



**ASIIN Seal**

# **Accreditation Report**

**Bachelor's degree programmes**  
***Aquaculture***  
***Food Science and Technology***

Provided by  
**Hasanuddin University, Makassar**

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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 <sup>1</sup>	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) <sup>2</sup>
Sarjanaperikanan (SPI)	Bachelor of Science in Aquaculture	ASIIN	-	08
Sarjana Teknologi Pertanian	Bachelor of Agricultural Technology	ASIIN	-	08
<p><b>Date of the contract:</b> 30.08.2018</p> <p><b>Submission of the final version of the self-assessment report:</b> 30.10.2018</p> <p><b>Date of the onsite visit:</b> 19.02 – 21.02.2019</p> <p><b>at:</b> Makassar, Indonesia</p>				
<p><b>Peer panel:</b></p> <p>Prof. Dr. Siegfried Bolenz, University of Applied Sciences Neubrandenburg</p> <p>Prof. Dr. Harry Palm, University of Rostock</p> <p>Dr.-Ing. Oliver Schlüter, Leibniz-Institute of Agricultural Technology and Bio-Economy</p> <p>Muhammad Farisan Auzan, Brawijaya University, student</p>				
<p><b>Representative of the ASIIN headquarter:</b></p> <p>Christin Habermann</p>				
<p><b>Responsible decision-making committee:</b></p> <p>Accreditation Commission for Degree Programmes</p>				

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1 ASIIN Seal for degree programmes;

2 TC: Technical Committee for the following subject areas: TC 08 - Agriculture, Nutritional Sciences and Landscape Architecture.

<p><b>Criteria used:</b></p> <p>European Standards and Guidelines as of 15.05.2015</p> <p>ASIIN General Criteria, as of 28.03.2014</p> <p>Subject-Specific Criteria of Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture as of 27.03.2015</p>	
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## A Characteristics of the Degree Programmes

a) Name	Final degree (original/English translation)	b) Areas of Specialization	c) Corresponding level of the EQF <sup>3</sup>	d) Mode of Study	e) Double/Joint Degree	f) Duration	g) Credit points/unit	h) Intake rhythm & First time of offer
Ba Aquaculture	Sarijanaperikanan (SPi) / Bachelor of Science in Aquaculture		6	Full time	no	8 Semester	144 Indonesian Credits (245 ECTS)	Each year in August 1996
Ba Food Science and Technology	Sarijana teknologi Pertanian / Bachelor of Agricultural Technology		6	Full time	no	8 Semester	145 Indonesian Credits (247 ECTS)	Each year in August

For the Bachelor's degree programme Aquaculture UNHAS has presented the following profile in the self-assessment report:

"The Bachelor's Programme Aquaculture has been established in 1996 and since then aims at producing graduates who have personality and the ability for scientific interaction and who are able to apply science and technology in aquaculture, with an emphasis on coastal aquaculture. The aim of this programme is in line with the ASP vision.

### Vision of the Programme

To become the centre of excellence in education, research, community service of coastal aquaculture in Indonesia by 2030.

### Mission of the Programme

To achieve this vision, the Aquaculture Study Programme has established the following missions:

1. Implement demand-oriented education and the development of marine and fisheries development
2. Develop research excellence in the field of marine and fisheries (orientation of national and international reputation requirement)
3. Develop policy recommendations for the central and local government-based research in the field of maritime affairs and fisheries

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<sup>3</sup> EQF = The European Qualifications Framework for lifelong learning

4. Provide assistance and advocacy to the community and the business world in the field of marine and fisheries
5. Develop partnerships/collaboration with marine and fisheries with reputable institutions nationally and internationally

For the Bachelor's degree programme Food Science and Technology UNHAS has presented the following profile in the self-assessment report:

"The Food Science and Technology study programme at Hasanuddin University has expressed its purpose in its vision and missions. The vision is to become one of the leading education, research and development centres of Food Science and Technology in Indonesia in supporting the food agro-industry according to continental maritime-based cultural values. To support this vision, the study programme follows two missions:

1. To produce Bachelor graduates who are proficient and skilled in the field of Food Technology as well as broad-minded and personable with high moral and ethical standards
2. To implement the educational activities, researches, and community services for the development of Food Technology in supporting the food agro-industry."

## B Peer Report for the ASIIN Seal

### 1. The Degree Programme: Concept, content & implementation

<b>Criterion 1.1 Objectives and learning outcomes of a degree programme (intended qualifications profile)</b>
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#### Evidence:

- Self-Assessment Report
- Discussions during the audit
- Study plans of the degree programmes
- Module Descriptions
- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

#### Preliminary assessment and analysis of the peers:

The peers refer to the Subject-Specific Criteria (SSC) of the Technical Committee 8 – Agriculture, Nutritional Sciences and Landscape Architecture as a basis for judging whether the intended learning outcomes of the Bachelor's degree programme Aquaculture (ASP) as well as the Bachelor's degree programme Food Science and Technology, as defined by UNHAS, correspond with the competences as outlined in the SSC. They come to the following conclusion:

According to the self-assessment report, graduates of the Aquaculture degree programme are capable to work in several professions, especially instructors, researchers, fish farmers and extension officers. The competencies, which must be acquired by each student, are the following:

1. Instructor: Being able to manage the process of aquaculture from the early development stages to the rearing process of cultivated species
2. Researcher: Being able to examine and conduct experiments in the field of feed and feeding, water quality management, aquaculture engineering as well as fish disease control
3. Fish farmers: Being able to operate fish hatchery, rearing and growing out ponds of

a cultivated organism

4. Extension officer: Being able to demonstrate the process of aquaculture and choose the appropriate aquaculture methods, which meet local community needs.

The Intended Learning Outcomes (ILO) of the Bachelor's degree programme Aquaculture fulfil the Indonesian Qualification Framework (IQF) standard for undergraduate education and are in line with the faculty's mission and vision. The consistency with the university's mission is achieved by producing graduates with strong enthusiasm to learn and master the knowledge of aquaculture as well as related topics. ASP has also formulated ten Intended Learning Outcomes (ILOs), which cover three elements: attitude, knowledge and skills; the latter is divided into generic and specific skills (s. annex).

Judging from an objectives-matrix that links the ten ILOs to the Subject-Specific Criteria for Bachelor's degree programmes Aquaculture as well as an objective-module-matrix that delineates in which modules students learn the skills purposed in the ILOs, the peers see that the objectives and intended learning outcomes of the Bachelor's degree programme Aquaculture are suitable to produce qualified graduates. They wonder, however, why the study programme's emphasis on coastal aquaculture, as outlined in the study programme's vision, is reflected neither in the ILOs nor in the curriculum. As is stated, the programme envisions "to become the centre of excellence in education, research, community service of coastal aquaculture in Indonesia by 2023), yet the ILOs do not mention coastal aquaculture but aquaculture in general. During the discussion with the university representatives, the peers learn that the central Indonesian government demands that each Aquaculture study programme in Indonesia must have a unique focus to distinguish them from each other. The peers understand this demand, yet they emphasize that they are not able to find the content of coastal aquaculture when studying the curriculum of the programme. The university explains that coastal aquaculture is indeed taught, yet it is not visible and transparent in the module descriptions and the study plans. The peers strongly urge UNHAS to redraft the documents to make unequivocally clear the coastal aquaculture focus of the study programme (s. criterion 5.1)

With regard to the job market perspectives and practical relevance of the field of aquaculture, UNHAS states in the SAR that aquaculture is the fastest-growing food production sector and an important component in many poverty alleviation and food security programmes in Indonesia. As Indonesia has such a huge aquaculture potential, the need for qualified workers is constantly rising and chances of employment after graduating from UNHAS are adequate. Information on graduate placement in the labour market is conducted through a continuous tracer study every five years, yet data is also regularly added to the study through information gathered on various social network platforms. The peers

learn that around 80% of the graduates are employed in the field of coastal aquaculture and 14% are employed as entrepreneurs. In the discussions with the students, the peers also learn that the students are very confident in finding a job after graduating and that many of them are interested in continuing their studies. They acknowledge that there is sufficient support for the students regarding their strategies for finding a suitable career (s. criterion 1.4). The peers also notice that only 5% of the graduates continue to the Master's Programme and inquire why. The faculty explains that a Master's Degree is not compulsory for a career in Indonesia, an opinion the stakeholders and employers agree with. Positions in the government, for example, do not yet require a Master's Degree. However, universities in Indonesia nowadays require a M.Sc degree for their recruits and such a low percentage of students continuing their degree counteracts the attempt of UNHAS to gain national and international reputation. The university and the faculty should think about strategies to increase the number students interested in a higher degree program, national or international, in aquaculture.

Graduates from the Bachelor's degree programme Food Science and Technology may continue their education and pursue a Master's Degree. They are also able to find employment in the food processing industry, the plantation sector, become a researcher at a respective research institute or an entrepreneur of food processing technology. In the discussion with the students, the peers learn that around 80% of the graduates will find employment in plant-related industries but that some also continue their studies at the consecutive Master's Programme at UNHAS that began in 2010.

With regard to the objectives and learning outcomes of the study programme Food Science and Technology, the peers notice that UNHAS has set up a variety of different ILOs for the study programme, among them Intended Learning Outcomes, Project Learning Outcomes and Course Learning Outcomes. The Course Learning Outcomes are to be found in the module description and should aim at precisely describing the skills and knowledge the students will achieve after passing a specific module. The superordinate Programme Learning Outcome and the ILOs (describing the entirety of the study programme) are the same; thus the peers recommend to join PLOs and ILOs. While the peers laude the detailed content description of each module, they assess the Course Learning Outcomes to be very general and would like to see precise learning outcomes established that correlate with the actual content of the modules. As the study programme focusses on cereals, vegetables, cocoa, coffee, and various other products from plant origin, the peers urge UNHAS to depict this unique focus of the study programme in the objectives and intended learning outcomes respectively.

The peers are of the opinion that the objectives and intended learning outcomes of the

Aquaculture study programme are reasonable and well founded and that the study programme is designed to match the set objectives. They correspond with the ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 10 – Agriculture, Food Science and Landscape Architecture.

With regard to the Food Science and Technology Programme, however, the peers agree that the educational objectives and course learning outcomes must be redrafted in a way that they depict the academic, subject-specific and professional classification of the qualifications gained by the graduates of this programme.

<b>Criterion 1.2 Name of the degree programme</b>
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**Evidence:**

- Self-Assessment Report

**Preliminary assessment and analysis of the peers:**

The peers hold the opinion that the English translation and the original Indonesian name of the Bachelor's degree programme Aquaculture corresponds with the intended aims and learning outcomes as well as the main course language.

With regard to the Bachelor's degree programme Food Science and Technology, the peers observe that there exist a relatively small amount of technology and processing within the curriculum and that the focus of the programme appears to be on food science. Even in sessions about plant processing technology, chocolate production and animal product technology the students are not learning about the machinery and technology used in these productions as there exists another study programme at UNHAS – “Agricultural Technology” – where these technologies are taught. When confronted by the peers with the lack of technology in a study programme named “Food Science and Technology”, the university representatives reply that besides the compulsory module “Food Machinery” other technological skills are taught in elective modules, as not all students are interested in the technological aspects of food production. To avoid any misunderstanding with regard to the study title and the taught content, UNHAS must ensure that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

<b>Criterion 1.3 Curriculum</b>
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**Evidence:**

- Self-Assessment Report
- Discussions during the audit
- Study plans of the degree programmes
- Module descriptions
- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

**Preliminary assessment and analysis of the peers:**

The curriculum of the Bachelor's degree programme Aquaculture was developed through a number of meetings and workshops within UNHAS and involved relevant stakeholders such as employers from the industry, lecturers, students and alumni representatives. The programme is based upon six fields of competencies, namely aquaculture system technology, science and technology of feed, hatchery management, aquaculture environment, diseases of aquatic organism as well as the final Bachelor's thesis. The curriculum is structured in a way that modules are consecutive. As such, the four-year Bachelor's Degree is generally arranged from basic/general courses to intermediate courses up to specialized courses and the final thesis. In the first year, ASP students are introduced to the general concepts of aquaculture. Courses offered here include introduction to Physics, Chemistry and Biology as well as English and Religion. In the second semester, students are introduced to the field of aquaculture. During the second and third year, students build on the existing foundation and learn various specific skills relating to the field of aquaculture.

A more detailed analysis of the presented modules reveals that the focus of the degree programme – “coastal aquaculture” – is not clearly visible within the study program. It is evident that relevant aspects are taught within different modules. However, environmental impact of coastal aquaculture technologies and/or environmental impact assessment is not taught at all. The main profile lines (based on the laboratories) are not easily understandable for the student, suggesting renaming of some modules, and few modules such as laws and regulation or entrepreneurship should be moved because they are more relevant in a later stage of the study program. Finally, the students require extra time during the last two semesters for the community services, the internships and the thesis. Consequently the modules Technology of Seaweed Culture and Aquabusiness seem to be out of place in the 7th semester and should be moved to an earlier place within the curriculum.

At the end of the study program, the students undergo a two weeks practical in each of the four laboratories during their internal practical. Elective courses might help to streamline the seventh semester. Finally, students of the bachelor program are allowed to conduct their internship and final project research simultaneously in large privates or stated-owned aquaculture industries. There must be a clear delineation between the learning outcome of the external practical and the subsequent, possibly in the same institution following research activity for the thesis.

The Bachelor's degree programme Food Science and Technology is also pursued in eight semesters (4 years) and its modules are designed to be consecutive. Thus, in the first year of study, students are provided with basic courses that teach them general knowledge of the natural sciences as well as religion. The second and third year of study are intended to offer the essence of theoretical and practical knowledge of the field of food science and technology. During the fourth and final year, students take up special courses, such as an internship or a research seminar, to develop their practical or research portfolio and will hand in their Bachelor's thesis. UNHAS provides the peers with a detailed study plan that showcases how modules are building consecutively one another and which modules are offered in which semester.

As has been discussed under criterion 1.2, the peers notice that although the study programme is titled "Food Science and Technology" there exist a lack of technological content in the curriculum. They urge UNHAS to ensure that the name of the degree programme corresponds with its curricular content.

During the sixth, seventh and eighth semester, students from both study programmes must complete the community service. The peers discuss with the programme coordinators the content and goal of this course. The programme coordinators explain that community service is compulsory for all Indonesian students. It has a minimum lengths of eight weeks and takes place in villages or rural areas where students stay and live together with the local community. The course is designed "to allow students to apply their knowledge based on own field in order to empower society." Since the community service usually takes place in remote areas, the students cannot attend any classes during this time. The students work in interdisciplinary teams during the community service in order to advance Indonesian society and bring about further development. This course was introduced to all Indonesian universities in 1971. The assessment of the community service consists of a work plan, programme implementation and activity report. The peers understand that students should work for the benefit of the community and the Indonesian society during the community service and support this concept.

Since UNHAS has the goal to become internationally more visible and wants to further internationalise its degree programmes the peers discuss with the programme coordinators if there are any classes taught in English in both study programmes. The programme coordinators explain that the course descriptions and the necessary documents are all available in English, but only a few classes are actually taught in English, e.g. when an international student attends the course. UNHAS's partners from the industry point out that the practical English skills of the graduates could be improved. This is confirmed by the students, who express their sincere wish to have more subject-specific elements taught in English. This could for example be achieved by offering a journal club, where the students read, discuss and present current international papers or seminars with discussions and student presentations in English. In addition, the peers recommend doing poster presentations and oral presentations in English, which will also improve the communication skills of the students. In Food Science and Technology, the students read English literature and they have to hold presentation in English. For the Bachelor's thesis students have to read English literature.

Despite some shortcomings in the curricula of both study programmes, the peers gain the impression that the graduates of both degree programmes under review are well prepared for entering the labour market and can find adequate jobs in Indonesia. During the discussion with the peers UNHAS's partner from the industry/public sector confirm that the graduates have a broad scientific education, are very adaptable, and have manifold competences which allows them to find adequate jobs.

<b>Criterion 1.4 Admission requirements</b>
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**Evidence:**

- Self-Assessment Report
- Discussions during the audit
- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

According to the self-assessment report, admission of new students to UNHAS is possible via different modes of entry (national and local modes). The different modes of entry are designed not only to select the top-quality students from high schools, but also to provide opportunities for high school students from all over Indonesia, especially those from rural areas.

The different modes of entry are:

1. SNMPTN (National Entry Selection of Public Universities), based on academic performance during high school.
2. SBMPTN (Joint Entry Selection of Public Universities), based on a nationwide selection test that is held every year for university candidates.
3. Local admission, these students are selected under special consideration of their education, local origin, social background, achievements in sports or science, and financial means.

Every year, up to 80 new students are admitted to the Aquaculture programme. This quota is composed of 50% (40 students) for the SNMPTN pathways, 30% (24 students) for the SBMPTN scheme and 20% (10 students) for independent admission pathways.

While 80 places are offered, not all students also enrol in the programme. This is due to the fact that aquaculture is not their first choice in applying. However, since 80% of those students applying also enrol in the program, the peers judge the programme to be highly interesting and promising for students.

For Food Science and Technology, 85 new students are admitted to the programme and its quota is composed equally to that of the Aquaculture programme.

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

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

##### *Objectives and Learning Outcomes*

With regard to the Aquaculture degree programme, the peers acknowledge that UNHAS has revised their intended learning outcomes for the aquaculture study programme so that they align with the programme's focus "coastal aquaculture." For example, ILO 5 now reads "able to communicate aquaculture technology into diverse communities and work as a team in the field of coastal aquaculture" and ILO7 now reads "demonstrate good skills in feed formulation and feeding management of cultivated coastal organisms." The peers feel that these new intended learning outcomes focus on the study programmes profile as coastal aquaculture.

With regard to the Food Science and Technology degree programme, UNHAS declares in its statement that it has redrafted the intended learning outcomes so that they describe the academic, subject-specific and professional classification of the qualifications gained

during this programme. The peers agree that after implementation the new ILOs will depict the qualifications in a more precise manner.

#### *Name of the Degree Programme*

UNHAS states that the previous version of the curriculum for the Bachelor's degree programme Food Science and Technology included several modules that focused on processing technology, e.g. food processing technology of animal husbandry and food processing technology of fisheries products. Since the implementation of the current curriculum in 2015, however, the curriculum has focused more on food science and those modules dealing with food technology were no longer mandatory. The programme coordinators understand the peers' criticism with regard to the name of the study programme and plan to reintroduce modules on food technology as a mandatory part of the programme. As a result, all students will not only learn about the production process but also about the necessary machinery. The peers will welcome these changes after their implementation. Module descriptions for these newly introduced modules have also been provided by UNHAS and found sufficient by the peers.

#### *Curriculum*

UNHAS has presented the draft of a new curriculum for the Aquaculture study programme, which specifically focuses on aspects of coastal aquaculture, such as coastal aquaculture commodities or the environmental impact of coastal aquaculture technologies. The programme coordinators have already provided module descriptions for the additional modules in the new curriculum. Thus, UNHAS plans to introduce new modules that focus on specific coastal aquaculture species, such as crustacean aquaculture, microalgae aquaculture or crab aquaculture. Additionally, modules have also been drafted that focus on handling parasites and fish disease as well as the environmental impact of coastal aquaculture. The peers are of the opinion that these additional modules will aid in sharpening the profile "costal aquaculture" of the study programme.

Similarly, UNHAS has presented module descriptions of modules focusing on food technology for the Bachelor's programme Food Science and Technology. The peers see that after being implemented they will aid the students in not only understanding the production process, but also the technology involved.

UNHAS presents a detailed schedule to depict that the new curriculum and the new intended learning outcomes will be approved by the University Senate in June 2019 and thus can be implemented for all new students who enrol in August 2019. The peers recognize that UNHAS has worked diligently in providing new curricula. They are looking forward to receiving the approved version of the documents.

The peers have also recommended to redesign the curriculum of the both degree programmes so that students may complete a longer period of vocational training without any prolongation of their studies. With regard to the Bachelor's degree programme Aquaculture, UNHAS states that the new curriculum will ensure that students may also complete a longer period of vocational training. This is possible as in the new curriculum, the internships are solely conducted in commercial aquaculture industries and students must no longer attend two-months long internships in the four laboratories before visiting the industries. In the new curriculum, modules are introduced that teach the students how to work in laboratories so that no specific internships are necessary to gather those skills. Also, students are no longer required to write an internship report but must instead fill out a log book detailing the activities of their internship. The peers laude the steps UNHAS has already taken in allowing the students to partake in a more extensive vocational training.

In summary, the peers consider that criterion 1 will be mostly fulfilled after implementation of the changes already announced.

## 2. The degree programme: structures, methods and implementation

### Criterion 2.1 Structure and modules

#### Evidence:

- Self-Assessment Reports
- Study plans of the degree programmes
- Module descriptions
- Discussions during the audit
- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

#### Preliminary assessment and analysis of the peers:

The curriculum of the Bachelor's degree programme Aquaculture is aligned with the national standards in Indonesia and is formulated and classified into three fields of knowledge: ASP core knowledge, supporting science and technology as well as university identity. The cluster of ASP core knowledge in itself consists of six fields of competencies, namely aquaculture system technology, science and technology of feed, hatchery management, aquaculture environment, diseases of aquatic organisms and the final task.

The peers notice, that the profile of the study programme is rather broad and enables students to acquire knowledge in various areas of aquaculture. As has been discussed under criterion 1.1, the peers express their wish to see the curriculum clarify the study programme's focus on coastal aquaculture. As the respective profile states, the programme prepares the students for employment in various areas (s. criterion 1.1). Yet, the peers believe it would support the individual career profile of the students if different profile paths were created within the curriculum from which the students can select different elective modules that aim at their own interests and career plans. Although the curriculum covers different themes of aquaculture, the peers notice that the fundamental subject of "environmental impact" of different aquaculture technologies is missing from the curriculum and ask UNHAS to add according modules to the curriculum.

In their fourth year of studying, each student must undertake two internships: one internship in the laboratories of the Aquaculture Faculty and a subsequent internship with an industry or company. During the eight-week internal laboratory internship, students visit four different laboratories, each one for two weeks, and gain skills in the fields of fish diseases or parasites. The practical internship lasts four weeks and may be undertaken at a local industry related to the study programme. During the discussion with the students, the peers learned that the students felt that this internship was extensive and required much time. Instead, students would rather spent more time conducting an internship at a company or focus their internship on one or two laboratories that match their interests. The peers agree with the students and advice UNHAS to redesign the curriculum so that students can either select among the different laboratory classes or have more time for a vocational training or internship outside of the laboratories.

The Bachelor's degree programme Food Science and Technology is based upon a consecutive curriculum that provides a good level of knowledge that increases from semester to semester. While the first year of study provides basic courses, which concern general knowledge in areas not necessarily related to the chosen study programme, the second and third semester focus on the theoretical and practical application of food science and technology. During the fourth year of study, students focus on their community service, their internship, their research seminar as well as their final thesis. There exists a variety of electives for this programme and the peers learn that they are offered on a regular basis and require a minimum of five student participants. Yet, as has been discussed under criterion 1.2, most of the modules concerned with food technology are offered as electives with "Food Machinery" being the only related compulsory module. In addition, the programme strongly focusses on plant-based products while products from animal origin are underrepresented. The peers thus urge UNHAS to ensure that the name of the degree pro-

gramme corresponds with its intended learning outcomes and its curricular content. Alternatively, more modules dealing with processing technology must become compulsory, including at least one module targeting processing food from animal origin.

During the on-site visit, the peers learn that in each semester, students visit factories or industries for a duration of 1-3 days. Additionally, student may undertake a longer internship within small or medium-sized food enterprises for which they gain 3 ECTS no matter the lengths of the internship, which allows flexibility to both the student and the company he wants to intern with. While the internship is not a mandatory part of the curriculum, students confirm that this internship enhances their skill-set and their professional attitude and supports them in finding employment after graduation.

#### *International Mobility*

The peers acknowledge that there exist student mobility within both degree programmes and that students are able and willing to spent a semester abroad, mostly in Japan, Thailand or South Korea. While international students are few in both study programmes, the peers agree that sufficient support is existent. They also learn that national study programmes are set up to support students in studying abroad and that students may also apply for additional programmes such as the DAAD (German Academic Exchange Service). The peers appreciate the effort to foster international mobility and support both faculties in further pursuing this path.

### **Criterion 2.2 Work load and credits**

#### **Evidence:**

- Self-Assessment Report
- Study plans of the degree programmes
- Module Descriptions
- Discussions during the audit

#### **Preliminary assessment and analysis of the peers:**

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

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

In comparison to the ECTS credit system, wherein 1 ECTS equals 25-30 hours of students' workload, it is determined that 1 CP is awarded for different amounts of workload, depending on the kind of studies. As such, for lecture sessions, one credit point equals 50 minutes, while one credit point for practical session is awarded for 3 hours of work. Both study programmes offer between 19 and 23 credit points per semester. The number of credit points that the students may take depends on their average GPA, yet the maximum amount of credit points is 24. The students' workload (contact hours and self studies) is measured in Indonesian credit points (CP), and converted to the European Credit Transfer System (ECTS). The extent of studies required for the BSN degree is 144 CP (234.08 ECTS) and for the PN degree 36 CP (67.20 ECTS). An average workload of 1500 hours is needed for one academic year, which corresponds to 60 ECTS. One ECTS equals 25 hours of students' workload.

To obtain a bachelor degree in Aquaculture, students must pass a minimum of 144 Indonesian credit points, which corresponds to 245 ECTS. To obtain a Bachelor's Degree in Food Science and Technology, students must pass a minimum of 145 Indonesian credit points, which correspond to 247 ECTS.

The peers confirm that the workload in hours is indicated in the module descriptions and the distinction between classroom work and self-studies is made transparent and is in line with the credits awarded.

The average study of the students for both study programmes is 9 semester. The programme can be extended, yet the peers are satisfied to hear that most students are capable to finish their studies in due time. The peers ask why the students have to prolong their studies by one Semester and they learn that many students are taking up work next to university. Before, the average study time was 10 semester.

UNHAS provides statistical data about the average length of studies and the number of dropouts. According to the data, the average length of studies in both study programmes is 4.5 years or nine semesters. The students claim that this is due to all the written examinations and the paper reports and also due to the fact that they have a final thesis or work next to studying.

The peers see that almost all students complete the degree programmes, for example, there are only between 1 to 4 students that drop out the Aquaculture every year, the numbers are similar in the BSN-PN programme (0 to 4 dropouts from 2014 to 2018).

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

The peers discuss with the programme coordinators and the students about the length of

the Community Service, the internal and external internships and the Bachelor's thesis, the related workload, and the awarded credit points. They gain the impression that the students regularly spent more time on the Community Service and the Bachelor's thesis than expected. Since the workload of the students was only estimated by the programme coordinators and seems to be too low in comparison to the actual time needed by the students, they suggest asking the students directly about their experiences. This could e.g. be done by including a respective question in the course evaluations. In any case, UNHAS must make sure that the actual workload of the students and the awarded credits correspond with each other.

### **Criterion 2.3 Teaching methodology**

#### **Evidence:**

- Self-Assessment Report
- Study plans of the degree programmes
- Module Descriptions
- Discussions during the audit

#### **Preliminary assessment and analysis of the peers:**

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

During the classes, active and interactive teaching methods (e.g. lectures, discussions, reports, presentations, and group work) are applied. UNHAS wants to encourage the students to gain knowledge from different scientific areas and wants to introduce them to research activities. This should ultimately contribute to the transition from a teacher centred to a student centred learning approach.

In 2009, UNHAS has introduced an online Learning Management System (LMS) in order to monitor the teaching methodology that is applied and make accessible the various course materials. Therefore, each teacher or professor must upload his or her teaching materials and working procedures on LMS.

In summary, the peer group judges the teaching methods and instruments to be suitable

for supporting the students in achieving the intended learning outcomes.

<b>Criterion 2.4 Support and assistance</b>
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**Evidence:**

- Self-Assessment Report

**Preliminary assessment and analysis of the peers:**

UNHAS offers a comprehensive advisory system for all undergraduate students. The offers can be divided into two types: academic support and non-academic supports. Academic advice includes the academic advisors, the Counselling and Advisory Centre, the Student Affair Unit, the programme coordinators, the Vice Dean for Academic Affairs and Development, and the supervisors for the Bachelor's thesis. Non-academic supports comprises the University Hospital, the Sports Centre, the Language Centre, the Alumni and Career Planning Centre, the Central Library, computer laboratories, and student dormitories.

At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for a group of 20 students from his classes. He is a student's first port of call for advice or support on academic or personal matters.

The role of the academic advisor is to help the students with the process of orientation during the first semesters, the introduction to academic life and the university's community, and to respond promptly to any questions. They also offer general academic advice, make suggestions regarding relevant careers and skills development and help if there are problems with other teachers. The students confirm during the discussion with the peers 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.

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

The programme coordinators are responsible for developing the study guides and monitor-

ing academic activities. The Vice dean for Academic Affairs and Development has the overall responsibility for the academic activities and the degree programmes.

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

The students confirm towards the peers that they are supervised in the working/research group during their work on the Bachelor's thesis. There are regular lab meetings where the students present their results and receive feedback from the other lab members.

All students at UNHAS have access to the Learning Management System (LMS). By using LMS, lecturers can upload their syllabus and learning materials or modules as well as assignment for students. Through LMS, students can also interact with other students and lecturers.

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

The peers judge the extensive advisory system to be one of the strong points of UNHAS.

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

*Modules taught in English*

With regard to the peers' recommendation of teaching more modules in English to increase the internationalisation of the degree programmes, UNHAS states that a number of modules have already been taught in English earlier this year and that the number will gradually increase over the following semesters. The peers commend this undertaking.

*Work Load and Credits*

For the Bachelor's degree programme Aquaculture, UNHAS comments in its statement that all final tasks for the ASP students, namely the internship, the community service and the Bachelor thesis, have been evaluated recently to assess whether the actual workload corresponds with the credit points awarded. For the final project, the actual time spent by

students varies based upon the topic of research, e.g. research topics on growing aquatic organisms require two months, whereas research on larvae requires less time. Based on this calculation, UNHAS concludes that the 6 CP awarded for the final thesis are reasonable compared to the actual workload of the students. Since late 2018, the community services is set up for a duration of four weeks. Thus, UNHAS explains that the 4 CP awarded for the community services corresponds with the students' workload. Students conducting their internship in industries or government institutions must follow the office hours, which normally amount to 8 hours/day, 5 days/week. As the internship lasts for about three months, UNHAS states that the workload of the students corresponds with the 5 CP awarded.

For the Bachelor's degree programme Food Science and Technology, UNHAS outlines the work students have to undertake in both the community service and the final thesis. For the community service, 6,8 CP are awarded and for the final thesis students gain 10,2 CP, which corresponds to the student's workload in both projects.

The peers recognize that UNHAS has re-assessed whether the workload corresponds with the awarded credit points. They can follow UNHAS's reasoning.

As such they regard criterion 2 as fulfilled.

### 3. Exams: System, concept and organisation

<b>Criterion 3 Exams: System, concept and organisation</b>
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**Evidence:**

- Self-Assessment Report
- Module Descriptions
- Sample exams and theses

**Preliminary assessment and analysis of the peers:**

According to the self-assessment report, the students' academic performance in the Aquaculture as well as the Food Science and Technology programme is evaluated based on their attendance and participation in class, their practical work and reports, assignments, homework, presentations, mid-term exam, and the final exam at the end of each semester. The form and length of each exam is mentioned in the course descriptions that are available to the students via UNHAS's homepage and the Learning Management System.

The written exams can be multiple choice, quizzes, or essays. In addition, there are oral exams, especially for assessing the laboratory work. The students are informed about mid-

term and final exams via the Academic Calendar. The final grade is the result of the different activities in the course (e.g. laboratory work, mid-term exam, the final exam, quizzes or other given assignments).

Based on the academic regulation, to be eligible to take final exam, students must attend at least 80% of the total course sessions. The results of the final exams will be announced online within two weeks after the exam period. Students, who fail the exam, must retake the course in the following year. The failed courses can be re-taken as often as necessary. If a student's GPA does not reach 2,00 out of 48 credits at the end of the fourth semester, he is ejected for academic reasons.

The peers discuss with the students how many and what kind of exams they have to take each semester. They learn that for each course there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or oral tests. The final grade is the sum of the sub exams. The students appreciate that there are a several short exams instead of one big exam and confirm that they are well informed about the examination schedule, the examination form and the rules for grading.

At the end of the first two years, the students' academic achievements are evaluated to determine whether they can continue their studies or must leave the faculty. Students may continue their studies if they acquire at least half of the expected credits and have a GPA of  $\geq 2.00$ . According to the programme coordinators, most dropouts in both programmes are due to students failing this evaluation. Only few students leave the degree programmes for other reasons and the total dropout rate is rather low (approximately 5 %). The peers see that only a few students do not complete their degree, but they suggest registering the real dropout rate for all degree programmes and distinguishing between students failing the examination after two years and students leaving on their own decision.

Every student is required to do a final thesis in the fourth year of studies. Prior to the actual research work, the students are required to write a research proposal and present it in a seminar attended by lecturers and other students. The research proposal has to be accepted by the Dean, who will then appoint the research supervisors. Usually, there are 2-3 research supervisors for each student. One will act as the principal supervisor and the others act as co-supervisors. After completing the work on the Bachelor's thesis, the student has to present and defend the results in front of teachers and fellow students.

During the discussion with the students the peers inquire how many exams they have to take and which forms these exams take. They learn that for each course there exist one mid-term exams and one final exams as well as additional practical assignments or oral tests. The students appreciate the various exams instead of just having one final exam as this forces them to continuously study during the entire semester and not having to solely

work for one final exam at the end of the semester. The students also confirm that they are well informed about the examination schedule and the rules for grading as the latter is published in the Standard Operational Procedure (SOP) of UNHAS.

The high amount of written examinations reflects in the eyes of the peers that the students mostly learn by heart. Since there are the only a few oral assignments, the peers suggest stronger aligning the form of examination with the intended learning outcomes of the respective module and introducing more competence-oriented examination methods like oral tests or presentations. The faculty is setting the rule that there must be one written exam per module. Yet, the peers recommend to change this to allow for a more specific examination of the intended learning outcomes. The students confirm that while there are indeed other forms of examinations, such as oral examinations, they mostly take written exams but would like to reduce this.

While the precise form and length of each exam is not anchored in the module description (s. criterion 5.1), the peers learn that the students are notified about the date and form of the exams at the beginning of each semester in the form of a learning contract.

The peers discuss with the programme coordinators, the members of the teaching staff, and the students about the process of finding suitable topic of the Bachelor's thesis. Basically, there are two possibilities. Either students can propose their own ideas or they can ask their academic advisor or other teachers for suggestions. Furthermore, the courses "research methodology" in the nursing programme and "research seminar I +II" in the pharmacy programme are designed to prepare students for doing research and finding suitable topics for their Bachelor's thesis.

The peers also inspect a sample of examination papers and final theses and are overall satisfied with the general quality of the samples. They confirm the high standard of the Bachelor's theses.

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

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

The peers acknowledge that UNHAS is planning on introducing skill examinations for the laboratory-based courses, such as the application of laboratory techniques, in order to stronger align the form of examination with the intended learning outcomes.

The peers consider criterion 3 to be fulfilled.

## 4. Resources

<b>Criterion 4.1 Staff</b>
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**Evidence:**

- Self-Assessment Report
- Staff Handbook
- Discussions during the audit
- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

**Preliminary assessment and analysis of the peers:**

At UNHAS, the staff members have different academic positions. There are professor, associate professor, assistant professor and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full professor needs to hold a PhD degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision depend on the academic position. The main difference of tasks and responsibilities based on academic staff position lies on the proportion of teaching and research activities. The higher the academic staff position is, the greater is the proportion of research activities, but the lower is the proportion of teaching activities.

The Bachelor's degree programme Aquaculture is one of six study programmes within the Faculty of Marine Science and Fishery, which is supported by 25 staff members. Of those, 5 are professors, 8 are associate professors and the remaining 12 are senior lecturers. Currently, two members of the teaching staff attain their doctorate so that within three years, 90% of the staff will hold a doctoral degree. The peers learn that many members of staff have attained their doctorate abroad, in Germany, Japan or in Australia.

The Bachelor's degree programme Food Science and Technology is supported by 18 academic staff members, with 5 fulltime professors, three full-time associate professors, ten full-time assistant professors and three supportive members of staff. In addition, guest lecturers from other national and international universities frequently visit UNHAS.

All academic staff members are involved in teaching, but the module coordinator can only be chosen from academic staff at senior lecturer level and above. All teachers are also responsible for advising students and supervising Bachelor's degree theses (either as main or as co-supervisor). With respect to research activities, associate lecturers are required to publish their research in national journals, senior lecturers and associate professors are

required to publish papers in an accredited national journal and/or international journal, while professors are required to publish their papers in reputable international journals

During the discussion with the programme coordinators the peers learn that UNHAS has a semi-autonomous status, which allows them to recruit their own staff members. However, the Indonesian Ministry of Higher Education still decides how many new staff members can be hired every year. The staff members are in general satisfied with the existing opportunities for pursuing their research interests. International publications are the goal and the key performance indicator for evaluating the research quality of the teachers.

In summary, the peers confirm that the composition, scientific orientation and qualification of the teaching staff are suitable for successfully implementing and sustaining the degree programmes. They notice however, that while the number of enrolled students in the Food Science and Technology programme has nearly doubled, the number of staff has not increased. The peers see that there are just barely enough professors and lecturers to run the lecture and seminars of the study programme. They notice, however, a substantial lack in the number of laboratory staff supporting the students in their practical education, which are oftentimes substituted by students from higher semesters. While the peers see that this is a great opportunity for students to gain more teaching experience, the students will not be able to run and maintain scientific equipment on a continuous basis. Practical education on a sophisticated level can only be done by experienced members of staff. Thus, the peers strongly recommend to increase the number of laboratory staff to match the increasing number of students.

In summary, the peers confirm that the composition, scientific orientation and qualification of the teaching staff are mostly suitable for successfully implementing and sustaining the degree programme, albeit noting the lack of professional laboratory staff. The only other weak point they identify with respect to the qualification of the teaching staff is the fact that most of the staff members are also graduates from UNHAS. For this reason, they recommend also hiring new staff members that graduated from other universities. At least, UNHAS should make sure that the staff members spent some time abroad or at another Indonesian university after their graduation from UNHAS before hiring them permanently (for example by sending them abroad for doing a PhD).

The auditors are impressed by the excellent and open-minded atmosphere among the students and the staff members. It is supported by an extensive advisory system, which ensures that every student has an academic advisor. This atmosphere of understanding and support is one of the strong points of the degree programmes.

#### Criterion 4.2 Staff development

**Evidence:**

- Self-Assessment Report
- Staff Handbook

**Preliminary assessment and analysis of the peers:**

UNHAS encourages the training of its academic staff so it has developed a programme for improving the didactic abilities and teaching methods. According to the self-assessment report to further improve teaching skills, UNHAS regularly offers workshops for staff members. They cover basic principles of learning and teaching, curriculum planning, and assessment of learning and teaching.

Moreover, every staff member has the opportunity to attend conferences, seminars, or workshops outside UNHAS in order to promote their professional development and expertise. UNHAS supports the professional development of its personnel by allowing them to take two trainings per year for independent study if the employee's supervisor and head of the unit (Dean) agree.

The peers support the strategy to send academic staff members to international universities to pursue a higher academic degree (Master's or PhD). This will not only foster academic expertise and knowledge, but also improve the English proficiency and promote the internationalisation of the degree programmes.

The peers discuss with the members of the teaching staff about the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at UNHAS. Since UNHAS wants to become internationally more visible the peers recommend to further increase the efforts to improve the English proficiency of the teaching staff. This would also allow to offer more subject-specific courses in English and subsequently foster the internationalisation of UNHAS (see Criterion 2.1)

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

#### Criterion 4.3 Funds and equipment

**Evidence:**

- Self-Assessment Report
- On-site visit of the laboratories, seminar rooms, and libraries

**Preliminary assessment and analysis of the peers:**

According to the self-assessment report, both degree programmes obtain their funding through non-tax state revenues, including student education development donations managed by the faculty. Every year the head of department and head of laboratories propose the budget allocation plan to the faculty. The received funds will then be used to improve equipment and facilities, to support the research of staff members and to aid students in their internships. The staff is also encouraged to actively submit project proposals to the Ministry of Research, Technology and Higher Education or the UNHAS internal grand scheme. The provided budget allocation of the last three years shows a rise in operational budgets as well as research grants.

During the audit, the peer group also visits the laboratories and the classrooms in order to assess the quality of infrastructure and technical equipment. For the Bachelor's degree programme Aquaculture, the peers are generally very satisfied with the available equipment and especially the research spaces. For example, UNHAS holds a marine station on Lampo Island, around 150 km outside of Makassar, with 20 ha of fishing ponds. Here, the students gain hands-on experience in the areas of giant clam breeding and restocking, fish hatchery as well as seaweed culture and processing. As a compulsory part of their study programme, the students will spend a minimum of three days per semester at this research site. The peers are very impressed by this offer and learn that further excursions to other sites are also undertaken and that the students are very excited about these field trips.

During the on-site visit as well as the discussion with the students, the peers acknowledge that the laboratorial spaces cannot host the large amount of students partaking in each class, so that either classes have to be taught twice or thrice or students do not have sufficient time to practice with the equipment. UNHAS was originally built to accommodate 15,000 students; yet currently 35,000 students are enrolled. The programme coordinators agree that new facilities must be constructed to accommodate the rising number of students and they show the peers a new building. The peers acknowledge that UNHAS is in the process of expanding its facilities, yet this new building is only set up for classrooms and not for laboratories. Hence, the peers urge UNHAS to consider constructing new facilities for larger laboratories as well.

For the Aquaculture study programme, the peers notice that in classes such as Parasitology or Water Quality, where 40-50 students attend, there are not enough (stereo)microscopes available for all students to efficiently practice. The programme coordinators explain that students work in small groups and take turns working with the microscope, yet the peers believe that the number of microscopes should nonetheless be increased to allow for sufficient practice of all students. Furthermore, the peers learn from the professors and lecturers that they would like to own a microscope that is connected to a camera so that the

students can follow the teacher's own work with the microscope. The peers agree with this assessment. Similarly, the peers urge UNHAS to add equipment to their laboratory to enhance the qualification of the student, such as a centrifuge and stereomicroscopes. While the staff members responsible for different laboratories display great communication and team spirit and share all their resources, the peers recommend stocking all laboratories with the basic equipment and technology.

In the Bachelor's degree programme Food Science and Technology, there exist four laboratories that the students of this study programme use. In order to accommodate all students, UNHAS offers morning and afternoon classes and divides the laboratories into different working stations to allow students more time for their own practical work. The programme coordinators explain that two laboratory technicians oversee each laboratory and additionally every workstation is supervised by one laboratorial assistant, who tends to be a student from a higher semester. The students explain that they work as lab assistants to gain more practical experience in addition to their own studies. While the peers laude the lab assistants effort, they demand that all students gain enough practical experience during their own studies instead of having to work as lab assistants. Additionally, as stated in criterion 4.1, the peers agree that the number of professional laboratory staff members must be increased to adequately supervise and train the students.

The peers learn that the number of students have doubled (45 in 2015 and 85 in 2018) but that neither the facilities nor the number of teaching staff has been increased to match the increased number of students. To compensate, classes are currently taught parallel. The peers urge UNHAS to increase the spaces in the laboratories, the available equipment and the teaching staff, so that teachers must only teach each class once instead of twice or thrice.

Considering the state of the laboratories and its equipment, the peers are pleased to see that the pilot plant for the production of chocolate and coffee is well equipped and up to modern international standards. All the remaining laboratories, however, do not meet international standards. Buildings and rooms are of poor shape regarding safety, hygiene, media supplies, interior fitting and climate control. The processing lab is too small in order to host pilot plant equipment necessary for teaching fundamentals in industrial food processing. The laboratories also lack most basic equipment, both in quantity and quality: In the chemistry and microbiological labs, the existing glassware and further equipment is not sufficient for teaching fundamental analytical techniques to the given number of students and is of outdated quality. Besides meeting the essentials for adequately teaching the fundamental analytical techniques, the peers would like to see more sophisticated equipment, such as HPLC, GCMF, AAS, PCR, colony counter, or aseptic chamber.

The same applies for the processing lab, which holds both usable and outdated equipment and must be transferred to a pilot plant that includes equipment such as various pumps and continuous heat exchangers for fluid products, double-jacket batch heater and mixer for medium and high viscosity products, evaporators, various dryers, mills and cutters, filling and packaging equipment, refrigerators and freezers. The peers agree that all equipment must either be purchased or, if already available, increased in number to meet the industrial requirements and to prepare each individual student sufficiently for his professional career.

In summary, the peers hold the opinion that for both study programmes new facilities must be constructed in order to host the increasing number of students and to improve the quality of their practical education. Additionally, it must be ensured that laboratory and pilot plant equipment of the Bachelor's degree programme Food Science and Technology meets international standards.

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

*Staff*

In their statement, UNHAS emphasizes that while almost all staff members are graduates from UNHAS, most of them have pursued their postgraduate studies at universities overseas, e.g. in Germany, Japan, Australia or the United Kingdom. Furthermore, UNHAS has implemented a new policy that explicitly supports pursuing a postgraduate degree overseas. For example, staff members under the age of 40 are not allowed to pursue their further studies at UNHAS. The peers commend that UNHAS increases the academic mobility of the staff members. Yet, they recommend also hiring staff members who have not graduated from UNHAS but have studied at an entirely different university.

*Funds and Equipment*

For the Aquaculture study programme, the programme coordinator informs the peers that procurement of the basic laboratory equipment and additional laboratory equipment have been proposed and will be provided by the University within two years. The faculty has established a detailed list of the type of equipment, the quantity and the year it shall be procured. The peers are impressed with the detailed plan of the faculty and wish to hear from the programme coordinators once the first round of equipment will be bought.

With regards to the laboratorial spaces in the Bachelor's degree programme Aquaculture, UNHAS already holds four laboratories that can either hold up to twenty or up to fifty stu-

dents. A number of laboratory sessions are offered each day to guarantee that each student has enough time and space to work in the laboratories. These smaller groups of students then also allow staff to closely monitor and supervise students during their activities. In addition, the new building of Marine Science and Fisheries the peers were already able to visit will soon be finished and allow even more space for students to work in.

For the Bachelor's degree programme Food Science and Technology, UNHAS is committed to relocating the existing laboratory and plans on building a new laboratory that meets international standards. To allow student access to sufficient equipment in a short manner of time, students of Food Science and Technology will share the resources of the Faculty of Mathematics and Natural Sciences in the Science Building. The programme coordinators have handed in a floor plan of the construction of the new building as well as a list of equipment that should be purchased in 2020 and 2021.

The peers appreciate that UNHAS acknowledges their shortcomings with regard to the laboratorial spaces and equipment and believe that once fully updated according to relocating plans, these laboratories will adhere to international standards. Nonetheless, the peers ask that the basic equipment be purchased very soon so that the students can study in a sufficient surrounding utilizing adequate equipment.

The peers thus consider criterion 4 to be not fulfilled.

## 5. Transparency and documentation

### Criterion 5.1 Module descriptions

#### Evidence:

- Self-Assessment Report
- Module Descriptions
- Discussions during the audit

#### Preliminary assessment and analysis of the peers:

The students, as all other stakeholders, have access to the module descriptions via UNHAS's homepage and the digital learning platform.

After studying the module description, the peers confirm that they already include many of the important data such as the teaching method, the workload or the awarded credit points, but that some information remains missing. For both study programmes the module descriptions must distinguish between the admission requirements of a module, the prerequisite to taking the exam and the actual form of examination. The peers noticed, for example, that many module descriptions listed "attendance of 80% " under the form of

examination but found out during the discussion with the programme coordinators that an 80% attendance is a prerequisite for participating in the exam. Moreover, the peers also request that the form, the length and the structure of the exam – although the students are informed about this at the beginning of each semester – must also be anchored in the module descriptions.

In the Bachelor's degree programme Aquaculture, excursions are an important part of the curriculum and regularly take place during each semester. This is not clearly stated and outlined inside the module descriptions.

With regard to the Bachelor's degree programme Food Science and Technology the peers ask UNHAS to specify the intended learning outcomes for each module as it currently reads rather vague and not specific to each module (s. also criterion 1.1).

### **Criterion 5.2 Diploma and Diploma Supplement**

#### **Evidence:**

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

#### **Preliminary assessment and analysis of the peers:**

The peers confirm that the students of both degree programmes are awarded a Diploma and a Diploma Supplement after graduation. The Diploma consists of a Diploma Certificate and a Transcript of Records. The Diploma Supplement contains all necessary information about the degree programme including acquired soft skills and awards (extracurricular, co-curricular, and intra-curricular activities). The Transcript of Records lists all the courses that the graduate has completed, the achieved credits, grades, cumulative GPA, and mentions the seminar and thesis title.

### **Criterion 5.3 Relevant rules**

#### **Evidence:**

- Self-Assessment Report

- Webpage Faculty of Aquaculture: <http://fikp.unhas.ac.id/bdp/>
- Webpage Faculty of Agriculture: <http://fst.agritech.unhas.ac.id/index.php./en/>

**Preliminary assessment and analysis of the peers:**

The auditors confirm that the rights and duties of both UNHAS 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 programme including at the beginning of each semester.

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

UNHAS explains that students must attend at least 80% of the classes to be eligible for taking their final exam and that this policy has been widely recognized by students when entering UNHAS. The peers understand that students are informed about the prerequisites and examinations of each modules, yet they emphasize that information about admission requirements as well as the conditions for the ward of credits must also be included in the respective module descriptions. The peers are glad to learn, however, that the form, length and structure of exams have already been added to the module descriptions of the Bachelor's degree programme Food Science and Technology.

The peers regard criterion 5 as partially not fulfilled.

## 6. Quality management: quality assessment and development

<b>Criterion 6 Quality management: quality assessment and development</b>
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**Evidence:**

- Self-Assessment Report
- Module Descriptions
- Discussions during the audit

**Preliminary assessment and analysis of the peers:**

The auditors discuss the quality management system at UNHAS with the programme coordinators. They learn that there is a continuous process in order to improve the quality of the degree programmes and it is carried out through internal and external evaluation. The quality assurance system is conducted at university level by the Board of Quality Assurance

and Development of Education (LPMPP), which is supported by the Quality Assurance Unit (GPM) on faculty level.

The GPMs aim to establish a quality management system and processes that promote the further academic and administrative development of the respective programmes.

Internal evaluation of the quality of the degree programmes is mainly provided through student, alumni and employer surveys. The students give their feedback on the courses by filling out the questionnaire online. Giving feedback on the classes is compulsory for the students; otherwise, they cannot access their account on the digital platform. The course evaluations are conducted at the end of each semester; the questionnaire was developed by the course survey committee and includes questions with respect to the course in general and about the teachers' performance.

The employer survey is intended to evaluate UNHAS's alumni performance and qualification. An alumni survey is done at an interval of two years after graduation.

The results of the course evaluations surveys are handed out to each teacher. Based on the results the programme coordinator and the teachers re-assess every course and possibly some changes are made. If there are negative results, the programme coordinator invites the concerned teacher to discuss about his or her teaching methods and thus, they are expected to enhance their performance in the future.

During the audit, the peers learn that the results of the surveys are accessible by the students and the members of the teaching staff. If there is negative feedback, the Dean talks to the respective teacher, analyses the problem, and offers guidance. Furthermore, there is a complain box for the students that can be used for suggestions or criticism. The auditors gain the impression that the faculties take the students' feedback seriously and changes are made if there is negative feedback. Nevertheless, the peers see that the results of the course evaluations are not always discussed with the students. As a consequence, the peers expect UNHAS to inform students about the results of the course evaluations and the teachers should discuss with them about possible improvements in the respective course. The feedback loops need to be closed.

UNHAS has established an alumni network that allows them to keep in touch with each other and with the UNHAS. The peers see that alumni are involved in the educational processes in the form of curriculum review, seminars, conferences, guest lectures, etc. Alumni surveys provide information regarding the relevance of alumni's knowledge, skills, and competences in comparison to market needs. The peers discuss with the representatives of UNHAS's partners from public institutions and private companies that there are regular

meetings with the partners on faculty level, where they discuss the needs and requirements of the employers and possible changes to the degree programmes. As the peers consider the input of the employers to be very important for the further improvement of the degree programmes, they appreciate the existing culture of quality assurance with the involvement of all stakeholders in the quality assurance process.

In summary, the peer group confirms that the quality management system is suitable to identify weaknesses and to improve the degree programmes. All stakeholders are involved in the process.

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

The peers regard criterion 6 as partially not fulfilled.

## C Additional Documents

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## **D Comment of the Higher Education Institution (02.05.2019)**

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

- Appendix B1.1: The Intended Learning Outcomes (ILO) of ASP
- Appendix B1.2: Structure and Content Curriculum of ASP
- Appendix B1.3: Example of Description Modules for Additional Modules in the New Curriculum
- Appendix B1.4: Example of Semester Learning Outline for Additional Modules in the New Curriculum
- Appendix B1.5: Example of Learning Outcome Assessment
- Appendix B1.6: Educational Background of Teaching Staff
- Appendix B1.7: Percentage of Modules delivery in English and Lecture Note
- Appendix B1.8: List of Basic Equipment for the Larger Laboratory and Other Supporting Laboratories in ASP
- Appendix B1.9: List of Lecturer Assessment Components in Giving the End Value
- Appendix B1.10: New building of faculty of marine sciences and fisheries
- Appendix B2.1: Module List of New Curriculum and Modules – Learning Outcomes Modules
- Appendix B2.2: Module List of FST
- Appendix B2.3: Floor Layout for New Laboratories for FST-SP
- Appendix B2.4: Plan of Laboratory Procurement

## E Summary: Peer recommendations (17.05.2019)

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

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Aquaculture	With requirements for one year	-	30.09.2024
Ba Food Science and Technology	With requirements for one year	-	30.09.2024

### Requirements

#### For both study programmes

- A 1. (ASIIN 6) Ensure that students get a feedback about the results of the course evaluations.
- A 2. (ASIIN 5.1) Re-write the module descriptions so as to include information about the admission requirements, the conditions for the award of credits as well as the form, lengths and structure of the exams.
- A 3. (ASIIN 2.2) Make sure that the actual workload of the students corresponds with the awarded credit points.

#### For the Bachelor's degree programme Aquaculture

- A 4. (ASIIN 1.1) Ensure that the focus of the degree programme – “coastal aquaculture” – corresponds with the intended learning outcomes and content.
- A 5. (ASIIN 1.3) Re-design the curriculum so that students have the opportunity to acquire knowledge about environmental impact.
- A 6. (ASIIN 1.3) Re-design the curriculum to ensure that the modules are structured in a thematically and chronological matter.
- A 7. (ASIIN 4.3) Update and increase the technical equipment in order to meet modern international standards.

#### For the Bachelor's degree programme Food Science and Technology

- A 8. (ASIIN 1.2) Ensure that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

- A 9. (ASIIN 1.1) Re-write the educational objectives and intended learning outcomes so that they describe the academic, subject-specific and professional classification of the qualifications gained in the degree programme.
- A 10. (ASIIN 4.3) Update and increase the laboratory space and the technical equipment in order to meet modern international standards.

## **Recommendations**

### **For all degree programmes**

- E 1. (ASIIN 2.1) It is recommended to improve students' and staff members' English proficiency.

### **For the Bachelor's degree programme Food Science and Technology**

- E 2. (ASIIN 4.1) It is recommended to increase the number of laboratory staff to match the increasing number of students in the degree programme.

## **F Comment of the Technical Committee 08- Agriculture, Nutritional Sciences and Landscape Architecture (19.06.2019)**

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

The Technical Committee 08 – Agriculture, Nutritional Sciences and Landscape Architecture discusses the procedure and agrees with the assessment of the peers.

The Technical Committee 08 recommends the award of the seals as follows:

<b>Degree Programme</b>	<b>ASIIN-seal</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Aquaculture	With requirements for one year	-	30.09.2024
Ba Food Science and Technology	With requirements for one year	-	30.09.2024

## **G Decision of the Accreditation Commission (28.06.2019)**

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

The Accreditation Commission for Degree Programmes discusses the procedure and agrees with the assessment of the peers and the technical committee. They change, however, the order of the listing of the requirements chronologically according to the criteria to avoid the impression that certain requirements are more urgent than others.

The Accreditation Commission for Degree Programmes decides to award the following seals:

<b>Degree Programme</b>	<b>ASIIN-seal</b>	<b>Subject-specific label</b>	<b>Maximum duration of accreditation</b>
Ba Aquaculture	With requirements for one year	-	30.09.2024
Ba Food Science and Technology	With requirements for one year	-	30.09.2024

### **Requirements**

#### **For both study programmes**

- A 1. (ASIIN 2.2) Make sure that the actual workload of the students corresponds with the awarded credit points.
- A 2. (ASIIN 5.1) Re-write the module descriptions so as to include information about the admission requirements, the conditions for the award of credits as well as the form, lengths and structure of the exams.
- A 3. (ASIIN 6) Ensure that students get a feedback about the results of the course evaluations.

#### **For the Bachelor's degree programme Aquaculture**

- A 4. (ASIIN 1.1) Ensure that the focus of the degree programme – “coastal aquaculture” – corresponds with the intended learning outcomes and content.
- A 5. (ASIIN 1.3) Re-design the curriculum so that students have the opportunity to acquire knowledge about environmental impact.

- A 6. (ASIIN 1.3) Re-design the curriculum to ensure that the modules are structured in a thematically and chronological matter.
- A 7. (ASIIN 4.3) Update and increase the technical equipment in order to meet modern international standards.

**For the Bachelor's degree programme Food Science and Technology**

- A 8. (ASIIN 1.2) Ensure that the name of the degree programme, its intended learning outcomes and its content correspond with each other.
- A 9. (ASIIN 1.1) Re-write the educational objectives and intended learning outcomes so that they describe the academic, subject-specific and professional classification of the qualifications gained in the degree programme.
- A 10. (ASIIN 4.3) Update and increase the laboratory space and the technical equipment in order to meet modern international standards.

**Recommendations**

**For all degree programmes**

- E 1. (ASIIN 2.1) It is recommended to improve students' and staff members' English proficiency.

**For the Bachelor's degree programme Food Science and Technology**

- E 2. (ASIIN 4.1) It is recommended to increase the number of laboratory staff to match the increasing number of students in the degree programme.

## B Fulfilment of Requirements (26.06.2020)

### Analysis of the peers and the Technical Committee 08 - Agriculture, Nutritional Sciences and Landscape Architecture (17.06.2020)

#### Requirements

##### For all degree programmes

- A 1. (ASIIN 2.2) Make sure that the actual workload of the students corresponds with the awarded credit points.

Initial Treatment	
Peers	fulfilled Justification: UNHAS clearly defines how it calculates its workload and provides tables that showcase that the awarded credit point correspond with the actual workload of the students. One major point of criticism in particular by the students as the compulsory visit of five laboratories during practical work in semester 7; this has now been tuned into an elective and positioned in semester 6 which lessens the workload in semester 7.
TC 08	fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.

- A 2. (ASIIN 5.1) Re-write the module descriptions so as to include information about the admission requirements, the conditions for the award of credits as well as the form, lengths and structure of the exams.

Initial Treatment	
Peers	fulfilled Justification: The module descriptions have been re-written and now include all necessary information.
TC 08	fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.

- A 3. (ASIIN 6) Ensure that students get a feedback about the results of the course evaluations.

Initial Treatment	
Peers	fulfilled Justification: Measures have been taken to ensure that students get feedback about the results of the course evaluation. Evaluations are now a part of the new curriculum and so is their feedback.
TC 08	fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.

**For the Bachelor's programme Aquaculture**

- A 4. (ASIIN 1.1) Ensure that the focus of the degree programme – “coastal aquaculture” – corresponds with the intended learning outcomes and content.

Initial Treatment	
Peers	fulfilled Justification: The curriculum has been changed to make coastal aquaculture more visible. The new curriculum includes seven modules, three of them electives, that focus on those organisms relevant for coastal aquaculture. In addition, water quality management for coastal systems complete the intended learning outcomes.
TC 08	fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.

- A 5. (ASIIN 1.3) Re-design the curriculum so that students have the opportunity to acquire knowledge about environmental impact.

Initial Treatment	
Peers	fulfilled Justification: The curriculum has been redesigned and now includes 3 clearly visible modules, one of them elective, that focus on water quality and waste management, both topics also relevant for coastal aquaculture.
TC 08	fulfilled Vote: unanimous

	Justification: The technical committee follows the assessment of the peers.
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- A 6. (ASIIN 1.3) Re-design the curriculum to ensure that the modules are structured in a thematically and chronological matter.

Initial Treatment	
Peers	fulfilled Justification: The new curriculum is much better and has been sorted according to the intended learning progress of the students. This is also visible for the students that can monitor their own study progress according to the modules taught in each semester.
TC 08	fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.

- A 7. (ASIIN 4.3) Update and increase the technical equipment in order to meet modern international standards.

Initial Treatment	
Peers	Not completely fulfilled Justification: UNHAS has provided a concise equipment and facility plan for the ASP programme for 2019 and 2020, as recommended by the peers. The equipment list is understandable and adequate. However, the university statement is about difficulties to follow this equipment upgrade plan due to the current Corona crisis. This affects all universities worldwide and will delay the equipment upgrade. So, I would recommend ask UNHAS to follow up on this. The not complete fulfilment of this requirement, however, should not prevent accreditation of the ASP study programme with the presented new curriculum.
TC 08	not (completely) fulfilled Vote: unanimous Justification: The university has argued that purchasing modern equipment was generally planned, and is able to provide a list, but that due to the Corona Pandemic, the university's budget has to be reallocated. As a result, laboratory equipment cannot be procured at the moment and construction of a new laboratorial building has come to a halt. The technical committee realizes that while the university generally seems eager to fulfil all their requirements, the current pan-

	<p>demic hinders this undertaken. As it is not the fault of the university the technical committee asks whether it would be possible to grant an exceptional prolongation for these two requirements for about two years as this would give the university the necessary time to organize their financial footing and finish construction and purchasing.</p>
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**For the Bachelor’s programme Food Science and Technology**

A 8. (ASIIN 1.2) Ensure that the name of the degree programme, its intended learning outcomes and its content correspond with each other.

Initial Treatment	
Peers	<p>Fulfilled Justification: Curricular changes were undertaken and new modules were introduced that justify the name of the degree programme and align it with its intended learning outcome and its content.</p>
TC 08	<p>fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.</p>

A 9. (ASIIN 1.1) Re-write the educational objectives and intended learning outcomes so that they describe the academic, subject-specific and professional classification of the qualifications gained in the degree programme.

Initial Treatment	
Peers	<p>fulfilled Justification: The educational objectives and learning outcomes were re-written and now entail the academic, subject-specific and professional classification the students gain in the programme.</p>
TC 08	<p>fulfilled Vote: unanimous Justification: The technical committee follows the assessment of the peers.</p>

A 10. (ASIIN 4.3) Update and increase the laboratory space and the technical equipment in order to meet modern international standards.

Initial Treatment	
Peers	Not completely fulfilled

	<p>Justification: The submitted floor plan of the new laboratories would allow to meet international standards. However, there is no binding commitment that these plans will become reality. The mentioned temporary utilization of lab equipment in the Science Building is no adequate replacement for well equipped pilot plants.</p>
TC 08	<p>not (completely) fulfilled Vote: unanimous Justification: The university has argued that purchasing modern equipment was generally planned, and is able to provide a list, but that due to the Corona Pandemic, the university's budget has to be reallocated. As a result, laboratory equipment cannot be procured at the moment and construction of a new laboratorial building has come to a halt. The technical committee realizes that while the university generally seems eager to fulfil all their requirements, the current pandemic hinders this undertaken. As it is not the fault of the university the technical committee asks whether it would be possible to grant an exceptional prolongation for these two requirements for about two years as this would give the university the necessary time to organize their financial footing and finish construction and purchasing.</p>

## Decision of the Accreditation Commission (26.06.2020)

The accreditation commission discusses the procedure and follows the assessment of the peers and the technical committee 08. However, the accreditation commission realizes that requirements 7 and 10 are not yet fulfilled because financial and constructional plans had been halted by the outbreak of Covid-19. As the university is not to blame for this, the accreditation commission decides to grant a one-year extension of the fulfilment of requirements and continues the accreditation of the degree programmes initially until 25.07.2021

Degree programme	ASIIN-label	Subject-specific label	Accreditation until max.
Ba Aquaculture	Requirement 7 not fulfilled	/	12 months extension
Ba Food Science and Technology	Requirement 10 not fulfilled	/	12 months extension

## Appendix: Programme Learning Outcomes and Curricula

According to the self-assessment report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme in Aquaculture.

Domain	Code	Indented Learning outcomes (ILO)
Attitude	ILO1	Able to work adaptively, creatively and innovatively
	ILO2	Able to work honestly, professionally and responsible for its duties
Knowledge	ILO3	Able to demonstrate understanding basic principles of seed production and grow out of aquatic organisms
	ILO4	Able to apply the science and technology on freshwater, brackish and marine aquaculture systems
Generic Skill	ILO5	Able to communicate aquaculture technology into diverse communities and work as a team in the field of aquaculture
	ILO6	Demonstrate leadership and entrepreneurial skills
Specific Skill	ILO7	Demonstrate a good skills in feed formulation and feeding management of cultivated organisms
	ILO8	Able to manage and maintain the quality of various aquaculture environments
	ILO9	Able to perform engineering techniques of breeding of cultivated aquatic organisms
	ILO10	Able to apply disease detection and handling techniques of cultivated organisms

The following curriculum is presented:

No	Code	Course	Internship		Elective	
			Credit Point	ECTS	Credit Point	ECTS
<b>Semester 1</b>						
1	072U0033	Islamic Religion	3	5,1		
2	073U0033	Catholic Religion				
3	074U0033	Protestant Religion				
4	075U0033	Hindu Religion				
5	076U0033	Buddha Religion				
6	077U0033	Khonghuchu Religion				

**OF Appendix: Programme Learning Outcomes and Curricula Summary: Peer recommendations (17.05.2019)**

7	078U0033	Insight in maritime social culture	2	3,4		
8	082U0033	Citizenship	3	5,1		
9	086U0033	Fundamentals of Physics	3	5,1		
10	087U0033	Fundamentals of chemistry	3	5,1		
11	088U0033	Fundamentals of Biology	3	5,1		
12	101L0011	Co-curricular	1	1,7		
13	102L0012	introduction to marine science and fisheries	2	3,4		
14	079U0032	Insight of Science and Technology	2	3,4		
<b>Subtotal</b>			<b>22</b>	<b>37,4</b>	<b>0</b>	
<b>Semester 2</b>						
1	080U0032	Indonesian Language	2	3,4		
2	081U0032	English Courses	2	3,4		
3	085U0033	Fundamentals of mathematic	3	5,1		
4	121L2322	Fundamentals of Fishing	2	3,4		
5	122L2322	Fundamentals of Post Harvest Technology	2	3,4		
6	121L2122	Fundamentals of Fisheries Management	2	3,4		
7	121L2222	Fundamentals of aquaculture	2	3,4		
8	121L2422	Introduction to Economics	2	3,4		
9	103L0023	Aquatic Ecology	3	5,1		
10	104L0022	Introduction to Oceanography	2	3,4		
<b>Subtotal</b>			<b>22</b>	<b>37,4</b>	<b>0</b>	
<b>Semester 3</b>						
1	202L0013	Statistics	3	5,1		
2	203L0013	Ichthyology	3	5,1		
3	221L2213	Aquatic Microbiology	3	5,1		
4	222L2213	Fundamentals of Soil Science	3	5,1		
5	223L2213	Physiology of Aquacultured Organism	3	5,1		
6	224L2213	Biochemistry of Nutrition	3	5,1		
7	225L2213	Fundamentals of Fish Genetic	3	5,1		
8	221L2113	Laws and regulations in marine science and fisheries			2	3,4
<b>Subtotal</b>			<b>21</b>	<b>35,7</b>	<b>2</b>	<b>3,4</b>
<b>Semester 4</b>						
1	204L0022	Entrepreneurship in Fisheries and Marine Science	2	3,4		
2	251L2223	Aquatic Productivity and Fertility			3	3,4
3	226L2223	Parasite of Aquatic Organism	3	5,1		
4	227L2223	Aquaculture of Ornamental Fish and Aquascape	3	5,1		
5	228L2223	Fish Nutrition	3	5,1		

**OF Appendix: Programme Learning Outcomes and Curricula Summary: Peer recommendations (17.05.2019)**

6	229L2223	Management of Aquaculture Water Quality	3	5,1		
7	230L2223	Introduction to Biotechnology in Aquaculture	2	3,4		
8	231L2223	Reproductive Physiology of Aquacultured Organism	3	5,1		
9	251L2223	Histology			3	5,1
<b>Subtotal</b>			<b>19</b>	<b>32,3</b>	<b>6</b>	<b>8,5</b>
<b>Semester 5</b>						
1	321L2213	Live Feed Culture	3	5,1		
2	322L2213	Technology and Management of Feed	3	5,1		
3	323L2213	Fish Patology	3	5,1		
4	324L2213	Breeding of Aquacultured Organism	3	5,1		
5	325L2213	Freshwater Aquaculture Management	3	5,1		
6	351L2213	Fish Immunology			3	5,1
7	352L2213	Technology and Management of Water Quality			3	5,1
8	326L2213	Brackishwater Aquaculture Management	3	5,1		
<b>Subtotal</b>			<b>18</b>	<b>30,6</b>	<b>6</b>	<b>10,2</b>

<b>Semester 6</b>						
1	327L2223	Marine Aquaculture Management	3	5,1		
2	328L2223	Experimental Design and Methodology	3	5,1		
3	329L2223	Technology and Management of Fish Hatchery	3	5,1		
4	225L2422	Counseling and Communication in Fisheries			2	3,4
5	353L2223	Aquaculture Development			3	5,1
6	330L2222	Scientific Work Methodology	2	3,4		
7	331L2223	Engineering Aquaculture	3	5,1		
8	354L2223	Nutrition for Broodstock and Larva			3	5,1
<b>Subtotal</b>			<b>14</b>	<b>23,8</b>	<b>8</b>	<b>13,6</b>
<b>Semester 7</b>						
1	461L0035	Student Internship	5	8,5		
2	462L0034	Student Community Service	4	6,8		
3	463L0031	Seminar	1	1,7		
4	464L0036	Final Project	6	10,2		
5	451L2213	Aquabusiness			3	5,1
6	452L2213	Technology of Seaweed Culture			3	5,1

			<b>Subtotal</b>	<b>16</b>		<b>6</b>	<b>10,2</b>	
			<b>Semester 8</b>					
1	461L0035	Student Internship		5	8,5			
2	462L0034	Student Community Service		4	6,8			
3	463L0031	Seminar		1	1,7			
4	464L0036	Final Project		6	10,2			
			<b>Subtotal</b>	<b>16</b>	<b>27,2</b>	<b>0</b>		
			<b>Total</b>		<b>224,4</b>	<b>26*</b>	<b>45,9*</b>	

According to the self-assessment report, the following **objectives** and **learning outcomes (intended qualifications profile)** shall be achieved by the Bachelor's degree programme in Food Science and Technology.

Learning outcomes of the programme

1. Be able to apply the principles of food science and technology in food analysis and food quality control.
2. Having the ability to think and to analyze the actual problem in food and offer the alternative solution.
3. Having the ability to deliver the concept of food science and technology.
4. Having the ability to demonstrate the good character and attitude to deliver the knowledge in food science and technology.
5. Be able to manage business and processing of food industry from small, medium enterprises to the industry.
6. Be able to apply the comprehensive understanding of the theoretical concept and principle of food science and technology in solving the problem in the food industry.

Learning outcomes of the modules /module objectives

1. Having a comprehensive understanding of the theoretical concept and principle of food science and technology in a broad sense (humanity, basic, and applied science) to support their expertise in food science and technology.
2. Be able to identify the microorganism in foodstuff and processed food including applying in biotechnology.
3. Having the comprehensive understanding of food waste management and food safety.

4. Be able to perform food chemical and physical analysis in supporting food quality control, and food for special health purposes.
5. Having good skill in food handling starting from harvesting, processing, and packaging, including food product development.
6. Be able to apply the principles of food science, statistic, and computer science to perform good manufacturing practices in the food industry.
7. Capable of making decision strategic in food science and technology based on scientific data and information.
8. Being a good citizen who respects the diversity based on Indonesian national ideology.
9. Capable of communicating scientific knowledge effectively orally as well as written.

The following curriculum is presented

**Semester I**

CODE	COURSE	CP	ECTS
07...U002	Religion Education	2	3.4
083U002	Civic Education	2	3.4
078U002	English	2	3.4
081U002	Maritime Socio-Cultural Studies	2	3.4
087U003	Basic Chemistry	3	5.1
085U003	Mathematics	3	5.1
088U003	Biology	3	5.1
101G5402	Introductory to Agricultural Technology	2	3.4
<b>Sum</b>		<b>19</b>	<b>32.3</b>

**Semester II**

CODE	COURSE	CP	ECTS
084U002	Indonesia Language	2	3.4
082U002	Pancasila (State Ideology)	2	3.4
086U003	Physics	3	5.1
121G5302	Calculus	2	3.4
122G5303	Analytical Chemistry	3	5.1
123G5303	Organic Chemistry	3	5.1
124G5303	General Microbiology	3	5.1
125G5302	Basic of Communication	2	3.4
<b>Sum</b>		<b>20</b>	<b>32.3</b>

**Semester III**

CODE	COURSE	CP	ECTS
324G0103	Sustainable Agriculture	3	5.1
201G5303	Physical Chemistry	3	5.1
202G5302	Statistics	2	3.4

**Semester IV**

CODE	COURSE	CP	ECTS
228G0103	Experimental Design	3	5.1
123G3203	Basic of Agribusiness	3	5.1
323G5403	Operational Research	3	5.1

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203G530 2	Food Chemistry I	2	3.4	221G530 2	Postharvest physiology and Technology	2	3
204G530	Food Microbiology	2	3.4	222G530	Application of	2	3
2				2	Biochemistry and Postharvest		
205G530 2	Introductory to Food Industry materials	2	3.4	223G530 2	Evaluation of Food Nutrition	2	3
206G530 2	Food Processing Engineering	2	3.4	224G530 2	Industrial Microbiology	2	3
207G530 2	Food Analysis	2	3.4	225G530 2	Food Chemistry II	2	3
208G530 2	Application of laboratory technique	2	3.4	226G530 2	Sanitation and Management of Industrial Waste	2	3
209G530 2	Food Biochemistry	2	3.4	227G530 2	Food Processing and Preservation Technology	2	3
<b>Sum</b>		<b>22</b>	<b>37.4</b>	<b>Sum</b>		<b>22</b>	<b>3</b>

**Semester V**

CODE	COURSE	CP	ECTS
301G530 2	Application of physical and chemical changes in Food	2	3.4
302G530 2	Application of Food Safety and Microbiology	2	3.4
303G530 2	Food Quality Control	2	3.4
304G530 2	Food Fermentation Technology	2	3.4
305G530	Processing	2	3.4

**Semester VI**

CODE	COURSE	CP	ECTS
321G5302	Research Method	2	3
322G5303	Sensory Analysis	3	5
323G5303	Packaging and Storage Technology	3	5
324G5302	Food Development Product Technology	2	3
325G5302	Application of	2	3

2	Technology of Plantation Product				Food Biotechnology		
306G530 2	Processing Technology of Horticultural Product	2	3.4	326G5302	Application of Plant Food Product	2	3
307G530 3	Management and Layout in Food Industry	3	5.1	327G5302	HACCP	2	3

**OF Appendix: Programme Learning Outcomes and Curricula Summary: Peer recommendations (17.05.2019)**

308G530 2	Machinery and Equipment in Food Industry	2	3.4			Elective courses*	3	5.
302G320 3	Entrepreneurship	2	3.4			<b>Sum</b>	<b>23</b>	<b>32</b>
	Elective courses*	3	5.1					
	<b>Sum</b>	<b>22</b>	<b>37.4</b>					

**Semester VII**

CODE	COURSE	CP	ECTS
499U004	Regular Student Service**	4	6.80
441G5304	Profession Student Service **	4	6.80
442G5304	KKU ***	4	6.80
443G5304	Internship***	4	6.80
444G5302	Research	6	10.20
445G5301	Seminar I	1	4.5
446G5301	Seminar II	1	4.5
447G5306	Co-curricular	2	3.4
	Elective courses*	3	4.5
	Elective courses*	3	4.5
	<b>Sum</b>	<b>20</b>	<b>34</b>

**Semester VIII**

CODE	COURSE	CP	ECTS
444G5302	Research	6	10.20
445G5301	Seminar I	1	4.5
446G5301	Seminar II	1	4.5
447G5306	Co-curricular	2	3.4
	<b>SUM</b>	<b>10</b>	<b>20.80</b>

**Elective course in odd semester**

CODE	COURSES	CP	ECTS
311G5303	Enzyme Technology	3	4.5
312G5302	Essential Oil Technology	2	3
313G5302	Processing Technology in Animal Food Product	2	3
	Processing		
314G5303	Technology in Fisheries Food Product	3	4.5
	Processing		
315G5302	Technology in Coffee and Cacao	2	3
316G5303	Production Plant and Control	3	4.5
356G5303	Practical Work	3	4.5
311G3203	Managerial Skill	3	4.5

**Elective course in even semester**

CODE	COURSES	CP	ECTS
331G5303	Starch and Sugar Technology	3	4.5
332G5302	Fats and Oil Food Technology	3	4.5
333G5302	Healthy Food Technology	2	3
	Processing		
334G5302	Technology on Legume and Cereals	2	3
335G5302	Functional Food	2	3
336G5302	Food Waste Technology	2	3
356G5303	Practical Work	3	4.5
303G3203	Marketing Management	2	3

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335G3203	Credit Analysis on	3	4.5		SUM	19	28
	Agriculture						