



**ASIIN Seal**

## **Accreditation Report**

**Bachelor's Degree Programmes**

*Marine Science*

*Oceanography*

**Master's Degree Programme**

*Environmental Science*

**PhD Programme**

*Environmental Science*

Provided by

**Universitas Diponegoro, Indonesia**

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## A About the Accreditation Process

Name of the degree programme (in original language)	(Official) English translation of the name	Labels applied for <sup>1</sup>	Previous accreditation (issuing agency, validity)	Involved Technical Committees (TC) <sup>2</sup>
Program Studi Sarjana Ilmu Kelautan	Marine Science Undergraduate Programme	ASIIN	BAN-PT, 2026 „A“	11
Program Studi Sarjana Oseanografi	Oceanography Undergraduate Programme	ASIIN	BAN-PT, 2025 „A“	11
Program Studi Magister Ilmu Lingkungan	Master Programme of Environmental Science	ASIIN	BAN-PT, 2025 „A“	11
Program Studi Doktor Ilmu Lingkungan	Doctoral Programme of Environmental Science	ASIIN	BAN-PT, 2023 „A“	11
<p><b>Date of the contract:</b> 05.07.2021</p> <p><b>Submission of the final version of the self-assessment report:</b> 28.07.2021</p> <p><b>Date of the audit (online):</b> 29.03. – 31.03.2022</p>				
<p><b>Peer panel:</b></p> <p>Prof. Dr. Gernot Friedrichs, University of Kiel</p> <p>Prof. Dr. Sonja Kleinertz, IPB University Bogor</p> <p>Muhammad Firman Nuruddi, Institut Teknologi Bandung, student</p>				
<p><b>Representative of the ASIIN headquarter:</b></p> <p>Rainer Arnold</p>				
<p><b>Responsible decision-making committee:</b></p> <p>Accreditation Commission</p>				
<p><b>Criteria used:</b></p>				

<sup>1</sup> ASIIN Seal for degree programmes;

<sup>2</sup> TC: Technical Committee for the following subject areas: TC 11 – Geosciences

## **A About the Accreditation Process**

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European Standards and Guidelines as of 15.05.2015	
ASIIN General Criteria as of 28.03.2014	
Subject-Specific Criteria of Technical Committee 11 – Geosciences as of 09.12.2011	

## B Characteristics of the Degree Programmes

a) Name	Final degree (original)	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
Bachelor in Marine Science	Sarjana Sains (S.Si.) Ilmu Kelautan / Bachelor of Science in Marine Science	-	6	Full time	no	8 Semester	144 SKS / 214,9 ECTS	1987, Once a year (August)
Bachelor in Oceanography	Sarjana Sains (S.Si.) Oseanografi / Bachelor of Science in Oceanography		6	Full time	no	8 Semester	146 SKS / 217,9 ECTS	2001, Once a year (August)
Master in Environmental Science	Master Ilmu Lingkungan / Master of Environmental Science	Environmental Planning Environmental Management Environmental Engineering Disaster Management	7	Full time	no	4 Semester	41 SKS / 116 ECTS	2000, Once a year (August)
PhD in Environmental Science	Doktor Ilmu Lingkungan / Doctor of Environmental Science		8	Full time	no	6 Semester	47 SKS / 174 ECTS	2008, Once a year (August)

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

For the Bachelor's degree programme Marine Science (MSUP), Universitas Diponegoro (UNDIP) has presented the following profile on its homepage:

**“Vision:**

Becoming an excellent faculty in the field of tropical fisheries and marine science in 2025.

**Mission:**

1. Conducting quality education in the field of fisheries and marine,
2. Carrying out research, scientific publications, and producing Intellectual Property Rights (IPR) in the field of fisheries and marine,
3. Carrying out community service in the field of fisheries and marine,
4. Conducting professional and accountable governance,
5. Carrying out student activities to support the achievement of COMPLETE graduate qualifications.

**Objectives:**

1. Conducting the best education system in the field of marine science
2. Producing research, scientific publications and IPR (Intellectual Property Rights).
3. Producing applied science and technology in the field of marine that benefits the community.
4. Supporting student organizations that produce excellent characters of students and graduates.”

For the Bachelor's degree programme Oceanography (OcUP), Universitas Diponegoro (UNDIP) has presented the following profile on its homepage:

**“Vision:**

By 2025, the study program becomes the leading of oceanographic higher education organizers in Indonesia

**Mission:**

Improve the quality of learning and academic environment;

Improve the quality of human resources;

Improve the quality of learning facilities and infrastructure;

Improve the implementation of accountable academic governance;

Improve the quality of research and community service; and

Increase the development and implementation of institutional and industrial cooperation.

### **Objectives:**

Produce graduates who have academic abilities in the field of oceanography.

Produce graduates who have the ability to conduct research in the field of oceanography. Especially those related to coastal and marine resource exploration, disaster mitigation, coastal and marine area development and marine alternative energy.

Produce graduates who are able to become professionals in the field of oceanographic management.

Produce graduates who are able to become entrepreneurs in the field of oceanography.”

For the Master’s degree programme Environmental Science (MES), Universitas Diponegoro (UNDIP) has presented the following profile on its homepage:

### **“Vision:**

Providing high-quality graduates with good personalities and dedication in integrating environmental, economic, and social interest

### **Mission:**

To achieve the Vision above, the Master Program of Environmental Science has established the following missions:

Providing higher education with a master degree in environmental science planning, architecture, and management;

Organizing and pioneering research activities and development of science and technology in environmental planning;

Facilitating activities related to community service, in particular in environmental issues;

Becoming a feeder centre in environmental problem formulation and resolution.

### **Educational Goals**

The purpose of education of Master of Environmental Science is to produce graduates who have the following abilities:

Able to demonstrate the knowledge of environmental science to the community;

Able to conduct research for the development of environmental science;

Able to formulate environmental management policies;

Able to become a professional in implementing knowledge and methods of controlling environmental damage, both in work and in business development.”

For the Doctoral programme Environmental Science (DES), Universitas Diponegoro (UNDIP) has presented the following profile on its homepage:

### **“Vision**

To become an excellent Doctoral Program in the field of environmental science, with national and international reputation

### **Mission**

1. Organizing postgraduate higher education at doctoral level in the fields of planning, management and environmental engineering.
2. Organizing and pioneering research activities in the development of environmental management science and technology.
3. Facilitating community service activities in the environmental field.
4. Become a Feeder Center in thinking and solving environmental problems

### **Educational Goals**

Doctoral Program of Environmental Science aims at producing graduates who have the following abilities:

1. Able to develop knowledge, and demonstrate environmental science to the community.
2. Able to develop research methods for the development of environmental science
3. Able to develop environmental management policies for the public interest through government, industry, and company.”



## C Peer Report for the ASIIN Seal

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

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

**Evidence:**

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Webpage Universitas Diponegoro: <https://www.undip.ac.id>
- Webpage Faculty of Fisheries and Marine Science: <https://fpik.undip.ac.id/en/home/>
- Webpage School of Postgraduate Studies: <https://pasca.undip.ac.id/home/>
- Webpage Ba Marine Science: <https://kelautan.fpik.undip.ac.id/language/en/>
- Webpage Ba Oceanography: <https://oseanografi.fpik.undip.ac.id/language/en/>
- Webpage Ma Environmental Science: <https://mil.pasca.undip.ac.id/>
- Webpage PhD Environmental Science <http://dil.pasca.undip.ac.id/>
- Discussions and online tour of laboratories during the audit

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

The peers base their assessment of the learning outcomes as provided on the websites and in the Self-Assessment Report of all four degree programmes under review.

The peers referred to the Subject-Specific Criteria (SSC) of the Technical Committee for Geosciences as a basis for judging whether the intended learning outcomes of the four degree programmes as defined by UNDIP correspond to the competences as outlined by the SSC. They come to the following conclusions:

The peers confirm that that in both Bachelor's programmes students should acquire basic knowledge and understanding of the essential features, processes, materials, history and the development of the Earth and of the of the key aspects and concepts of geosciences related to the specific aspects of marine science or oceanography.

Students of the Bachelor's degree programme Oceanography should acquire basic knowledge about natural sciences (physics, chemistry, and biology), which are underlying the study of geosciences and understand the major earth and ocean science theories. They should also understand which geological, atmospheric, oceanographic, chemical, and biological processes influence the complex oceanic system. In addition, students should become familiar with gathering, modelling, surveying, and mapping geographic information in order to perform statistical analysis of the collected data. Moreover, they should be able to identify, formulate, and solve tasks and problems in the area of oceanography and be able to use and apply instruments and tools in the field to this end.

The goal of the Bachelor's degree programme Marine Science is to impart essential competencies in biosciences and related areas of geosciences, which are essential for understanding marine systems. Students should learn about marine microbiology and chemistry as well as become familiar with climate and earth system topics. In addition to theoretical content, student should also receive practical training and become familiar with data collection and processing methods to the application of suitable equipment for chemical and microbiological environmental analysis.

Moreover, graduates of both undergraduate programmes should have adequate competencies in oral and written communication skills, be adaptive to the development of sciences, and have adequate English proficiency as well as a social and academic attitude.

In addition to the subject-related qualification objectives, students of both Bachelor's programmes should be capable of working autonomously as well as in a team-oriented manner, and be able to conduct research activities. Furthermore, they should be able to solve subject-relevant problems, to present their results, have trained their analytical and logical abilities, and have an awareness of possible social and ethical effects of their actions. During the course of their studies, the students should acquire communicative and language skills, and develop a strategy for life-long learning.

Graduates of both undergraduate programmes have several job opportunities; they can work as researchers, educators, instructors, conservationists, and entrepreneurs, especially in the marine field. Alumni of both programmes work in various government agencies, the military, the private sector, NGOs, and as independent entrepreneurs.

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

The peers conclude that the objectives and intended learning outcomes of the degree programmes adequately reflect the intended level of academic qualification and correspond sufficiently with the respective ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 11 – Geosciences and can be assigned to level 6 (Bachelor's degree programmes) of the European Qualifications Framework (EQF/EQF).

The peers point out that the overall intended learning outcomes of the Master's programme Environmental Science are worded much too generic and they do not make sufficiently clear which subject-specific competences graduates should acquire. The Self-Assessment Report just lists four general competences such as "Able to formulate environmental management theory" or "Able to formulate and carry out scientific research to solve environmental problems". This is all fine and Master's graduate should certainly acquire these skills but these objectives are not programme specific and could be formulated in this way for any environmental programme. In addition, there are four different specialisations in the Master's programme Environmental Science, but the learning outcomes are the same with no respect to the distinctly different curricula of the four specialisations. UNDIP has to draft subject-specific learning outcome for all four different specialisations that need make transparent what overall competences the graduates should acquire. Moreover, it needs to be made clear that graduates should acquire advanced knowledge and understanding of the environmental principles and concepts. In addition, the updated and specified intended learning outcomes should be included in all official documents and made available to all stakeholders e.g. by publishing them on the programme's webpage. However, the learning outcomes as mentioned in the module description seem realistic and can be assigned can be assigned to level 7 (Master's degree programmes) of the European Qualifications Framework (EQF/EQF). MES students are either fresh Bachelor's graduates (40 %) or students with job experience (60 %), who usually go back to their employer after graduation.

With respect to the Doctoral programme Environmental Science, the peers confirm that UNDIP has drafted comprehensive learning outcomes that describe appropriately what competences should be acquired in the course of the programme. As necessary for a doctoral programme, the focus is on designing, carrying out, and reporting on an advanced independent research project in the area of environmental sciences. This includes that doctoral students should be able to identify and understand the complexity of issues and processes which contribute to an environmental problem. They should be able to describe how their research is situated in the history and scope of environmental studies and demonstrate a comprehensive understanding and knowledge of disciplines relevant to their research topic. Moreover, doctoral students should be able to explain, justify, and correctly

report on their research activities and have adequate presentation skills to share their research plans and results. In order to achieve these results, they need to be able to independently design, which includes a profound understanding of the underlying theoretical principles and the ability to use modern instruments and techniques to implement and carry out the practical research activities in a laboratory. PhD graduates usually become researchers or university teachers.

The peers hold the view that the objectives and intended learning outcomes of Doctoral programme Environmental Science are reasonable and well founded. They correspond sufficiently with the respective ASIIN Subject-Specific-Criteria (SSC) of the Technical Committee 11 – Geosciences and can be assigned to level 8 (PhD programmes) of the European Qualifications Framework (EQF/EQF).

#### Criterion 1.2 Name of the degree programme

**Evidence:**

- Self-Assessment Report

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

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

However, the peers see that the focus of MSUP is on marine biology. For this reason, the peers point out that it would be useful renaming Marine Science to Marine Biology or Marine Biosciences, because this would better reflect the focus of the degree programme (see also criterion 2.1).

#### Criterion 1.3 Curriculum

**Evidence:**

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Webpage Ba Marine Science: <https://kelautan.fpik.undip.ac.id/language/en/>
- Webpage Ba Oceanography: <https://oseanografi.fpik.undip.ac.id/language/en/>
- Webpage Ma Environmental Science: <https://mil.pasca.undip.ac.id/>

- Webpage PhD Environmental Science <http://dil.pasca.undip.ac.id/>
- Discussions during the audit

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

The oceanography and the marine science undergraduate programmes are offered by the Faculty of Fisheries and Marine Science of UNDIP.

Both Bachelor's degree programme under review are designed for four years and at least 144 SKS (214.9 ECTS) need to be achieved in MSUP, while OcUP need to acquire 146 SKS (217.9 ECTS).

All undergraduate programmes at UNDIP are designed to be completed in eight semesters or four academic years with a maximum of 14 semesters or seven academic years. Each semester is equivalent to 16 weeks of learning activities including one week for midterm exams and one week for final exams. The odd semester starts in August and ends January of the following year, while the even semester lasts from February to July.

The curriculum consists of university requirements and compulsory and elective courses determined by UNDIP and the respective departments. University requirements are courses that need to be attended by all undergraduate students at UNDIP. There are six university requirements: English, Bahasa Indonesia, Religion, Sports, Internet of Things, and Pancasila and Civic Education. These courses are all offered in the first two semesters of studies, in addition to courses conveying basic knowledge of natural sciences. A bit unusual is the fact that students of both undergraduate programmes have classes in swimming and scuba diving. But taking into account that both programmes involve a lot of aquatic activities, it is certainly a useful supplement to the curriculum and a unique selling point to attract students.

Courses on the different subject-specific sciences are offered from the third to the eighth semester. Elective courses can be taken from the third year of study. Students usually choose elective courses that relate to their thesis and/or their individual interests. During the eight semesters, students must also complete the field practise (3 SKS), the community service (3 SKS), and the undergraduate thesis (6 SKS).

Usually during the last year of studies, students must complete the community service. The peers discuss with the programme coordinators about the content and goal of this course. The programme coordinators explain that community service is compulsory for all Indonesian students. It has a minimum length of four weeks and often take place in villages or rural areas where students stay and live together with the local people. The course is designed "to allow students to apply their knowledge based on their field in order to empower society." Since the community service usually takes place in remote areas, the students

cannot attend any classes during this time. The students work in interdisciplinary teams during the community service in order to advance the society and bring further development about. This course was introduced at all Indonesian Universities in 1971. The assessment of the community service consists of a work plan, programme implementation, and activity report. The peers understand that students should work for the benefit of the community and the Indonesian society during the community service and support this concept. Both degree programmes include a field practise (internship), which can be conducted in research institutions or companies. Students can get information about available places from the programme coordinators, the UNDIP Career Center, or the internship supervisor and need to submit an internship proposal.

The regular classes of both Bachelor's programmes are conducted in Bahasa Indonesia, however, some teachers use English slide in the lectures and most of the textbooks are provided in English. The regular classes of the MES programme are conducted in Bahasa Indonesia, in addition an English class is offered. The courses for this class are conducted in English and are offered to foreign students or Indonesian students who wish to attend the courses in English. Moreover, there is a collaboration class in MES, where companies and governmental and non-governmental organisations send some of their most promising employees in order to continue their academic education and join MES. The cooperating organisations usually cover the tuition fees and the students continue working for their employer after finishing their Master's studies.

The MES curriculum is designed for two years, encompasses 41 SKS, and consists of two parts. The first part (14 SKS) is related to studies of advanced environmental sciences with a focus on physical, social, and economic aspects. In addition, Master's students learn more about research methods. The second part covers in-depth studies related to the specific concentration in the field of environmental sciences issue and encompasses 27 SKS including the Master's thesis. MES students have two chose one out four different specialisations: Environmental Planning (PL), Environmental Engineering (RL), Environmental Management (ML), and Disaster Management (MB). The courses in the first semester are attend by students of all specialisations, from the second semester on, students focus on their specialisation.

The DES curriculum is designed for two years, encompasses 47 SKS, and is divided into two parts. The first part focuses on advanced courses in environmental management and research methods with a weight of 13 SKS. The second part focuses on the research activities and encompasses 34 SKS.

DES offers "matriculation lectures" before the first semester of teaching and learning begins, which must be taken by students who have not a Master's degree in environmental

science. Since the doctoral students come from various fields of science, it is necessary to establish a common understanding and perception of environment sciences, in the form of environmental principles, as well as environmental issues that occur on a global, national, and regional scale. The areas of the research projects correspond with the four areas of specialisation in MES: Environmental Planning (PL), Environmental Engineering (RL), Environmental Management (ML), and Disaster Management (MB).

To give students practical experience in a professional environment, MSUP and OcUP offer the internship courses. In this course, students carry out learning activities directly during a work placement in a company or a public institution.

Similar to the internship programme, MES students are required to undertake field trips, which are designed for students so that they can identify the challenges of environmental management in the field, both in the context of current environmental problems and in the context of environmental problem-solving.

MES and DES require students to conduct seminars, conferences and publish their scientific works in the media, journals, and conferences. In this way, students should learn how to design research projects, convey research ideas, and present research results in scientific forums.

Since UNDIP has the goal to become internationally more visible and wants to further internationalising its degree programmes, the peers discuss with the programme coordinators and students if any courses in the Bachelor's programmes are taught in English. The programme coordinators explain that usually all courses in the regular classes are delivered in Bahasa Indonesia (Indonesian language) but most of the teaching materials (teaching slides) are provided in English. The students confirm that some presentations are done in English, and English textbooks are used. However, the peers would like to express their opinion that – similar to the MES programme, it is worth thinking about the possibility to offer international classes, which are taught in English, in MSUP and OcUP. This would not only improve the students' English proficiency but would also attract international students.

The members of the teaching staff explain on demand of the peers that they offer possible topics for the final projects for the Bachelor's and the Master's programmes according to their own research projects. All members of the teaching staff supervise theses. Students have to design a research proposal with a time schedule for the project, which is discussed with the academic advisor. If they agree, the students apply formally for being allowed to work on the suggested topic.

The peers learn during the audit that students can acquire soft skills by joining one of the many student organisations. They offer workshops for students to develop and improve their soft skills (e.g., communication and presentation skills).

A critical point that is discussed at length during the audit is the fact that UNDIP has just recently (in 2021) implemented new study paths in MES and DES. Unfortunately, no information about these “research paths” was included in the Self-Assessment Report and the peers just learned during the audit about this. Since no curriculum, nor intended learning outcomes, graduation profile, job perspectives or module description for the newly established “research paths” were provided, the peers cannot assess whether these paths are aligned with the ASIIN criteria and the SSC. For this reason, these new “research paths” are not yet ready for accreditation and therefore this accreditation report just focuses on the already established “course paths” of MES and DES:

The peers gain the impression that the graduates of all degree programme under review are well prepared for entering the labour market and can find adequate jobs in Indonesia.

#### **Criterion 1.4 Admission requirements**

##### **Evidence:**

- Self-Assessment Report
- Decree of Minister of Research, Technology and Higher Education No. 2, 2015
- Webpage Universitas Diponegoro: <https://www.undip.ac.id>
- Webpage Faculty of Fisheries and Marine Science: <https://fpik.undip.ac.id/en/home/>
- Webpage School of Postgraduate Studies: <https://pasca.undip.ac.id/home/>
- Discussions during the audit

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

According to the Self-Assessment Reports, admission procedures and policies for new students follow the National Regulation No.2, 2015. The requirements, schedule, registration venue, and selection test are announced on UNDIP’s webpage and thus accessible for all stakeholders.

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



1. National Entrance Selection of State Universities (Seleksi Nasional Masuk Perguruan Tinggi Negeri, SNMPTN), a national admission system, which is based on the academic performance during the high school (20 % of the students at UNDIP are admitted through this selection system).

2. Joint Entrance Selection of State Universities (Seleksi Bersama Masuk Perguruan Tinggi Negeri, SBMPTN). This national selection test is held every year for university candidates. It is a nationwide written test (subjects: mathematics, Bahasa Indonesia, English, physics, chemistry, biology, economics, history, sociology, and geography). It accounts for 30 % of the admitted students at UNDIP.

3. Independent Selection (Seleksi Mandiri) students are selected based on a written test (similar to SBMPTN) specifically held by UNDIP for prospective students that haven't been accepted through SNMPTN or SBMPTN (50 % of the students at UNDIP are admitted through this test).

The average capacity is 150 new students per year in marine science and 120 new students per year in oceanography and depends on the number of teachers in the different departments and the available facilities (e.g., laboratory working places). The average number of new MES students is 35 per year and 15 for DES.

There are eight different levels of tuition fees for undergraduate students at UNDIP. They range from IDR 500,000 (€ 30) to IDR 8,500,000 (€ 518) per semester. Which level of tuition fees the students have to pay, depends on the economic background of their parents. As UNDIP explains, students in the international classes have to pay higher tuition fees.

Several undergraduate students at UNDIP are fully funded by the government including their daily expenditures. A tuition waiver scheme is available upon request and the amount depends on the parents' economic status. The amount of waiver ranges from 20 to 100 % of the total fee. Approximately 10 % of the international students receive scholarships, which are either funded by UNDIP or other public or private institutions. Several students confirm during the discussion with the peers that they receive a scholarship either from the government and other public institutions or from private companies. Usually, undergraduate students have to achieve and keep a certain GPA (e.g., above 3.0 or 3.5) to receive financial support, otherwise there are no strings attached to the scholarships.

Students can apply online at UNDIP for admission to the Master's programme. Candidates are required to have a Bachelor's degree in the areas of science with a GPA of  $\geq 2.75$ , and to go through an interview process at UNDIP. In addition, applicants need to submit a verification of English proficiency (e.g., TOEFL score  $\geq 450$ ) and of sufficient academic ability (e.g., Academic Potential Test (TPA) score  $\geq 400$ ). The tuition fee is 9 million IDR per semester (€ 570,-).

There are several financial resources available for MES students. Several students receive a scholarship from the Indonesian government, especially from the Ministry of Education and Research or from the Ministry of Marine Affairs and Fisheries. Other students get financial support from local governments or private institution. Moreover, several MES students are funded by their employer who send promising employees to UNDIP for further pursuing their academic education. After finishing the MES, the graduates continue working for their employer.

For enrolling in the Doctoral programme, students need to have Master's degree with a GPA of  $\geq 3.00$  and have to go through an interview process at UNDIP. In addition, applicants need to submit a verification of English proficiency (e.g. TOEFL score  $\geq 500$ ) and of sufficient academic ability (e.g. Academic Potential Test (TPA) score  $\geq 400$ ). The tuition fee for DES is 14 million IDR per semester (€ 890,-) for domestic students, and 21 million IDR per semester (€ 1335,-) for overseas students.

Prospective MES and DES students have to take two types of tests. The first is a written test which includes the Academic Potential Test and the English Language Test. This written test is conducted centrally at the University level. The second is the Interview Test conducted by the study programme. The results of the two tests are combined to determine the final score of the applicants.

For the Master's programmes and the Doctoral programme, the applicants have to explain about their background, interests, and reasons for continuing their studies at UNDIP. In addition, they have to state their motivation and demonstrate their ability for time management, critical thinking, independence, and communication. Candidate with research experience have to provide samples of their research activities, while practitioners or professionals can describe their achievements in their field of occupation.

In summary, the peers 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. However, the peers learn that applicants with colour-blindness and deaf are not admitted to MSUP and OcUP. They are aware that this is common practice at Indonesian universities, but are convinced that it is unnecessary, because experiments are conducted in groups and the colour-blindness of one student can be easily compensated by the other group members. Hence, they consider such an admission criterion too restrictive and expect UNDIP to relieve or even abandon this criterion (see also criterion 5.3).

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

The peers confirm that the School Postgraduate Studies (SPS) has formed a taskforce to evaluate and update the specified intended learning outcome for all four different specialisations (Environmental Management, Environmental Engineering, Environmental planning and Disaster management) of the Master's programme Environmental Science. The revised documents are now available for all stakeholders and can be accessed via the programme's webpage. However, the same cannot be said for the PhD programme Environmental Science. The cited webpage still does not mention the intended learning outcomes for the course and the research paths.

The peers understand that at present it is difficult or even impossible to rename the MSUP programme, since the naming is based on the decision of Ministry of Higher Education. However, in order to better reflect the focus of this programme, which is on Marine Biology/Marine Biosciences, possibilities should be mapped out to update the naming in the medium term.

The peers are glad to hear that UNDIP is planning to offer international classes in MSUP and OcUP and will revise the regulation with respect to admitting colour-blind persons. They expect UNDIP to provide the updated admission regulation in the further course of the procedure.

The peers consider criterion 1 to be mostly fulfilled.

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

### Criterion 2.1 Structure and modules

#### Evidence:

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Academic Regulations
- Webpage Universitas Diponegoro: <https://www.undip.ac.id>
- Webpage Faculty of Fisheries and Marine Science: <https://fpik.undip.ac.id/en/home/>
- Webpage School of Postgraduate Studies: <https://pasca.undip.ac.id/home/>
- Webpage Ba Marine Science: <https://kelautan.fpik.undip.ac.id/language/en/>

- Webpage Ba Oceanography: <https://oseanografi.fpik.undip.ac.id/language/en/>
- Webpage Ma Environmental Science: <https://mil.pasca.undip.ac.id/>
- Webpage PhD Environmental Science <http://dil.pasca.undip.ac.id/>
- Discussions during the audit

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

The curriculum of both Bachelor's degree programmes under review are designed for eight semesters. Nevertheless, it is also possible for excellent students to complete the degree in only seven semesters. Students cannot cover more than 24 SKS per semester. The students' individual study plans might differ from each other, but have to be approved by their academic advisors and the Vice Dean of Academic and Student Affairs. The curricula include courses with theoretical and practical content (except for a few cases, there seem to be no designated practical courses; practical work and theoretical lessons seem to be merged in most courses), thesis proposal and thesis, community service, and electives.

Elective courses can be chosen by the students in accordance with their areas of interest and after consultation with their academic advisor. The courses in the first two semesters of the Bachelor's programmes convey basic knowledge of natural sciences and languages (Indonesian and English). Both curricula certainly require students to take compulsory courses in the first year to build character and provide basic knowledge and skills in the laboratory and the field. In the next two years, the courses focus on strengthening knowledge and laboratory and field skills with subjects related to marine science/oceanography. Courses on the different sciences are offered from the third to the sixth semester. The programmes cover areas such as physical, chemical, and biological processes in oceanography, remote sensing, ocean mapping, and modelling, marine geology, oceanic-based-renewable energy, coastline management, coastal hazard, coastal and oceanic zone management. During the seventh and eighth semester, students must complete the Field Practise (internship), the Community Service and the undergraduate thesis.

Regular undergraduate students take 18 credits in every semester, while outstanding students may take up to 24 credits. Therefore, outstanding students are enabled to complete the Bachelor's degree in less than 4 years. However, this case is rare since the workload of the undergraduate programmes is rather high anyway and designed for a four-year study programme.

The peers discuss with the programme coordinators about their observation that the focus of MSUP seems to be on marine biology. The programme coordinators confirm that this impression is correct and has historical reasons. MSUP was established as the first undergraduate programme, several years before OcUP was designed. After establishing OcUP,

the focus of MSUP was shifted to marine biology/biosciences, whereas the OcUP deals more with other sciences such as chemistry, geology, and physics. The peers understand this distinction and just point out that it would be useful renaming MSUP to Marine Biology or Marine Biosciences, because this would better reflect the focus of the degree programme.

The peers see that the development of the field of oceanography and marine sciences is rapidly increasing and that there is a rising need for graduates from various governmental agencies, the private sector, as well as the marine industry, fisheries, and energy exploration (mining, marine alternative energy, etc.).

The MES programme offers four areas of concentration, namely:

1. Environmental Planning: Produce graduates who are able to analyse environmental conditions, propose alternative environmental policies and conduct environmental implementation studies and evaluations.
2. Environmental Engineering: Produce graduates who are able to solve environmental problems with a technical engineering approach.
3. Environmental Management: Produce graduates who are able to solve problems of environmental pollution/damage with a management approach.
4. Disaster Management: Produce graduates who are able to analyse migration and disaster adaptation.

The peers see that the MES programme is designed to make students familiar with current environmental issues such as the depletion of natural resources, declining biodiversity, increasing pollution and environmental damage that causes environmental disasters such as floods, landslides and droughts. At the same time, students need to be aware of the various effects caused by global warming and climate change, which threaten human life. Finally, they need to realise that in the era of globalization, free trade and regional autonomy, environmental aspects such as depletion of energy reserves and declining water quality and quantity become more and more important.

The curriculum of the DES programme encompasses 47 SKS in the form of nine compulsory courses and one dissertation course. The compulsory courses are divided into in-depth courses, research courses, seminars, dissertation proposal, and scientific publications. The dissertation course is mainly related to the student's research activities.

After analysing the module descriptions and the study plans the peers confirm that all four degree programmes under review are divided into modules and that each module is a sum of coherent teaching and learning units. All working practice intervals (Community Service) and internships are well integrated into the curriculum and the supervision by the Faculty

of Fisheries and Marine Science guarantees for their respective quality in terms of relevance, content, and structure.

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

With respect to practical laboratory work, the peers learn during the audit that students of both Bachelor's programmes under review usually do the experiments together in groups of up to five to six students (depending on the course).

However, despite the fact that UNDIP hosts some modern research buildings and teaching/research laboratories, there should be enough instruments and laboratory space so that the experiments can be conducted by groups of not more than two to three students. Otherwise, students may not acquire the necessary hands-on experience in conducting experiments and instrument operation. In addition, the module descriptions need to make transparent what laboratory work is included and how many hours students spend in the laboratory during each course (see criterion 5.1).

During the discussion with the peers, the employers and UNDIP's partner from the industry and from governmental and non-governmental institutions suggest to put more emphasis on conveying computational skills and knowledge of current software – especially for analysing data and running simulations. Otherwise, UNDIP's partners are very satisfied with the qualification profile of the graduates of all four programmes under review. This includes the graduates' practical skills.

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

#### *International Mobility*

UNDIP provides opportunities for students to conduct internships and exchange programmes abroad. The International Office of UNDIP (DIO) was established in 2009 and is responsible for establishing international collaborations, assisting international students, and supporting UNDIP's internationalisation. Students who take part in student exchanges through cooperation programmes can gain recognition of the acquired credits after obtaining approval from their undergraduate programme. The credits acquired abroad are transferable to UNDIP, although this transfer of credits is only possible if an agreement exists between UNDIP and the involved international university. This agreement regulates the details of the transfer, such as the list of courses that can be transferred, the minimum grade, equivalency of curriculum between universities, etc.

UNDIP wants to further promote the internationalisation and the current strategic plan of UNDIP aims at strengthening the international and employer reputation by increasing the number of international students and offering more summer schools especially for attracting international students and guest lecturers. A useful step in this direction would be offering international classes, which are taught in English in MSUP and OcUP. In MES, there is already an international class.

UNDIP has established international cooperations with several different universities and institutes. For example, there are agreements with Tokyo University of Marine Science, Japan, Kasetsart University Thailand, Toyama University Japan, Kwansai Gakuin University Japan, PSU Thailand, and the University of Wageningen, Netherlands. However, the students' academic mobility in the degree programmes under review is still low. In addition, there is a new national programme for undergraduate students for studying abroad. The Indonesian International Student Mobility Awards (IISMA) is a scholarship scheme to fund Indonesian students for studying at renowned universities overseas. Undergraduate students can spend one semester at the international university. The programme is centrally managed by Directorate General of Higher Education (DGHE), Ministry of Education and Culture (MoEC) and is open for undergraduate students from all Indonesian higher education institutions. However, the programme is highly competitive, because students from all Indonesian universities can apply for it.

The peers emphasise that especially in areas such as marine science, oceanography and environmental science it is important that students get international experience, because environmental and marine issues are internationally relevant especially in the view of climate change and pollution. This is even more relevant for MES and DES students as they need a wider and international perspective in order to better understand the global environmental issues.

The new policy of the Indonesian government actively supports any activities outside of the university by releasing a regulation on the Merdeka Belajar-Kampus Merdeka (MBKM), which requires the university to promote students who want to take outside their Bachelor's programme for up to three semesters (Minister of Education and Culture Regulation Number 3 Year 2020). UNDIP recognizes the courses taken by the students outside university based on the comparability of the intended learning outcomes. The peers consider this regulation sufficient. However, according to the opinion of the peer group, the academic mobility of the students should be further promoted. The number of students who participate in international exchange programmes is still low despite students' high interest. National scholarships are available, but it is highly competitive so only a few students receive them.

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

The peers understand these problems; however, facing the high level of internationalisation of marine and environmental science research and business, they recommend increasing the effort to further internationalising UNDIP by establishing more international cooperations and exchange programmes and by offering more and better-endowed scholarships. In addition, the peers see that most of the faculty members have international contacts, which can be used for establishing more international cooperations. It is also possible for students and teachers to apply to international organisations like ERASMUS or the German Academic Exchange Council (DAAD) for receiving funds for stays abroad.

In summary, the peers appreciate the effort to foster international mobility and support both the Faculty of Fisheries and Marine Science and the Graduate School to further pursuing this path.

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

### **Evidence:**

- Self-Assessment Report
- Study plans of the degree programmes
- Module descriptions
- Academic Regulations
- Discussions during the audit

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

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

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

- 50 minutes of scheduled contact with the teaching staff in learning activities,



- 60 minutes of structured activities related to lectures, such as doing the assignments, writing papers, or literature study,
- 60 minutes of independent activities outside the class room to obtain a better understanding of the subject matters and to prepare academic assignments such as reading references.

For lab work, final project, fieldwork, and other similar activities, one SKS is equivalent to 3 to 5 hours a week of student's activities.

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

The peers point out that there can be no fixed conversion rate between SKS and ECTS points, but the ECTS points need to be calculated separately for each course. This can be easily done by dividing the students' total workload, which is described in detail in the respective module description, by the number of hours that is required for one ECTS. In addition, UNDIP needs to define, how many hours of students' total workload are needed for awarding one ECTS point. In the Self-Assessment Report, UNDIP calculates with 25 hours per ECTS point, but this regulation needs to be made transparent, so that external stakeholders are informed about the actual workload of the single courses and the whole degree programmes.

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

The peers point out that especially the ECTS points awarded for Master's thesis in particular and for the whole MES programme in general need to be recalculated and adjusted to the students' actual total workload. According to international standards, for a fulltime two year programme approximately 120 ECTS points should be awarded. The same issue is relevant for DES, also here the students' workload and the awarded ECTS points seem not to be aligned with their actual workload.

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

students' total workload (including the time needed for self-studies) needs to be determined and verified for each course separately. UNDIP should follow the procedure as described in the ECTS Users' Guide.

During the audit, the students confirm that their workload is high but manageable and that it is possible to finish the degree programme within the expected time.

### **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:**

Various teaching and learning methods (including lectures, computer training and classroom and lab exercises, field trips, individual and group assignments, seminars and projects, etc.) have been implemented. Structured activities include tutorials, homework, assignments (reading or problem exercises) and practical activities. Group project assignments are given in some courses to develop students' skills in teamwork, communication, and leadership. The assignments and exercises should help students to develop their abilities with respect to critical thinking, written/oral communication, data acquisition, problem solving, and presentations.

The most common method of learning is class session, with several courses having integrated laboratory practices. Lecturers generally prepare presentations to aid the teaching process. With individual or group assignments, such as discussions, presentations, or written tasks, students are expected to improve their academic as well as their soft skills. Laboratory work covers laboratory preparation, pre or post-tests, laboratory exercises, reports, discussions, and presentations. In addition, practical activities should enable students to be acquainted with academic research methods.

To help students achieving the intended learning outcomes and to facilitate adequate learning and teaching methods, UNDIP offers a digital platform and an academic information system (SIAP).

In addition, distance learning is applied via virtual meetings (MS Teams, Zoom, etc.) and through a MOODLE based Learning Management System (KULON UNDIP), which is designed to manage learning content (lesson plans, teaching materials, learning videos, etc.) and learning activities other than virtual meetings (exams, quizzes, assignments, discussion forums, grading, etc.). During the COVID-pandemic, teachers prepared videos for practical classes, which demonstrated experiments conducted by the lab assistants. In addition, group discussions and lectures were conducted online and some guest lecturers were invited.

In summary, the peer group considers the teaching methods and instruments to be suitable to support the students in achieving the intended learning outcomes. In addition, they confirm that the study concept of all programmes comprises a variety of teaching and learning forms as well as practical parts that are adapted to the respective subject culture and study format.

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

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit

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

UNDIP offers a comprehensive advisory system for all undergraduate students. At the start of the first semester, every student is assigned to an academic advisor. Each academic advisor is a member of the academic staff and is responsible for approximately 20 students from his classes. He/she 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.

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

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

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

The peers notice the good and trustful relationship between the students and the teaching staff; there are enough resources available to provide individual assistance, advice and 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 comprehensive tutorial and support system at UNDIP is one of the strengths of the degree programmes.

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

The peers appreciate that UNDIP has recalculated the ECTS point awarded for the MES programme. Now, 116 ECTS points are awarded, which seems to be realistic for a four semester long programme. Furthermore, now 174 ECTS are awarded for the DES programme, which also realistic as the programme is designed for six semesters.

Although the awarded ECTS points are now mentioned in the module descriptions, the peers point out that it is still necessary to verify the students' total workload and to define how many hours of students' workload is required for one ECTS point.

The peers consider criterion 2 to be mostly 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
- Academic Regulations

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

According to the Self-Assessment Report, the students' academic performance in both Bachelor's programmes is evaluated based on their attendance and participation in class, their laboratory works 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 module descriptions that are available to the students via UNDIP's homepage and the digital platform SIAD.

The most common type of evaluation used are written examinations; however, quizzes, laboratory work, assignments (small projects, reports, etc.), presentations, seminars, and discussions may contribute to the final grade. Written examinations, either closed-book or open-book, typically include short answers, essays, problem-solving or case-based questions, and calculation problems. Some lecturers also give multiple choice or true-false questions in examinations or quizzes. The grade from laboratory work usually consists of laboratory skills, discussions, reports, and oral exams. Students are informed about mid-term and final exams via UNDIP's homepage. 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). Usually, the assignments contribute to 30 %, practical work to 30 %, mid-term exams to 20 %, and final exams to 20 % to the final grade.

Usually, students cannot repeat a failed final exam. If they fail, they have to retake the class in the next semester. However, lecturers need to arrange examinations for students who have not taken the examinations due to valid reasons. Some courses allow students, whose grades are still below the passing level, to improve their grades through repeating an exam (remedial). The students are satisfied with this policy but the peers point out that this process should be made transparent in the academic regulations.

After the exam, teachers upload the students' grades to the academic information system (SIAP) of Diponegoro University. If students are not satisfied, they can ask for a clarification from the teacher and can appeal their grades. The details of the procedure are described in the academic regulations.

The peers discuss with the students about their exam load and the exam organisation. They learn that for each course there is one mid-term exam and one final exam in every semester. Usually, there are additional practical assignments or quizzes. The final grade is the sum of the sub-exams. The students confirm that they are well informed about the examination schedule, the examination form, and the rules for grading and that the exam load is appropriate.

Every student in both undergraduate programmes under review is required to do a final project (Bachelor's thesis). This project is conducted independently under the guidance of

one or more supervisors and usually consists of literature study, practical research, and data analysis. Both the student and his /her supervisors might decide the topic and content of the project. The teachers offer possible topics for the final projects according to their own research projects. All members of the teaching staff supervise theses. Students have to design a research proposal with a time schedule for the project, which is discussed with the academic advisor. If they agree, the students apply formally for being allowed to work on the suggested topic. Moreover, students can develop their own ideas for their final project and design the proposal accordingly. It is also possible to conduct an external final project e.g., in co-operation with a company. In this case, one co-supervisor comes from the respective host institution.

For carrying out the Master's and the PhD thesis, MES and DES students are assisted by specific supervisors to complete their research projects. In particular, the thesis and dissertation advisors help students to design the research topic and to implement the research project. In addition, the thesis advisor monitors the conducted research activities, provide guidance on problems and approve the script of the final project report.

The PhD and the Master's thesis are designed to be an in-depth research project that takes new developments of science and technology into account and are carried out independently by the students. Moreover, the doctoral dissertation needs to be a scientific paper of in-depth study which that generates new knowledge in the field of environmental science.

Publications resulting from the Master's thesis and the PhD thesis should be submitted to peer-reviewed journals. The peers point out that the quality of the Master's thesis and the PhD thesis can best be proven by publishing the results in a reputable scientific journal with peer-review.

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

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

UNDIP does not comment on this criterion in its statement.

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 Handbooks
- Study plans
- Module descriptions
- Discussions during the audit

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

At UNDIP, the staff members have different academic positions. There are professors, associate professors, assistant professors, and lecturers. The academic position of each staff member is based on research activities, publications, academic education, supervision of students, and other supporting activities. For example, a full professor needs to hold a PhD degree. In addition, the responsibilities and tasks of a staff member with respect to teaching, research, and supervision depend on the academic position. According to Indonesian regulations, every teachers has a workload of 12 to 16 credits (one credits equals 170 minutes of working time per peek), whereas at least 6 credits need to be spend teaching, 2 credits on research activities and 1-2 credits on community service and supporting activities.

All fulltime members of the teaching staff are obliged to be involved in (1) teaching/advising, (2) research, and (3) community service. However, the workload can be distributed differently between the three areas from teacher to teacher.

According to the Self-Assessment Report, the teaching staff in MSUP consists of 37 fulltime teachers (4 professors, 18 associate professors, 15 assistant professors), in OcUP of 27 fulltime teachers (3 professors, 13 associate professors, 14 assistant professors), and in MES and DES of 25 fulltime teachers (12 professors, 13 associate professors). All teachers in UNDIP's Graduate School, which offers MES and DES, are either full or associate professors and all of them hold a PhD degree. The teachers are supported by non-academic staff members (laboratory technicians, administrative staff, finance, and librarians).

The peers point out that if UNDIP wants to become a national and international recognised research university, the share of teachers with a PhD degree should be further increased. They confirm that UNDIP regularly sends young teachers abroad e.g. to Japan, Thailand, or USA for pursuing a PhD degree. The peers support these efforts but stress that the ultimate goal should be that almost all teachers should have a PhD degree. This goes hand in hand

with the observation, that UNDIP should further increase the research activities and encourage teachers and graduates students even more to publish their research results in international peer-reviewed journals.

The peers positively notice that in all degree programmes several guest lecturers from renowned international universities and private companies are invited to give classes and act as keynote speakers in seminars. The purpose of inviting domestic and foreign guest lecturers is to provide students with a different learning experience, and to improve standard of lectures at UNDIP.

The peers discuss with UNDIP's management how new staff members are recruited. They learn that every year the faculties and departments announce their vacancies to UNDIP's management, which subsequently announces the vacancies on the university's webpage. One way to recruit new teachers is to send promising Master's students from UNDIP abroad to complete their PhD and then to hire them as teachers when they are finished. Besides this general recruitment, there is a "special recruitment" at UNDIP for teachers with expertise in a specialised area that is needed at UNDIP.

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.

The peers are impressed by the excellent and open-minded atmosphere among the students and the staff members. 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 Handbooks
- Discussions during the audit

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

UNDIP encourages training of its academic and technical staff for improving the didactic abilities and teaching methods. As described in the Self-Assessment Reports, faculty members and non-academic staff regularly participate in training or workshops.

To this end, UNDIP has established several programmes to support staff development. New staff members are required to undertake an intensive basic training programme called Pre-Service or Pra-Jabatan. Following Pra-Jabatan, lecturers are required to undertake Training



for the Development of Basic Skills in Instructional Techniques (PEKERTI) and Applied Approach (AA) to develop teaching and management skills. In addition, lecturers are required to take a lecturer certification and obtain an educator certificate (SERDOS) that shows their recognition as a professional staff. In addition, lecturers are mentored by their seniors to develop their expertise and to advance their career.

Faculty members can also further develop their competencies through several activities such as post-doctoral programmes, training, workshops, joint research, etc. Moreover, they are encouraged to present their research papers in national and international conferences, and to collaborate with colleagues from international universities.

Teacher development programmes, especially in the field of learning and teaching methods, are coordinated by the UNDIP Education Quality Assurance and Development Institute. The institute is responsible for developing the teachers' didactical skills and for providing trainings in the form of mentoring lecturers, courses on e-learning, information technology, distance learning, and on preparing teaching materials.

The peers discuss with the members of the teaching staff the opportunities to develop their personal skills and learn that the teachers are satisfied with the internal qualification programme at UNDIP, their opportunities to further improve their didactic abilities and to spend some time abroad to attend conferences, workshops or seminars; even a sabbatical leave is possible, which is funded by UNDIP or the government.

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

#### **Criterion 4.3 Funds and equipment**

**Evidence:**

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

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

Basic funding of the undergraduate programmes and the facilities is provided by UNDIP, the School for Graduate Studies, and the Faculty of Fisheries and Marine Science. Additional funds for research activities can be provided by UNDIP or the Indonesian government (Bantuan Pendanaan Perguruan Tinggi Nasional, BPPTN), but the teachers have to apply for them. In addition, there are several co-operations with industrial partners.

The financial means for the programmes can be divided into a state revenue budget (APBN) and non-state revenue budget (non-APBN). APBN funds are provided by the Indonesian Ministry of Education and Research, they constitute between 30 and 35 % of the total budget and cover the employee salaries. Non-APBN funds come from UNDIP, the largest share derives from tuition fees around and additional funds are generated from co-operations with companies and business activities. These funds are used for covering the operational costs of the degree programmes and for non-permanent employees. The provided budget allows the departments to conduct the study programmes as well as some specific activities, including student exchange programmes, student financial assistance for research, and participation in international conferences.

The programme coordinators emphasise that from their point of view, all programmes receive sufficient funding for teaching and learning activities. Hence, the departments do not face any financial shortages. Of course, there is limited funding to modernise or add laboratory equipment, but there are sufficient resources for adequately teaching the classes.

Especially in MES and DES, the teachers cooperate with other international or national universities and research institutions to gain access to some sophisticated instruments that are not available at UNDIP. For example, UNDIP cooperates with the Marine Science Techno Park and the National Nuclear Energy Agency (BATAN).

From the provided documents and videos of the laboratories, the peers deduct that there seem to be no severe bottlenecks due to missing equipment or a lacking infrastructure. Most of the research labs are well equipped with modern instruments and most of the laboratories are hosted in modern research buildings. However, as the study fields under review are heavily based on the availability of modern analytical and survey instrumentation, it is important to establish sound financing possibilities to keep up with the rapid technological advancements and to modernize the laboratories as an ongoing effort.

The basic technical equipment for teaching the students is available, although it is not always state of the art. Overall, based on the provided online lab-tour, the peers got a positive impression of the lab facilities and the technical equipment. Nevertheless, there is no question (keeping the high number of students in mind), that the facilities for practical work are a bit limited. The students confirm during the discussion with the peers that, in general, they are satisfied with the available equipment, but that several instruments are outdated. Moreover, the peers learn during the audit that students can use and operate the instruments in the laboratories by themselves after being trained and instructed by either senior students or lab technicians. Each laboratory has a lab supervisor; in addition, there are several senior students, which work as lab assistants.

The peers emphasise that all Bachelor's students need to have the opportunity to get hands-on experience with instruments and carrying out laboratory experiments. For this reason, the number of students conducting one experiment should be reduced. In order to gain sufficient practical experience in the laboratories, groups conducting one experiment should be limited to two to three students. Currently there are up to five or six students in one group, which is too many. For this reason, the peers expect UNDIP to further increasing the laboratory equipment so that experiments in the laboratories are conducted by groups of not more than two to three students.

In addition, teachers and students can use the facilities of UNDIP's central laboratory. Here, more sophisticated instruments (e.g. Atomic Force Microscopy, X-Ray Diffraction, Gas Chromatography, Mass Spectrometry, and Laser Particle Size Analyser) are available and lab technicians are present to operate them. Teachers have to apply for using the facilities and are charged for the provided services.

The students also express their satisfaction with the library and the available literature there. They confirm having access to international literature and publications as well as to scientific databases such as ScienceDirect.

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

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

UNDIP does not comment on this criterion in its statement.

For the OCUP and MSUP programmes, an updated list of currently available technical equipment in all laboratories is provided. This list confirms the initial assessment of the peers, i.e. the need to expand and continuously upgrade the equipment to provide state-of-the-art practical training in smaller groups of students.

The peers consider criterion 4 to be mostly fulfilled.

## 5. Transparency and documentation

<b>Criterion 5.1 Module descriptions</b>
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**Evidence:**

- Self-Assessment Report
- Module descriptions
- Webpage Ba Marine Science: <https://kelautan.fpik.undip.ac.id/language/en/>
- Webpage Ba Oceanography: <https://oseanografi.fpik.undip.ac.id/language/en/>
- Webpage Ma Environmental Science: <https://mil.pasca.undip.ac.id/>
- Webpage PhD Environmental Science <http://dil.pasca.undip.ac.id/>
- Discussions during the audit

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

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

After studying the module descriptions, the peers confirm that the module descriptions include almost all necessary information about the persons responsible for each module, the teaching methods, the awarded credit points, the intended learning outcomes, the content, the applicability, the admission and examination requirements, and the forms of assessment.

However, the information about the teaching format in the module description should be updated; it is not always clear what course is a lecture and what course includes laboratory work. The module descriptions need to make transparent how many hours students spend in the laboratory in each course and what laboratory work is done. In addition, the calculation of the students' total workload and the conversion into credits is either missing or not transparent. The students total workload (time spend in the class room and laboratory and the time needed for self-studies) needs to be described in detail. Moreover, UNDIP needs to define in an official regulation how many hours of students' total workload are required for one ECTS point and make that information transparent. This issue is also discussed under criterion 2.2. Finally, some module descriptions were not provided by UNDIP, especially for MES. For this reason, it is necessary to submit the complete module handbooks for each degree programme.

Finally, the peers point out that all module descriptions should include up-to-date literature references.

<b>Criterion 5.2 Diploma and Diploma Supplement</b>
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**Evidence:**

- Self-Assessment Report
- Sample Diploma for each degree programme
- Sample Diploma Supplement for each degree programme

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

The peers confirm that the students of all 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 almost all necessary information about the degree programme including acquired soft skills and awards (extracurricular and co-curricular activities).

The auditors point out that a Diploma Supplement should also include information about the awarded ECTS points and statistical data about the distribution of final grade according to the ECTS Users' Guide. This allows the reader to categorise the individual result. For this reason, the peers ask UNDIP to include this additional information in the Diploma Supplement.

The Transcript of Records should include information about the awarded ECTS points for each course and how many ECTS points are awarded for the whole degree programme.

With respect to MES and DES, the peers point out that the respective Diploma Supplement needs to make transparent what area of specialisation (Environmental Planning (PL), Environmental Engineering (RL), Environmental Management (ML), or Disaster Management (MB)) the student has chosen. The intended learning outcomes as mentioned in the Diploma Supplement need to differentiate between the four areas of specialisation and the course and the research path.

<b>Criterion 5.3 Relevant rules</b>
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**Evidence:**

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

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

The peers confirm that the rights and duties of both UNDIP and the students are clearly defined and binding. All rules and regulations are published on the university's Indonesian

website and hence available to all stakeholders. In addition, the students receive all relevant course material in the language of the degree programme at the beginning of each semester.

The peers discuss with UNDIP about the admission of students with disabilities, particularly colour-blindness, as this is a known issue in Indonesia. The university stresses that it follows a general non-discrimination policy and that students with disabilities are eligible for admission into the programmes. The peers understand that applicants with colour-blindness and deaf are not admitted to MSUP and OcUP. They are aware that this is common practice at Indonesian universities, but are convinced that it is unnecessary. The peers emphasise that with modern tools and technology, colour-vision is no longer an important ability even in laboratories. Regarding the study programmes at hand, it is even less of an issue as the experiments are conducted in groups and the colour-blindness of one student can be easily compensated by the other group members. Hence, they consider such an admission criterion too restrictive and expect UNDIP to delete or change it.

The peers point out that UNDIP needs to design study plans for each degree programme that include the awarded ECTS points for every course. These study plans should be published on the respective programme's webpage.

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

The peers see that the module descriptions have been significantly updated, but they still do not make fully transparent how much time students spend on self-studies and how the awarded ECTS points are calculated. In addition, it should also be clear, how many hours students spend in the laboratory in each course and what laboratory work is done.

The Diploma Supplement now includes information about the area of specialisation (MES programme). However, the Transcript of Records needs to list the acquired ECTS points of each course and that the Diploma Supplement needs to include statistical data about the distribution of final grade according to the ECTS Users' Guide. This is relevant for all four degree programmes.

The peers consider criterion 5 to be mostly fulfilled.

## 6. Quality management: quality assessment and development

### Evidence:

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit

### Preliminary assessment and analysis of the peers:

The peers discuss the quality management system at UNDIP with the programme coordinators. The peers learn that there is an institutional system of quality management aiming at continuously improving the degree programmes.

This system relies on internal (SPMI) as well as external (SPME) quality assurance. SPMI encompasses all activities focused on implementing measures for improving the teaching and learning quality at UNDIP. SPME focuses on both national and international accreditations. National accreditation is conducted by the National Accreditation Board for Higher Education (BAN-PT), under the Ministry of Education and Culture, Republic of Indonesia. National accreditation of the programme within the university is a legal obligation for every study programme. All programmes under review have received the highest accreditation status (A) from BAN-PT.

Internal evaluation of the quality of the degree programmes is mainly provided through student 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 UNDIP's digital platform. The questionnaires are used to monitor and evaluate the learning processes and are distributed every semester to the lecturers before the final exam is done. A summary of the students' feedback is sent to the respective lecturers. Based on the results, the programme coordinator and the teachers reassess every course and possibly some changes are made. If there are negative results, the Department Head invites the concerned teacher to discuss about his or her teaching methods and thus, they are expected to enhance their performance in the future. The students confirm during the meeting with the peers that they are informed about the results of the questionnaires via UNDIP's digital platform.

In addition, UNDIP has established the "Academic Dialogue", which is held once a year on department level. Students, Dean, Vice-Dean, Head of Department, programme coordinators, and teachers are all taking part in this forum. The goal of the forum is to discuss with all people involved in running the degree programme to discuss about weaknesses and possible measures for improvement. The peers appreciate this format and consider it to be

very useful for getting direct feedback from students. The peers gain the impression that the departments take the students' feedback seriously and changes are made if necessary.

Students confirm during the audit that they are not represented in the university's boards – with the exception of the Board of Trustees on university level - and, thus, are not directly involved in the decision-making processes. Of course, there is a students' senate at department, faculty, and university level, but they focus on organising students' extracurricular activities. In addition they also give feedback if there are some problems with the teaching and learning activities. However, the peers are convinced that it would be very useful to have students as official members in the different boards. For this reason, they recommend that student representatives should be members of boards at UNDIP (at least on programme and department level) and be actively involved in the decision-making processes for further developing the degree programmes.

UNDIP regularly conducts an alumni tracer study. By taking part at this survey, alumni can comment on their educational experiences at UNDIP, the waiting period for employment after graduation, their professional career, and they can give suggestions how to improve the programme. Moreover, the employers are asked to give feedback to UNDIP on employability and acquired competencies of UNDIP's graduates. During the audit, the employers express their general satisfaction with the qualification profile. They just recommend improving the students' computational skills and knowledge of current software especially for analysing data and running simulations.

The peers discuss with the representatives of UNDIP's partners from public institutions, and private companies if there are regular meetings with the partners on faculty or department level, where they discuss the needs and requirements of the employers and possible changes to the degree programmes. They learn that some employers and alumni are invited to give their feedback on the content of the degree programmes. The peers appreciate that UNDIP stays in contact with its alumni and has a close relation with its partners from the industry and public institutions. However, the peers point out that external stakeholders and alumni should be invited more often than just every four or five years to discuss the further development of the programmes. For this reason, the peers recommend establishing an academic advisory board on department level. The advisory board should meet on a regular basis (at least every one to two years), consist of a group of professionals, employers, and experts of the relevant fields from outside the university (e.g. companies and governmental institutions). Including students, professionals, and employers in the different boards will help further developing the degree programmes. Especially in fast developing areas such as environmental sciences it is important to consult with experts from companies and public and research institutions about current developments and how the study programmes can be adjusted.



In summary, the peer group confirms that the quality management system at UNDIP is, besides the mentioned deficits, suitable to identify weaknesses and to improve the degree programmes.

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

The peers are satisfied that UNDIP has already established advisory boards with external stakeholders for all four degree programmes.

The peers consider criterion 6 to be mostly fulfilled.

## D Additional ASIIN Criteria for structured Doctoral Programmes

### Criterion D 1 Research

#### Evidence:

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit
- List of research projects

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

As detailed in the Self-Assessment Report, the goal of the DES programme is to verify that the doctoral candidates are able to conduct original and scientifically relevant research activities in the area of environmental science. In addition, they should be able to independently analyse and interpret results of their original research activities and should have obtained the latest knowledge in environmental sciences. This includes scientific and academic skills as well as practical abilities.

Conducting research activities means getting familiar with laboratory work, involvement in research work, use of literature, preparation of seminars, and participation in publishing scientific papers.

The head of the degree programme monitors the research activities and students have to submit their progress reports, which includes the courses the students have taken during the ongoing semester, the attendance in the workshop/seminar, and the updated data of their research.

As a requirement for completing the Doctoral programme, students have an obligation to publish their research in an accepted international journal. Since 2017, 41 scientific papers have been published by the students of the Doctoral programme in Environmental Science.

The peers emphasise that it needs to be made transparent, what the scope of the actual scientific doctoral thesis is. PhD students still attend courses in the first two semesters and then concentrate on the doctoral thesis and also regularly report on their progress in seminars. However, the peers criticise that this structure is not clear from either the curriculum or the module descriptions and that it is not clear what the overall scope of the scientific-experimental work is.

In addition, publications resulting from the PhD thesis should be submitted to peer-reviewed journals. The peers point out that the quality of the PhD thesis can best be proven by publishing the results in a reputable scientific journal with peer review.

### Criterion D 2 Duration and Credits

#### Evidence:

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit
- Study plan
- Module descriptions
- Academic Regulation for Postgraduate Studies
- Statistical data

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

The curriculum of the Doctoral programme Environmental Science is designed for six semesters and encompasses a work load of at least 47 SKS. This includes 13 SKS for advanced courses in environmental science and research methods, 11 SKS for writing a scientific publication, and 23 SKS for the dissertation preparation and the final examination.

DES offers “matriculation lectures” before the first semester of teaching and learning begins, which must be taken by students who have not a Master’s degree in environmental science. Since the doctoral students come from various fields of science, it is necessary to establish a common understanding and perception of environment sciences, in the form of environmental principles, as well as environmental issues that occur on a global, national, and regional scale.

Since it is a research-based curriculum, one SKS for seminar courses is equivalent to 100 minutes face-to-face lecture and 70 minutes of independent study time, while one SKS for scientific work is equivalent to 170 minutes of independent study time.

As stated in Academic Regulations, doctoral students have two to three advisors, to whom they regularly report about their research activities and their progress. In addition, they should get involved in other academic activities, such as trainings, seminars and workshops as well as community service. Doctoral students should also attend seminars given by visiting professors or guest lectures which are held by the DES programme each semester, and the internal seminar for monitoring and evaluating the dissertation progress report.

Based on the provided statistical data, the average length of studies and the time span between the doctoral defence and the publication of the results varies for every single doctoral student. The average length of study since 2018 was four years and two months, while it took on average four months between the doctoral defence and the publication of the results. Publication in an accepted scientific journal is the requirement for students to perform the final defence as completion of their studies.

The peers point out that there are some critical issues. First, there is no calculation of the doctoral students' total workload. UNDIP needs to verify with the students, how much time they spent on the different courses and then award the ECTS points accordingly (see criterion 2.2).

Secondly, UNDIP needs to verify, which some PhD students need more than five or six years to complete the programme. UNDIP should discuss with the respective students about the reasons and implement suitable measures in order to make sure that all PhD students can graduate within a reasonable time frame.

### **Criterion D 3 Soft Skills and Mobility**

#### **Evidence:**

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit
- Study plan
- Module descriptions

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

UNDIP and the School of Postgraduate Studies support its doctoral students' personal and professional development by inviting guest lecturers to give seminars for doctoral students with different topics from environmental sciences. Doctoral students should also attend seminars to present their research results or a scientific paper with a relation to their research topic.

UNDIP offers several supporting programmes for all doctoral students. This includes the Career Development Centre and offers scholarships to conduct research activities abroad. In addition, doctoral students can receive grants from RDDU (Dissertation Research Grant for UNDIP Lecturer) and from the Indonesian government.

As the programme coordinators explain, several doctoral students have taken part at international academic mobility programmes, including the “Sandwich Programme” through the DIKTI Graduate Scholarship Program funding scheme, Utrecht Summer School funded by PMDSU, Online Course co-funded by Erasmus Programme of the European Union, and Research Assignment Cooperation Programme (RACP) funded by Netherlands Enterprise Agency (RVO).

At the same time, there are international student at DES, who receive funding from DISS (Diponegoro International Student Scholarship), which is the financial assistance offered by UNDIP to international students to pursue their studies at UNDIP.

To further promoting their professional and didactic skills in preparation for the career as a lecturer, doctoral students are recommended to become co-supervisors for Bachelor’s theses and/or work as lab or research assistants.

### Criterion D 4 Supervision and Assessment

#### **Evidence:**

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit
- Module descriptions

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

Each doctoral student is assigned a supervisor and a co-supervisor at the beginning of her/his studies. During admission, the student has to submit their short outline research plan or interest along with other registration documents, and this will be used as a guidance for supervisor assignment by the head of DES.

The supervisor and the student discuss the study and research plan where the research topic, target and other research outputs will be agreed by upon. Generally, the supervision is started from writing a research proposal, which will be assessed by an examiner team (four members including two supervisors). The supervisor mentors and guides the student's work during the preparation of the doctoral dissertation, monitors the quality of the student's research work, encourages participation in scientific projects and the publication of the results. The mentor makes sure that the research goes according to plan, so that all research necessary for the preparation of the doctoral dissertation is done within the planned period.

PhD students need to report on their progress through a research progress seminar as part of the assessment process, in order to see whether the project is still on the right track as agreed in the research proposal.

DES is completed with passing all scheduled exams, preparation and defence of the doctoral dissertation. Students have acquired right to defend the doctoral dissertation if they have published at least one paper or if it has been accepted for publication in a reputable journal (with a minimum impact factor).

### Criterion D 5 Infrastructure

#### **Evidence:**

- Self-Assessment Report
- Discussions during the audit

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

Doctoral students usually perform their research activities in the laboratories at the Faculty of Fisheries and Marine Science, in the UNDIP Central Laboratory, at associated research centres, or at companies. UNDIP provides the necessary equipment for scientific research, including the equipment provided by the institutions that UNDIP cooperates with.

While conducting their research activities, the doctoral students also have access to the UNDIP central laboratory.

In addition, UNDIP cooperates with other international or national universities and research institutions to gain access to some sophisticated instruments that are not available at UNDIP. For example, UNDIP cooperates with the Marine Science Techno Park and the National Nuclear Energy Agency (BATAN).

### Criterion D 6 Funding

#### **Evidence:**

- Self-Assessment Report
- Discussions during the audit

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

Students of the Doctoral programme Environmental Science have the opportunity to receive scholarships or research grants from the Indonesian Ministry of Monetary and Funds or from the Ministry of Education, Culture, Research and Technology. In addition, they can

receive scholarships and research grants from the regional government of West Java and grants for doctoral students as a lecturer of UNDIP (RDDU, Dissertation Research for UNDIP Lecturer). Finally, students can also apply to receive financial support from different companies.

Besides studying, DES students can work in various fields. They work as lecturers, researchers, environmental consultants, or government employees, etc. There are also jobs opportunities as research assistants. However, some students just study and don't work at the same time. They receive a PMDSU scholarship, which is a funding scheme for accelerating postgraduate studies for Master's and PhD programmes.

### Criterion D 7 Quality Assurance

#### **Evidence:**

- Self-Assessment Report
- Academic Regulations
- Discussions during the audit

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

The Academic Regulation for Postgraduate Studies specifies the conditions and procedures of admission, purpose, objectives and learning outcomes, the curriculum, organization of the degree programme, and the rules of doctoral academic studies.

Rules of good scientific practice are followed according to the code of conduct on scientific research work and monitored by external examiners who check for plagiarism and review the dissertation manuscript.

To improve the quality of the Doctoral programme, tracer studies and career tracking are conducted and the results are analysed.

Doctoral students are encouraged to actively joining national and international seminars for dissemination of their research.

#### **Final assessment of the peers after the comment of the Higher Education Institution regarding the additional ASIIN criteria:**

The peers thank UNDIP for providing additional information about the DES programme.

Concerning the "course path" of the DES programme, the peers consider the additional ASIIN criteria for structured doctoral programmes as mostly fulfilled.

## **E Additional Documents**

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

- Complete module handbooks for all degree programmes



## **F Comment of the Higher Education Institution (20.05.2022)**

UNDIP provides a detailed statement for all four programmes and links to the updated documents (e.g., the complete module handbooks).

With respect to the DES programme, the following additional information is provided:

### **D. Additional ASIIN Criteria for structured Doctoral Programmes**

#### **Criterion D 1 Research**

The first two semesters are a chance for PhD students to expand and deepen their knowledge in environmental issues. Not merely for their personal knowledge gain, this first year is very crucial to help students in deciding their research topic. This is aligned with the research pathway where students are expected to develop their research plan in the following semester, which is in the early of their second year. To ensure the students are on the right track in doing their scientific research both in the second and third year, they are expected to be able to do weekly reports to the lecturers. Speaking about the scope of the work, students are given the freedom to decide their topic as well as the complexity of their work. However, DES always emphasized that students shall conduct comprehensive environmental research which includes the abiotic, biotic, and culture aspects. For example, students taking research in assessing microplastic toxicity for the human body, would also be encouraged to see from a wider perspective such as the source and spatial pattern of the plastic debris flows, also from the policy aspects, as well as how the community responds to the wicked plastic waste problems.

In the first and second semesters, the DES students gain a deep understanding of three scientific philosophies, namely ontological, epistemological, and axiological. It is the basic foundation for a doctoral candidate in understanding science and its application. Then, they also receive qualified knowledge in designing dissertation research methods. Furthermore, no less important, they gain knowledge about writing good and correct scientific articles, selecting reputable international journals, and how to avoid predatory journals. The comprehensive understanding received by the students is evidence of the successful transfer of knowledge provided by the lecturers of DES program to their students.

Some of the scientific articles produced from the theses of DES student have been published in highly reputable international journals (Scopus Q1, Q2, & Q3) which are reputable scientific journals with peer-review. In the future, students are encouraged to publish their research results in highly reputable international journals. A complete publication in reputable international journals indexed by Scopus can be seen at the link <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/International-Journal.pdf>.

### **Criterion D 2 Duration and Credits**

Recalculation of the total workload of doctoral students has been carried out and detailed for each course. The calculation results are included in the curriculum and uploaded to the program website:

- Curricula 2017 by course path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/CURRICULUM-2017-3.pdf>
- Curricula 2020 by course path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/BY-COURSE-2020.pdf>
- Curricula 2020 by research path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/BY-RESEARCH-2020.pdf>

Details of activities for each course along with the total workload are listed in the handbook module and can be seen at:

- Module handbook for curricula 2017 by course path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/Module-Handbook-Curriculum-2017.pdf>.
- Module handbook for curricula 2020 by course path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/Module-Handbook-By-Course-2020.pdf>.
- Module handbook for curricula 2020 by research path: <http://dil.pasca.undip.ac.id/wp-content/uploads/2022/05/Module-Handbook-By-Research-2020.pdf>.

Some of the problems that cause delayed student graduation so that they need more than five or six years to complete the program can be identified as follows:

- The research implementation exceeds the targeted time duration
- Requirements for publication in reputable international journals take varying amounts of time, some experience delays in the preparation of articles, the submission process, and the review process.
- During the Covid-19 pandemic, some students had problems in collecting research data.

The suitable measures in order to make sure that all PhD students can graduate within a reasonable time frame:

- At each stage of the research, the achievement targets that must be achieved by students are determined, both at the stage of preparing a proposal and writing a dissertation report. In the proposal preparation process, targets and achievement indicators are implemented through the Proposal Writing course, while the targets and achievement indicators at the dissertation report writing stage are implemented through several Research Courses held every semester.
- Monitoring and evaluation of the achievement of targets are carried out by the promoter team and the implementing team formed by the study program.

### **Criterion D 3 Soft Skills and Mobility**

Prior to studying at DIL, some students had worked as lecturers in higher education institutions so they had experience in teaching and research activities. However, they are also involved in lecturer research, especially those related to the dissertation research being carried out so as to further expand the research experience and accelerate the completion of the dissertation. Some students who do not have jobs have been included as research assistants for lecturers. In accordance with the recommendations given, in the future, they will be more involved as co-supervisors for Bachelor's theses and/or work as lab or research assistants.

#### Criterion D 7 Quality Assurance

Tracer studies and career tracking have been conducted and the result has been uploaded to the website <http://dil.pasca.undip.ac.id/daftar-alumni/>. The summary of the results of the tracer studies is presented as follows.

Table 1 Summary of DES alumni data No	Fields of Work	Total
1	Lecture	74
2	Government officials	14
3	Teacher	4
4	Researcher	3
5	Consultant	2
6	Entrepreneur	2
<b>Total</b>		<b>99</b>

## G Summary: Peer recommendations (27.05.2022)

Taking into account the additional information and the comments given by UNDIP, 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 Marine Science	With requirements for one year	-	30.09.2027
Ba Oceanography	With requirements for one year	-	30.09.2027
Ma Environmental Science	With requirements for one year	-	30.09.2027
PhD Environmental Science	With requirements for one year	-	30.09.2027

### Requirements

#### For all degree programmes

- A 1. (ASIIN 2.2) Verify the students' total workload and award the ECTS points accordingly. Define how many hours of students' workload is required for one ECTS point.
- A 2. (ASIIN 5.1) The module descriptions need to include information about the students' total workload, the awarded ECTS points and need to make transparent how many hours students spend in the laboratory in each course and what laboratory work is done.
- A 3. (ASIIN 5.2) The Transcript of Records needs to list the acquired ECTS points of each course. The Diploma Supplement needs to include statistical data about the distribution of final grade according to the ECTS Users' Guide.

#### For the Bachelor's degree programmes

- A 4. (ASIIN 1.4) UNDIP must not exclude students from admission on the grounds of colour-blindness alone.

- A 5. (ASIIN 4.3) Provide enough technical equipment and instruments so that experiments can be done by smaller student groups. Ideally, experiments are conducted by groups of not more than two to three students.

**For the PhD programme**

- A 6. (ASIIN 1.1) Draft different intended learning outcomes for the course and the research paths. Include the updated and aligned intended learning outcomes in all official documents and make them available to all stakeholders.
- A 7. (D 1) The actual scope of the scientific doctoral thesis needs to be made transparent in the study plan and the module descriptions.

**Recommendations**

**For all degree programmes**

- E 1. (ASIIN 2.1) It is recommended to further promote the academic mobility of the students and to cooperate with more renowned international universities.
- E 2. (ASIIN 4.1) It is recommended to increase the number of teachers with a PhD degree.
- E 3. (ASIIN 6) It is recommended to make student representatives members of the boards at UNDIP at programme or department level and to directly involve them in the decision making processes for further developing the degree programmes.

**For the Bachelor's degree programmes**

- E 4. (ASIIN 1.3) It is recommended to establish international classes that are taught in English in both Bachelor's degree programmes.

**For the Master's and the PhD programmes**

- E 5. (ASIIN 4.1) It is recommended to increase the research output and to make the research activities more visible. Papers should be published in peer-reviewed journals.

## H Comment of the Technical Committee 11 - Geosciences (10.06.2022)

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

The TC agrees with the proposed requirements and recommendations.

The Technical Committee 11 – Geosciences 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 Marine Science	With requirements for one year	-	30.09.2027
Ba Oceanography	With requirements for one year	-	30.09.2027
Ma Environmental Science	With requirements for one year	-	30.09.2027
PhD Environmental Science	With requirements for one year	-	30.09.2027

# I Decision of the Accreditation Commission (24.06.2022)

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

The Accreditation Commission discusses the procedure and agrees with the assessment of the peer group and the TC 11 – Geosciences.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN-seal	Subject-specific label	Maximum duration of accreditation
Ba Marine Science	With requirements for one year	-	30.09.2027
Ba Oceanography	With requirements for one year	-	30.09.2027
Ma Environmental Science	With requirements for one year	-	30.09.2027
PhD Environmental Science	With requirements for one year	-	30.09.2027

## Requirements

### For all degree programmes

- A 1. (ASIIN 2.2) Verify the students' total workload and award the ECTS points accordingly. Define how many hours of students' workload is required for one ECTS point.
- A 2. (ASIIN 5.1) The module descriptions need to include information about the students' total workload, the awarded ECTS points and need to make transparent how many hours students spend in the laboratory in each course and what laboratory work is done.
- A 3. (ASIIN 5.2) The Transcript of Records needs to list the acquired ECTS points of each course. The Diploma Supplement needs to include statistical data about the distribution of final grade according to the ECTS Users' Guide.

### For the Bachelor's degree programmes

- A 4. (ASIIN 1.4) UNDIP must not exclude students from admission on the grounds of colour-blindness alone.

- A 5. (ASIIN 4.3) Provide enough technical equipment and instruments so that experiments can be done by smaller student groups. Ideally, experiments are conducted by groups of not more than two to three students.

**For the PhD programme**

- A 6. (ASIIN 1.1) Draft different intended learning outcomes for the course and the research paths. Include the updated and aligned intended learning outcomes in all official documents and make them available to all stakeholders.
- A 7. (D 1) The actual scope of the scientific doctoral thesis needs to be made transparent in the study plan and the module descriptions.

**Recommendations**

**For all degree programmes**

- E 1. (ASIIN 2.1) It is recommended to further promote the academic mobility of the students and to cooperate with more renowned international universities.
- E 2. (ASIIN 4.1) It is recommended to increase the number of teachers with a PhD degree.
- E 3. (ASIIN 6) It is recommended to make student representatives members of the boards at UNDIP at programme or department level and to directly involve them in the decision making processes for further developing the degree programmes.

**For the Bachelor's degree programmes**

- E 4. (ASIIN 1.3) It is recommended to establish international classes that are taught in English in both Bachelor's degree programmes.

**For the Master's and the PhD programmes**

- E 5. (ASIIN 4.1) It is recommended to increase the research output and to make the research activities more visible. Papers should be published in peer-reviewed journals.



## J Fulfilment of Requirements (23.06.2023)

### Analysis of the peers and the Technical Committee (12.06.2023)

#### Requirements

##### For all programmes

- A 1. (ASIIN 2.2) Verify the students' total workload and award the ECTS points accordingly. Define how many hours of students' workload is required for one ECTS point.

Initial Treatment	
Peers	Fulfilled Vote: per majority Justification: The module descriptions have been thoroughly updated for all. degree programmes. However, in the Ma Environmental Science (MES) the provided information is not as well structured as in the other programmes. Thus, the module descriptions should be checked again.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the majority of peers.

- A 2. (ASIIN 5.1) The module descriptions need to include information about the students' total workload, the awarded ECTS points and need to make transparent how many hours students spend in the laboratory in each course and what laboratory work is done.

Initial Treatment	
Peers	Fulfilled Vote: per majority Justification: The module descriptions have been thoroughly updated for the B.Sc. degree programs Marines Sciences/Oceanography and the PhD program Environmental Sciences. In modules with practical content (laboratory work, hands-on exercise), corresponding workload hours have been specified.

	The module descriptions for the Ma Environmental Science are not complete, there are some inconsistencies and missing information. For this reason, the module descriptions should be checked again.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the majority of peers.

- A 3. (ASIIN 5.2) The Transcript of Records needs to list the acquired ECTS points of each course. The Diploma Supplement needs to include statistical data about the distribution of final grade according to the ECTS Users' Guide.

Initial Treatment	
Peers	Fulfilled Vote: unanimous Justification: The documents have been adjusted accordingly.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the peers.

#### For the Bachelor's degree programmes

- A 4. (ASIIN 1.4) UNDIP must not exclude students from admission on the grounds of colour-blindness alone.

Initial Treatment	
Peers	Not fulfilled Vote: unanimous Justification: UNDIP provides a letter of the rector stating that it has been tried to adjust provisions related to disabilities, but that several study programmes continue to conduct screening tests related to the physical abilities that must be met by students. This may be well justified depending on the particular ability – but is of special concern in case of colour-blindness alone. According to the rector's statement, UNDIP is in the process of adjusting the regulations.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the peers.

- A 5. (ASIIN 4.3) Provide enough technical equipment and instruments so that experiments can be done by smaller student groups. Ideally, experiments are conducted by groups of not more than two to three students.

<b>Initial Treatment</b>	
Peers	Fulfilled Vote: unanimous Justification: UNDIP has described in some detail how they take effort to continuously improve the technical equipment for the laboratory courses. Noteworthy, a new Marine Environment Lab has now been opened for MSUP. Also for the OCUP programme, new equipment became available in the Geological Oceanography, Chemical Oceanography, and Physical Oceanography Laboratories.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the peers.

#### **For the PhD programme**

- A 6. (ASIIN 1.1) Draft different intended learning outcomes for the course and the research paths. Include the updated and aligned intended learning outcomes in all official documents and make them available to all stakeholders.

<b>Initial Treatment</b>	
Peers	Fulfilled Vote: unanimous Justification: The necessary information has been added to the corresponding documents.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the peers.

- A 7. (D 1) The actual scope of the scientific doctoral thesis needs to be made transparent in the study plan and the module descriptions.

<b>Initial Treatment</b>	
Peers	Fulfilled Vote: unanimous Justification: The guidelines for dissertation writing have been expanded to better explain the scope of the thesis.
TC 11	Fulfilled Vote: unanimous Justification: The TC follows the assessment of the peers.

## Decision of the Accreditation Commission (23.06.2023)

The AC decides that requirement A4 is not fulfilled.

Justification:

UNDIP needs to provide a clear verification that colour-blind persons are not automatically excluded from studying.

The Accreditation Commission points out that the module descriptions of the Master's degree programme Environmental Science should be thoroughly checked for inconsistencies and missing information.

The Accreditation Commission decides to award the following seals:

<b>Degree Programme</b>	<b>ASIIN seal</b>	<b>Subject-specific labels</b>	<b>Maximum duration of accreditation</b>
Ba Marine Science	Requirement A4 not fulfilled	-	prolongation for six months
Ba Oceanography	Requirement A4 not fulfilled	-	prolongation for six months
Ma Environmental Science	Requirement A4 not fulfilled*	-	prolongation for six months
PhD Environmental Science	Requirement A4 not fulfilled	-	prolongation for six months

## K Fulfilment of Requirements (08.12.2023)

### Analysis of the peers and the Technical Committee (28.11.2023)

#### Requirements

For all degree programmes

- A 4. (ASIIN 1.4) UNDIP must not exclude students from admission on the grounds of colour-blindness alone.

Second Treatment	
Peers	Fulfilled Vote: unanimous Justification: UNDIP put a new admission policy into place (which will be applied from 2024 onward) that does not impose any special requirements regarding the colour vision ability of the prospective students. It is the understanding of the peers that this also holds for the study programmes under concern and that student admission will not be rejected due to colour-blindness alone.
TC 11	Fulfilled Vote: unanimous Justification: The TC agrees with the experts' assessment.

### Decision of the Accreditation Commission (08.12.2023)

The Accreditation Commission follows the assessment of the experts and the Technical Committee and decides that all requirements are fulfilled.

The Accreditation Commission decides to award the following seals:

Degree Programme	ASIIN seal	Subject-specific labels	Maximum duration of accreditation
Ba Marine Science	All requirements fulfilled	-	30.09.2027

<b>Degree Programme</b>	<b>ASIIN seal</b>	<b>Subject-specific labels</b>	<b>Maximum duration of accreditation</b>
Ba Oceanography	All requirements fulfilled	-	30.09.2027
Ma Environmental Science	All requirements fulfilled	-	30.09.2027
PhD Environmental Science	All requirements fulfilled	-	30.09.2027

# 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 Marine Science:

## A. Generic Skills

1. Able to plan, conduct and evaluate scientific learning by using information and communication technology.
2. Understand professional ethics and social responsibility.
3. Able to present data or information in a responsible, precise and informative manner and develop excellent scientific research, communication, and writing skills.
4. Able to develop independence, leadership, and creativity in problem-solving, management and entrepreneurship.
5. Improved knowledge and ability to continue studying in a higher degree programme.

## B. Specialised Skills:

1. Able to demonstrate and apply basic and specific knowledge of marine sciences and perform marine exploration, conservation and management.
2. Able to apply logical, critical, systematic, and innovative thinking in the context of development and implementation of marine sciences that take into account and apply humanity values in accordance with marine sciences.
3. Able to master and apply the concept of biotechnology for the conservation and development of marine bio-industries. Being able to recognize specific Life Sciences problems and then formulate solutions and present results.

The following **curriculum** is presented:



Semester	Course Title	Credits
1	Religion	2
1	Pancasila (National Principle)	2
1	Bahasa Indonesia	2
1	Sport (Swimming)	1
1	Coastal Society Sociology	3
1	Introduction to Marine Science and Fisheries	3
1	Biology	3
1	Basic Chemistry	3
1	Oceanography	3
2	Kewarganegaraan (Citizenship)	2
2	English	2
2	Marine Geology	3
2	Introduction to Economics	2
2	Biochemistry	3
2	Diving	2
2	Marine Botany	3
2	Aquatic Ecology	3
3	Tropical Marine Ecology	3
3	Microbiology	3
3	Planktonology	3
3	Marine Invertebrates	3
3	Management	2
3	Meteorology & Climatology	3
3	Sedimentology	3
3	Statistics	2

4	Coralogy	3
4	Marine Vertebrates	3
4	Biotechnology	3
4	Conservation	3
4	Remote Sensing	3
4	Basics of Environmental Impact Assessment (AMDAL)	2
4	Field Practice (PKL)	2
4	Marine Natural Products	3
5	Entrepreneurship	3
5	Scientific Methodology	2
5	Quantitative Bio-ecology	3
5	Mariculture	3
5	Marine Biotechnology	3
5	Marine Pollution	3
5	Geographical Information System (GIS)	3
5	Scientific writing	2
6	Stock Assessment	3
6	Feasibility study	3
6	Algae Bioindustry	3
6	Coastal and Marine Resource Management	3
6	Community Service Program (KKN)	3
7	Thesis	6
6 or 7*	Marine Biodiversity	3
6 or 7*	Phycology	3
6 or 7*	Mariculture Engineering	3

6 or 7*	Captivity and Restocking	3
6 or 7*	Biomonitoring	3
6 or 7*	Ecotoxicology	3
6 or 7*	Diving Expertise	3
6 or 7*	Environmental Impact Assessment	3
6 or 7*	Coastal and Marine Spatial Planning	3
6 or 7*	Coastal and Marine Disaster Mitigation	3
6 or 7*	Coastal and Marine Environmental Modeling	3
6 or 7*	Coastal Geomorphology	3
6 or 7*	Ecotourism	3
6 or 7*	Marine Bioprospection	3
6 or 7*	Marine Pharmacology	3
6 or 7*	Identification of Marine Natural Compounds	3
6 or 7*	Bioremediation	3
6 or 7*	Biodeterioration	3
6 or 7*	Marine Chemical Ecology	3
6 or 7*	Marine Toxin	3

\*Electives

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

**A. Specialised Skills:**

1. Able to apply mathematics and basic sciences in the fields of programming, modelling, surveying, mapping, geographic information and statistical analysis
2. Being able to have the appropriate knowledge and skills in a specific subject of Oceanography
3. Can be applied skills in a special subject Oceanography
4. Increase knowledge and skills in professional practice
5. Able to identify, formulate and complete Oceanography tasks and problems
6. Able to utilize and practice modern technology, new methods and tools in the field Oceanography.

**B. Generic Skills:**

7. Able to find literature and data sources that match your needs
8. To have sufficient knowledge and skills of understanding and behavior in customer oriented and interdisciplinary
9. Having an attitude of professional openness, the deep creativity and innovation
10. To have leadership and are able to work in teams
11. Understand professional ethics and social responsibility
12. Having skills in socialization, business work and scientific environment
13. To have an awareness of the importance of lifelong learning
14. Able to understand and describe national characteristics and problems

The following curriculum is presented:

Semester	Course Title	Credits
1	Calculus	2
1	Physics	3
1	Religion study	2
1	Indonesian Languages	2
1	Introduction to Fisheries and Marine Science	3
1	Information Technology	2
1	Chemistry	3
1	Biology	3
1	Swimming	1
2	Physics Mathematics	3
2	Fluid mechanics	3
2	English	2
2	Citizenship	2
2	Pancasila	2
2	Marine Ecology	3
2	Sociology and coastal community	2
2	Introduction to economics	2
2	Diving	2
3	Statistics	2
3	Hydrodynamics	3
3	Physical oceanography	3
3	Remote sensing and ocean mapping	3
3	Analytical chemistry of sea water	3
3	Marine Geology	3
3	Marine Biology	3
3	Introduction to student creative program	1

4	Numerical model in oceanography	3
4	Tides	3
4	Ocean waves	3
4	Marine Geophysics	2
4	Ocean currents	3
4	Marine Instrumentation System	2

4	Marine Geographical Information System	3
4	Marine Environmental Chemistry	2
5	Oceanography Modelling	3
5	Method in Oceanography	3
5	Chemical Oceanography	3
5	Geological Oceanography	2
5	Marine Sedimentology	3
5	Ichthyology	2
5	Fisheries Oceanography	2
5	Biological Oceanography	2
6	Oceanographic Engineering	3
6	Coastal Hydraulics	2
6	Research methods and Scientific Writing	2
6	Colloquium	2
6	Marine Geochemistry	2
6	Internship	1
6	Lecture Field Work ( MPA )	2

7	Coastal and Marine Disaster Mitigation	3
7	Meteorology and Marine Climatology	2
7	Entrepreneurship	2
7	Community Service	3
7	Feasibility Study & Project Management	2
8	Bachelor Thesis	4
	Oceanographic Programming	3
	Marine Acoustics	3
	Hydrographic Survey	3
	Coastal Building	3
	Coastal and Marine Spatial Planning	3
	Ocean Energy	3
	Climate Change	3
	Marine Environmental Modelling	3
	Atmospheric and Ocean Interaction	3
	Estuary Dynamics	3
	Conservation of Marine Resources	3
	Marine Resources Exploration	3
	HSE / Health and Safety at Sea	3
	Cadastre and the Law of the Sea	3
	Diving Expertise	3
	Marine Pollution	3
	Marine Radionuclide	3
	Sediment Transport	3
	Reclamation and Dredging	3
	Environmental Impact Assessment	3

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

1. Able to formulate environmental management theory;
2. Able to formulate and carry out scientific research to solve environmental problems;
3. Able to formulate environmental management policies;
4. Able to formulate rules, methods, and ideas for environmental management to improve the quality of life, and save them in the form of theses, national and international journals, or in the form of reputable seminar proceedings.



Curriculum by course:

Code	Semester I	Workload					Credit Point Semester			
	Mandatory Course	Lecturing in class	Individual Task	Group Task	Mid Semester Test	Final Semester Test				
P-CIL-8-101	Philosophy of Science and Research Methodology	14	2	1	1	1	3			
P-CIL-8-102	Environmental Economics and Natural Resources	14	2	1	1	1	3			
P-CIL-8-103	Environmental Statistics	14	1	1	1	1	2			
P-CIL-8-104	Ecology and Environmental Science	14	2	1	1	1	3			
P-CIL-8-105	Computer Applications and Environmental Modeling	14	2	1	1	1	3			
<b>TOTAL CREDIT POINT SEMESTER I</b>							<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
Code	Semester II						Credit Point Semester			
	Concentration Elective Course						PL	RL	ML	MB
P-CIL-8-201	Environmental Law and Policy	14	1	1	1	1	2	2	2	2
P-CIL-8-202	Environmental Impact Analysis	14	1	2	1	1	3	3	3	3
P-CIL-8-203	Disaster and Environment Risk	14	1	1	1	1				2
P-CIL-8-204	Environmental Planning Theories	14	1	2	1	1	3			
P-CIL-8-205	Natural Resources and Environment Conservation	14	1	2	1	1		3	3	
P-CIL-8-206	Disaster Mitigation and Adaptation	14	1	2	1	1				3
P-CIL-8-207	Spatial Planning and Environment	14	1	1	1	1	2			
P-CIL-8-208	Environmental System Analysis	14	1	1	1	1		2		
P-CIL-8-209	Environmental Pollution Control	14	1	1	1	1			2	
P-CIL-8-210	Disaster Management Strategies	14	1	1	1	1				2
	Elective I (*)	14	1	1	1	1	2	2	2	2
	Elective I (**)	14	1	1	1	1	2	2	2	2
<b>TOTAL CREDIT POINT SEMESTER II</b>							<b>14</b>	<b>14</b>	<b>14</b>	<b>14</b>
Code	Semester III						Credit Point Semester			
	Mandatory Course									
P-CIL-8-301	Capita Selecta	14	1	1	1	1	2			
P-CIL-8-302	Field Trip	14	Organizing resources for group field trip (select location, expert), proposal field trip discussion, running field trip, group presentation, report submission				1			

P-CIL-8-303	Thesis Proposal	14 structured meeting	Organizing resources for individual research, Proposal Thesis Examination, Proposal Thesis Revision, Document Proposal thesis submission	2			
P-CIL-8-304	Seminar and Scientific Publication	14	Publishing 1 paper in Reputable Journal, or 1 paper in International Reputable Conference and 1 paper in Reputable National Conference	2			
<b>TOTAL CREDIT POINT SEMESTER III</b>				<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
Code	Semester IV			Credit Point Semester			
	Mandatory Course						
P-CIL-8-401	Thesis	14 structured meeting	Organizing resources for individual research, 6 Month individual work, Thesis Examination, Thesis Revision, Document thesis submission	6			
<b>TOTAL CREDIT POINT SEMESTER IV</b>				<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
<b>TOTAL CREDIT POINT SEMESTER FOR MASTER ENVIRONMENTAL SCIENCE BY COURSE</b>				<b>41</b>			

**Descripton**

**PL: Environmental Planning**

**RL: Environmental Engineering**

**ML: Environmental Management**

**MB: Disaster Management**

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

Able to analyse, develop and apply the conceptual and theoretical thinking of environmental science in various environmental research.

Able to parse theoretical abstractions in environmental science and its application through mastery of environmental management concepts along with rules and policies

Able to carry out stages in the environmental research process through problem identification, risk analysis, management concepts, alternative solutions, data analysis, conclusions and recommendations that are functional and efficient.

Able to demonstrate scientific attitude and think critically in carrying out duties professionally through appreciation of religion, culture, humanity, morals and ethics.

ASPECTS	Learning Outcomes Description
KNOWLEDGE	1. Able to analyze the theoretical thinking of environmental science and its development and application in various environmental situations.
	2. Able to develop conceptual thinking about research methodology and the selection of appropriate methods in environmental research.
	3. Able to apply theoretical thinking in environmental science aspects in accordance with the field under study
	4. Able to apply various environmental research methods and techniques.
SKILL	1. Able to mastering the rules and policies in the environment and their implementation.
	2. Able to have the ability to parse theoretical abstraction in environmental science and its application.
	3. Able to act as a facilitator in environmental science learning for institutions and society.
	4. Able to analyze environmental risks and understand environmental management concepts simultaneously.
COMPETENCES	1. Able to lead and carry out the stages in the environmental research process.
	2. Able to analyze environmental risks and understand environmental management concepts, as well as provide recommendations for handling environmental problems.
	3. Able to identify problems related to environmental science and various alternative solutions.
	4. Able to analyze environmental data in the form of primary and secondary data, conclude based on accurate analysis results and recommend applicable, functional and efficient environmental research results.
ATTITUDE AND SOCIAL	1. Able to demonstrate good scientific manners, critical thinking, and innovation skills in educational, research, and professional fields.
	2. Able to demonstrate the appreciation of religious and cultural values in conducting their tasks as a professional.
	3. Able to upholding human values in carrying out duties based morals and ethics.

The following curriculum is presented:

CURRICULUM 2017 – 2022		
CODE	COURSES	CREDIT
	<b>Matriculation</b>	
-	Basic Understanding of Ecology	n sks
-	Human Ecology	n sks
-	Industrial Ecology	n sks
-	Spatial and Environmental Dimensions	n sks
-	Dimensions of Pollution and Environmental Damage	n sks
	<b>Semester I</b>	
C IL 2 3 811	Philosophy of Science and Research Methodology	3
C IL 2 3 812	Ekology and Global Environmental Change	3
C IL 2 3 813	System Analysis and Environmental Modelling	3
	<b>Total</b>	<b>9</b>
	<b>Semester II Elective Courses</b>	
C IL 2 3 82x	Elective Course 1	2
C IL 2 3 82x	Elective Course 2	2
C IL 2 3 828	Scientific Articles Writing	3
C IL 2 3 829	Proposal Writing	3
	<b>Total</b>	<b>10</b>
	<b>Semester III</b>	
C IL 2 3 834	Research 1 and Seminar of Result Phase 1	4
C IL 2 3 836	Scientific Publications 1	2
	<b>Total</b>	<b>6</b>
	<b>Semester IV</b>	
C IL 2 3 842	Research 2 dan Seminar of Result Phase 2	3
C IL 2 3 843	Scientific Publications 2	3
	<b>Total</b>	<b>6</b>
	<b>Semester V</b>	
C IL 2 3 851	Research 3 dan Seminar of Result Phase 3	3
C IL 2 3 852	Dissertation Feasibility Examination	2
C IL 2 3 853	Scientific Publications 3	3
	<b>Total</b>	<b>8</b>
	<b>Semester VI</b>	
C IL 2 3 861	Dissertation Defence	5
C IL 2 3 862	Doctoral Promotion	3
	<b>Total</b>	<b>8</b>
	<b>TOTAL</b>	<b>47</b>