communicated to UNAIR in subsequent correspondence.

In all other respects, the Accreditation Commission concurs with the assessments provided by the experts and the Technical Committees, without any further 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	-	30.09.2030
Ba Environmental Engineering	With requirements for one year	-	30.09.2030
Apothecary Education	With requirements for one year	-	30.09.2030
Ma Fisheries and Marine Biotechnology	Without requirements	-	30.09.2030

Requirements

For the Bachelor's degree programme Biology

- A 1. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.
- A 2. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.

For the Bachelor's degree programme Environmental Engineering

- A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.
- A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.
- A 5. (ASIIN 3.2) Develop an action plan with clear milestones and timelines for the improvement of the facilities and the technical equipment
- A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.
- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Recommendations

For all degree programmes

- E 1. (ASIIN 1.1) It is recommended to continue reinforcing the development of students' skills, with a particular focus on lifelong learning, communication, leadership, and integrity in all aspects of their discipline.
- E 2. (ASIIN 1.1) It is recommended to pursue further collaborations with industrial partners to expand opportunities for students and graduates across local, regional, national, and international markets.
- E 3. (ASIIN 1.3) It is recommended that upcoming curricular review cycles prioritise expanding the curriculum to include international standards.
- E 4. (ASIIN 1.5) It is recommended to further improve the preparation of students for the thesis writing phase, fostering greater confidence and readiness to fulfil their academic requirements within the standard study period.

- E 5. (ASIIN 3.1) It is recommended to further enhance teaching staff engagement in international activities, including teaching and collaborative research with foreign partners.
- E 6. (ASIIN 3.2) It is recommended that the University increase its efforts to provide sufficient ICT bioinformatics platforms.
- E 7. (ASIIN 3.2) It is recommended that further improvements are implemented to create a more friendly campus for people with disability.

For all Bachelor's degree programmes

- E 8. (ASIIN 1.4) It is recommended to conduct an evaluation to determine if the best-performing applicants are among the most successful students after one year.

For the Bachelor's degree programme Environmental Engineering

- E 9. (ASIIN 1.1) It is recommended that the presentation of the Learning Outcomes be consistent with the other programs.
- E 10. (ASIIN 1.3) It is recommended to increase the coverage of engineering aspects within the curriculum.
- E 11. (ASIIN 1.3) It is recommended to further enhance students' entrepreneurial abilities, with a particular focus on scaling up production for commercialisation.
- E 12. (ASIIN 3.2) It is recommended that students be provided with access to an ICP-OES or ICP-MS instrument, which could be realised in conjunction with the Faculty of Pharmacy.

For the Apothecary Education programme

- E 13. (ASIIN 3.2) It is recommended that lab space utilisation be monitored proactively to prevent overcrowding.
- E 14. (ASIIN 3.2) It is recommended that access to both an ICP-OES and ICP-MS instrument be facilitated to fulfil the new requirements set by the U.S. Pharmacopoeia.

For the Master's degree programme Fisheries and Marine Biotechnology

- E 15. (ASIIN 1.4) It is recommended that the Double Degree program adopt a strategy to ensure reciprocity and mutual exchange, with students not only traveling from UNAIR to NPUST but also from NPUST to UNAIR.
- E 16. (ASIIN 2) It is recommended that the Master's thesis be written in English in alignment with the internationalisation aspirations of the program.
- E 17. (ASIIN 2, 3.2) It is recommended that the expenses associated with students' research projects be covered by the university.

- E 18. (ASIIN 3.2) It is recommended to modernise and implement more biotechnological approaches. For example, implementing closed recirculation aquaculture systems (RAS) and modernising aquaponics systems.

I Fulfilment of Requirements (26.09.2025)

Analysis of the experts and the Technical Committees (18.09.2025)

Requirements

For the Bachelor's degree programme Biology

- A 1. (ASIIN 3.2) Ensure that biosafety regulations are addressed and strictly followed with respect to handling and safety instructions.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR states its commitment to ensuring that the Bachelor Biology program complies with biosafety regulations and prevents the accidental release of biological agents. To support this, several measures have been implemented, including adherence to safety guidelines and biosafety training, enhanced laboratory infrastructure, the replacement of pathogenic microorganisms with safer alternatives, and upgrades to laboratory equipment. The experts consider the requirement to ensure biosafety to be fulfilled as the organizational modulations and practical adaptations, such as the use of harmless microorganisms, now correspond to essential health and safety standards.
TC 10	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

- A 2. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.

Initial Treatment	
Experts	Not completely fulfilled Justification: UNAIR recognizes that phase-contrast microscopy is indispensable for the visualization of transparent specimens, including living cells and microorganisms, without requiring staining procedures. While the budget has been approved at the central level, it is anticipated that a phase contrast microscope will be available for the Bachelor Biology study program by the end of 2025. In the experts' view, UNAIR should be asked to report the equipment acquisition as soon as it exists. In this respect, the requirement is not yet completely fulfilled and the accreditation should be with reservations only.

TC 10	Not completely fulfilled Justification: The TC follows the assessment of the experts and considers Requirement A2 as not yet fulfilled.
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For the Bachelor's degree programme Environmental Engineering

A 3. (ASIIN 1.5) Ensure that practical work is included in all relevant modules to better develop students' practical skills.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR acknowledges the importance of integrating hands-on laboratory exercises to cultivate students' practical skills, analytical thinking, and problem-solving capabilities. In this context, new pedagogical approaches are expected to bridge theoretical knowledge with real-world application, equipping Bachelor Environmental Engineering students with competencies highly valued in professional settings where applied technical expertise complements academic understanding. The experts judge the adjustments conducted as suited to provide students with essential knowledge required for professional life.
TC 03	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

A 4. (ASIIN 3.2) Ensure that standard operation procedures covering the safety issues in the water treatment plant are written down and put on display.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR acknowledges that developing and disseminating Standard Operating Procedures (SOPs) that address safety protocols in water treatment facilities is fundamental for effective risk management. The experts appreciate this recognition and anticipate that well-documented SOPs will provide unambiguous, standardized instructions enabling personnel to perform their tasks safely and compliantly. This will help minimize the risk of accidents and microbial contamination. The Bachelor Environmental Engineering now features a visible display of SOPs, which will enhance awareness, ensure adherence, and serve as an immediate reference during routine operations or emergency situations. This will support training initiatives and regulatory compliance, and protect personnel and the integrity of the water treatment process. The experts consider that SOPs are now given compulsory emphasis.
TC 03	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

A 5. (ASIIN 3.2) Develop an action plan with clear milestones and timelines for the improvement of the facilities and the technical equipment

Initial Treatment	
Experts	Fulfilled Justification: UNAIR has developed a detailed action plan, with defined milestones and schedules, to facilitate systematic infrastructure and equipment upgrades for the Bachelor Environmental Engineering program. This plan decomposes complex improvement initiatives into achievable tasks. The experts believe that having clear milestones and timelines not only serves as performance indicators for the program, but also helps identify delays and maintain student motivation. Additionally, transparent planning is expected to improve stakeholder communication, accountability, and evidence-based decision-making, thereby ensuring timely and effective enhancement of facilities and technological assets. In summary, a detailed action plan is available addressing milestones that put emphasis on the improvement of the equipment and infrastructure of the Bachelor Environmental Engineering program.
TC 03	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

A 6. (ASIIN 4.1) Revise the module descriptions to address outdated literature, fill in missing information, and increase precision, ensuring that each module's qualification objectives and content are accurately and comprehensively described.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR recognizes the importance of updating course module descriptions to remove outdated references and enhance clarity, thereby maintaining academic integrity and institutional accountability. In this context, the module descriptions for the Bachelor of Environmental Engineering have been revised to align with external accreditation and quality assurance standards. The updates also incorporate recent literature to address informational gaps. This process is expected to promote transparency, facilitate curriculum coherence, and ensure that educational offerings meet the evolving demands of the industry. The experts consider that the module descriptions are now satisfactory and meet the required standards.
TC 03	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

For the Apothecary Education programme

- A 7. (ASIIN 3.2) Provide a compact titrator with automatic equivalence point finding to round up the practical skills in volumetric titration in pharmaceutical analysis to meet industry standards.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR indicates that, since February 2025, two compact automatic titrators have been installed in the Multipurpose laboratory-3. The experts appreciate that the claimed tool was purchased and is at hand, but note for consideration that the very basic automatic titration systems installed appear only suitable for the determination of alkalinity of water and not for the determination of the content of drug substances according to industry standards. Despite this limitation, the experts consider this provision sufficient to teach students how to set up and apply automatic titrations as requested.
TC 09	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

- A 8. (ASIIN 3.2) Ensure strict adherence to safety regulations concerning the storage of laboratory waste. A fire-proof locker for non-heat-resistant disposal containers must be installed in order to avoid safety issue.

Initial Treatment	
Experts	Fulfilled Justification: UNAIR has put safety standards in action that are suited to prevent environmental pollution and contamination and also reduce health hazards. The experts observe, nonetheless, that the safety issue is met by a rather basic approach. The lockers shown in the pictures appear not to be suited to store flammable solvents for up to 90 minutes and would not meet European standards (e.g. because the doors are not self-closing in the event of a fire alarm). However, since they are only necessary to prevent melting of plastic containers holding only aqueous waste and are required especially to avoid leakage and keep the floors free of spillage, allowing for the evacuation of the lab, the simple solution is acceptable. For this basic purpose, the simple storage lockers seem sufficient.
TC 09	Fulfilled Justification: The TC follows the assessment of the experts without any changes.

Decision of the Accreditation Commission (26.09.2025)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Bachelor Biology	Requirement A2 not fulfilled	-	Prolongation for six months
Bachelor Environmental Engineering	All requirements fulfilled	-	30.09.2030
Apothecary Education	All requirements fulfilled	-	30.09.2030

The Accreditation Commission justifies its decision as follows:

“The AC points out that while the phase contrast microscope needs to be purchased and used in laboratory work to teach the students accordingly.”

J Fulfilment of Requirements (27.03.2026)

Analysis of the experts and the Technical Committee 10 – Life Sciences (06.03.2026)

Requirements

For the Bachelor's programme Biology

A 2. (ASIIN 3.2) Provide the ability to perform phase contrast microscopy.

Second Treatment	
Experts	Fulfilled Vote: unanimous Justification: The required phase-contrast microscope is available since October 2025. Trainings of staff members on the new microscope have been conducted. The phase-contrast microscope is used for teaching from this time forward.
TC 10	Fulfilled Vote: unanimous Justification: The TC agrees with the assessment of the experts.

Decision of the Accreditation Commission (27.03.2026)

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Biology	All requirements fulfilled	-	30.09.2030

Appendix: Program Intended Learning Outcomes and Curricula

According to the self-assessment report and the provided “Curriculum Documents”, the following intended learning outcomes shall be achieved:

Bachelor of Biology

LEARNING OUTCOMES		
Attitude	A-01	Demonstrate an attitude of excellence with morality
General Skills	GS-01	Be able to apply logical, critical, systematic and innovative thinking in the context of developing or implementing science and/or technology according to their field of expertise based on the results of analysis of information and data
Special Skills	SS-01	Be able to present alternative solutions in resolving problems related to sustainable management of biological resources and the environment through the application of relevant knowledge, biological methods and technology as a basis for appropriate decision making
	SS-02	Be able to apply Biology knowledge to the scope of daily life that is beneficial to society with an emphasis on health and the environment
	SS-03	Be able to manage biological and environmental resources within a specific scope
	SS-04	Be able to carry out independent research in the laboratory and in the field, as well as the ability to handle organisms
Knowledge	K-01	Be able to evaluate biodiversity in Indonesia according to key determinations correctly
	K-02	Be able to describe natural phenomena based on biological principles (universality, evolution, diversity, continuity, homeostasis, interaction) correctly
	K-03	Be able to relate phenomena that occur within organisms and their interactions with the environment based on the principles and studies of MIPA (mathematics, physics and chemistry) correctly
	K-04	Be able to provide a strong basic knowledge of MIPA in relation to life sciences
	K-05	Be able to provide knowledge about the basics of molecular, cellular and organism biology
	K-06	Be able to provide relevant knowledge regarding safety and environmental issues, including related fundamental laws
	K-07	Be able to provide arguments regarding biological science and related technology from the cellular to the molecular level in accordance with scientific developments correctly
	K-08	Be able to integrate biological principles (botany, ecology, microbiology, zoology) in accordance with correct scientific principles
	K-09	Be able to use laboratory equipment according to SOP properly and correctly

The following curriculum map is presented for the Bachelor of Biology:

Sem	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	21
VIII					Thesis															
					6															
VII					Seminar					MBKM*									Comm Service MBKM	
					2					7									3	
VI					Field W. P. MBKM	Evolution	Biosys	P. Biosys		MBKM*									Religion II	
					4	2	2	1		6									2	
V	Eco syst B		Plant Biodiv	(P) Plant Biodiv	Bioinform	P. Bioinform	Capita Selekt	Research Meth					Animal B	P. Animal B	Emb Vert	P. Emb Vert				
	2		2	1	2	1	2	2					2	1	2	1				
IV	Conserv Bio	Behav Eco	Plant Emb	P. Plant Emb	Mol Ana Meth	P. Mol Ana Meth	Taxo	P. Taxo	Mon, Proti & Fungi B	Stat Meth			Ani Phy	P. Ani Phy						
	2	2	2	1	1	1	2	1	2	2			2	1						
III	Gen. Ecology	P. Gen Eco	Plant Phy	P. Plant Phy	Mol Gen	Microtech	Biochem						Ani Hist	P. Ani Hist			Gen Micro bio	P. Gen Micro bio	English	
	2	1	2	1	2	2	2						2	1			2	1	2	
II			Plant Struc	P. Plant Struc	Genetics	Basic Fis	Calculus		Log and Critical T	Intro to Scholarly Coll	Com m&S elf-Dev		Comp. Vert. Anatomy	P. Comp. Vert. Anatomy						
			3	1	2	2	3		2	2	2		2	1						
I					Cell Bio	Basic Bio	P. Basic Bio	B. Chem	P. Basic Chem	Data and Literature	Civics	Pancasila							Religion	B. Indonesia
					2	2	1	2	1	2	2	2							2	2

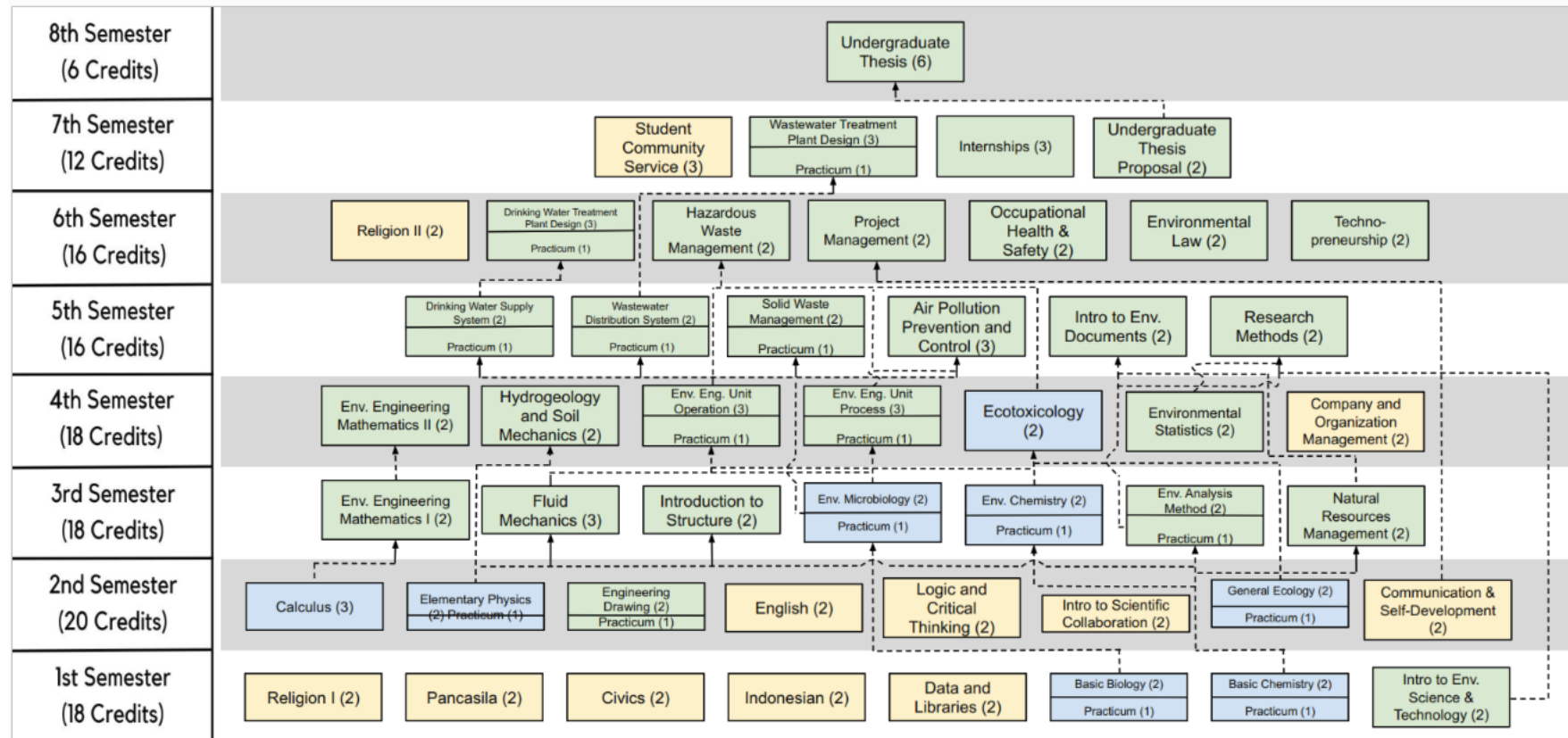
Curriculum Structure. Source: Appendix Self-assessment report, UNAIR.

Bachelor of Environmental Engineering

LEARNING OUTCOMES		
Attitude	LO-01	Demonstrate an attitude of excellence with morality
General Skills	LO-02	Be able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that pays attention to and applies humanities values in accordance with their field of expertise.
Special Skills	LO-03	Be able to apply engineering methods in environmental management to protect public health and the environment
	LO-04	Be able to identify, formulate, and design drinking water supply systems and drinking water treatment technically and practically; waste pollution control system (liquid, solid, and gas) as well as drainage and sanitation technically and practically
	LO-05	Be able to identify and design occupational health and safety systems
	LO-06	Be able to identify, formulate, and solve problems in environmental management systems (Environmental Impact Assessment, Environmental Management Systems, Cleaner Production, Water Resources, and Natural Resources in general)
	LO-07	Be able to make decisions and determine the impacts and risks of work and production processes (buildings, services, systems, locations, mapping or infrastructure) on the environment, health and safety of workers and society based on academic studies
	LO-08	Be able to use modern engineering tools for practical needs
	LO-09	Be able to work in a team involving other related fields of expertise or with stakeholders
	LO-10	Be able to apply and develop environmental engineering knowledge and ready to do lifelong learning
	LO-11	Have professional ethics (honest and responsible) in practicing their expertise in the field of Environmental Engineering
Knowledge	LO-12	Mastering the theoretical concepts of sciences, engineering principles needed for analysing environmental problems and the design of environmental management systems in at least one aspect, namely environmental protection, environmental preservation or environmental restoration
	LO-13	Mastering the principles, methodologies and techniques of designing environmental management systems with an integrated approach

The experts note that BoEE names LO as LO1, LO2, etc., whereas the other three programs refer to each LO using the first or second letter of aspect (AT-1, AT-2, GS-1, etc). They believe that the University should ensure uniformity in the presentation of the information.

The following curriculum map is presented for the Bachelor of Environmental Engineering:



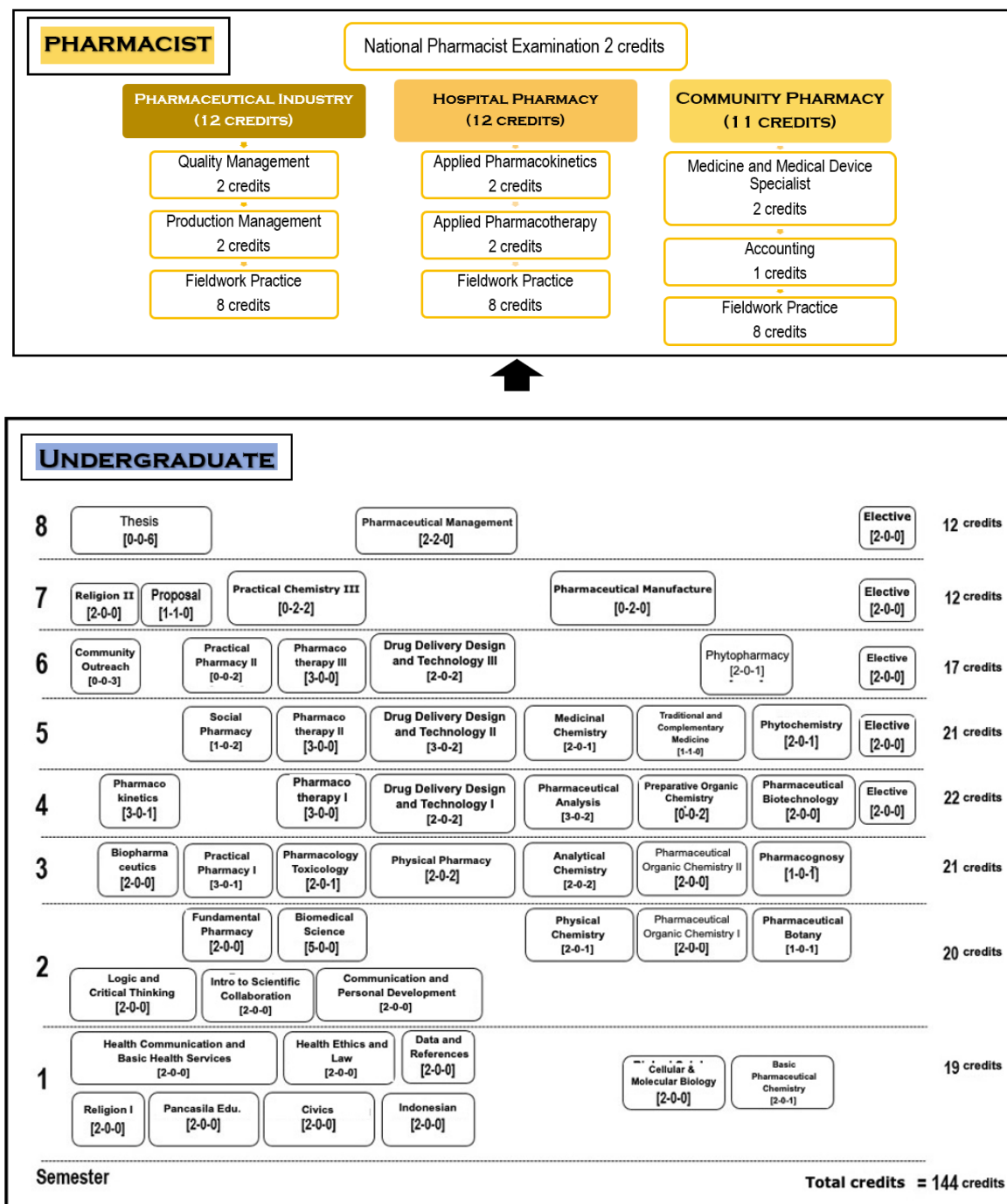
Curriculum Structure. Source: Self-assessment report, UNAIR

Apothecary Education

LEARNING OUTCOMES		
Attitude	AT-1	Realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently
	AT-2	Internalize the spirit of independence, struggle, and entrepreneurship
General Skills	GS-1	Apply logical, systematic, and innovative thinking in the context of science and technology development, review its outcome, and apply the humanity values to create solution, idea, design and scientific description as a thesis or a final report
	GS-2	Make decisions correctly in the context of problemsolving based on analyzing information and data, document and assure data validity, and prevent plagiarism
	GS-3	Perform independent, measurable, and quality performance, do a group work, supervise workers under their responsibility, and develop networks with mentors, associates, and colleagues in and out of the institution
Special Skills of Bachelor degree	SS-1	Prepare pharmaceutical products (drugs, traditional medicines and cosmetics) covering aspects of the formulation, manufacture and quality assurance based on logical, critical, systematic, and innovative thinking
	SS-2	Assess the scientific validity of drug-related information by considering legal, ethical, professional, sociocultural, and economic aspects for the benefits of patients
	SS-3	Conduct scientific review, research, publish the results, and be able to communicate and responsible for the results on the basis of scientific rules and principles
	SS-4	Inform and communicate pharmaceuticals, special drug group & medical supplies to patients, colleagues, communities and health professionals based on the principle of rational drug therapy
	SS-5	Communicate ideas and information in pharmaceutical field effectively, through various forms of media to the academic community, and support preventive and promotive efforts to improve the quality of public health
	SS-6	Make the right decisions in supervising and evaluating the pharmacy work based on the data analysis, government law and regulation, and professional code of ethics
	SS-7	Manage independent learning to catch up with science and technology development in the field of pharmacy
Special Skills of Professional degree	SS-8	Manage and serve the demand of pharmaceutical and medical devices according to the prevailing standards, either by prescription or non-prescription, accurately and safely.
	SS-9	Perform formulation, manufacturing and quality assurance of pharmaceutical preparations, on the basis of pharmaceutical science and technology
	SS-10	Be introspective and do self development according to the development of pharmaceutical science and technology

Knowledge of Bachelor degree	K-1	Explain fundamental and applied basic sciences, basic medical sciences and basic social sciences to support the pharmaceutical sciences
	K-2	Explain basic principles of pharmaceutical science and technology relevant to the drug development, from the invention to the marketing aspect of new pharmaceutical products.
	K-3	Explain the concept of quality control for drug raw material and pharmaceutical preparations (drugs, traditional medicines, and cosmetics), food and beverages in accordance with scientific principles and standards
Knowledge of Professional degree	K-4	Uphold professionalism, moral, ethical, and legal aspects, in the practice of pharmacy
	K-5	Perform pharmaceutical care and collaborate with patients, colleagues, and other health professionals by considering all legal, ethical, professional sociocultural, and economic aspects to ensure the rational drug therapy and participate in preventive and promotive efforts

The following curriculum map is presented for the Apothecary Education study program:

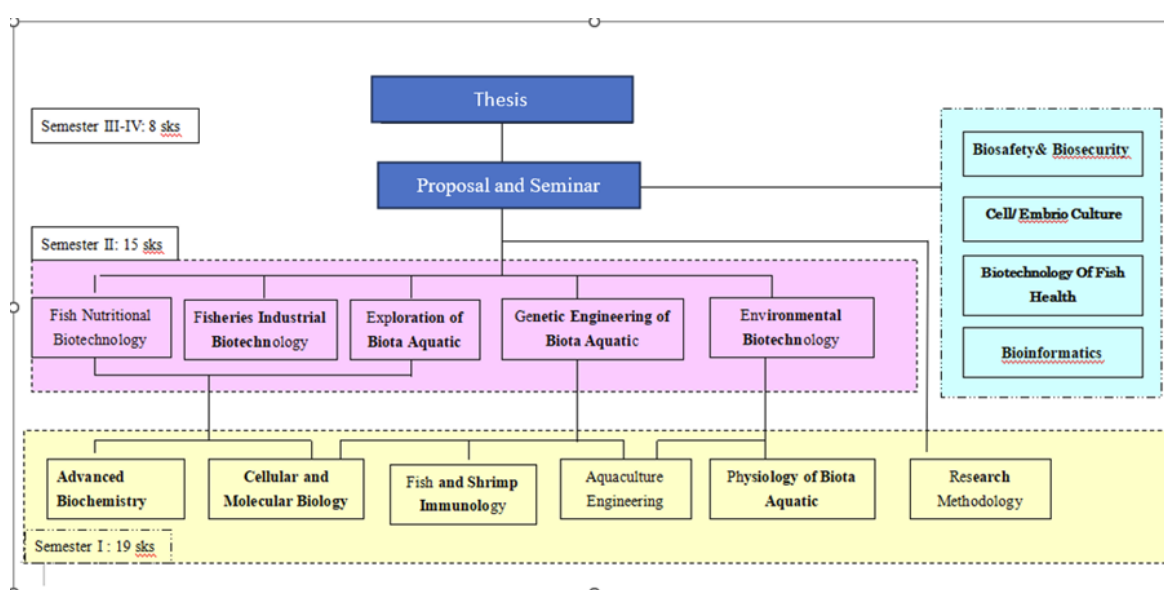


Curriculum Structure. Source: Self-assessment report, UNAIR.

Master of Fisheries and Marine Biotechnology

LEARNING OUTCOMES		
Knowledge	K1	Be able to master theories and applied theories of fisheries and marine biotechnology to improve quality fisheries and marine products (Decision Maker, Researcher, Manager, and Planner).
	K2	Be able to master the theories and applied theories of fisheries and marine biotechnology to manage quality aquatic environments in fisheries and marine culture (Decision Maker, Researcher, Manager, and Planner).
Specific Skills	SS1	Be able to develop science and technology in the field of biotechnology of aquatic biota health to improve fisheries and marine products based on academic values, norms, and ethics (Researcher, Planner).
	SS2	Be able to optimize biotechnology-based disease prevention methods to support fisheries products according to their professional responsibilities (Researcher, Manager, Planner)
	SS3	Be able to develop aquatic biota engineering to generate aquatic biota which are resistant to pathogenic infections and environmental changes based on academic values, norms, and ethics (Decision Maker, Researcher, Planner)
	SS4	Be able to improve and manage biotechnology-based quality aquatic environments to support the production of fisheries products prioritizing social sensitivity and care for society and environment (Decision Maker, Researcher, Manager, Planner)
	SS5	Be able to optimize biotechnology-based aquatic culture methods to improve the production of fishery and marine products according to their professional responsibilities (Researcher, Manager, Planner)
	SS6	Be able to develop formulation and aquatic feed products supporting the improvement of fisheries products based on experimental studies on data and information (Decision Maker, Researcher, Manager, Planner)
	SS7	Be able to develop excellent biotechnology-based fishery and marine product industries based on religious morality (Researcher, Manager, Planner)

The following curriculum map is presented for the Master of Fisheries and Marine Biotechnology study program:



Curriculum Structure. Source: Self-assessment report, UNAIR