

CHAPTER I

INTRODUCTION

1.1 BACKGROUND

The Faculty of Fisheries and Marine Sciences (FPIK) was first established with the establishment of the Department of Fisheries at the Faculty of Animal Husbandry through the Decree of the Rector of Universitas Diponegoro No. 44/1968 on October 8th, 1968. On August 17th, 1978, the faculty name was changed into Faculty of Animal Husbandry and Fisheries, based on the Decree of the Rector of Universitas Diponegoro No. 76/SK/UD/VI/1978. However, the name changed back to Faculty of Animal Husbandry in 1985 with the presidential decree No. 51/1982. Based on the Circular Letter of the Directorate General of Higher Education and Culture of the Republic of Indonesia No. 1023/D/Q/1985 in June 6th, 1985, Marine Science Study Program was established at Universitas Diponegoro along with five other Indonesian universities (Bogor Agricultural University, Pattimura University, Sam Ratulangi University, Hasanuddin University and Riau University).

In further development, UNDIP obtained a Decree of the Directorate General of Higher Education No. 54/Dikti/Kep/1987, which was revised in 1988 with the Decree of the Directorate General of Higher Education No. 24/Dikti/ Kep/1988, on the establishment of the Marine Science Study Program UNDIP, where the administrative management of the teaching staff is under the Faculty of Animal Husbandry, while the academic aspect is under the coordination between the Rector and the executive of the Management Agency for Marine Science Study Program.

In 1994, the Faculty of Fisheries and Marine Sciences (FPIK) was established, in accordance with the Decree of the Minister of Education and Culture of the Republic of Indonesia No.0181/0/1994, dated July 25th, 1994 consisting of two departments, namely the Department of Fisheries and the Department of Marine Sciences.

Since 1995, the Department of Fisheries has developed 3 (three) study programs, they are:

1. Aquaculture Study Program (BDP), according to the Decree of the Directorate General of Higher Education No. 473/Dikti/ Kep/1995.
2. Aquatic Resource Management Study Program (MSP), according to the Decree of the Directorate General of Higher Education No. 474/Dikti/Kep/1995.
3. Fishery Resource Utilization Study Program (PSP), according to the Decree of the Directorate General of Higher Education No. 475/Dikti/Kep/1995.

While the Technology of Fisheries Products Study Program (THP) was established in 2002 according to the Decree of the Directorate General of Higher Education No. 620/D/T/2002.

The Department of Marine Science has developed 2 (two) study programs, they are:

1. Marine Science Study Program based on the Decree of the Directorate General of Higher Education 54/Dikti/Kep/1987, which was revised by the decree of the Directorate General of Higher Education No. 24/Dikti/Kep/1998 and supported by the Decree of the Directorate General of Higher Education No.195/Dikti/Kep/1995.

2. Oceanographic Study Program based on the License of the Directorate General of Higher Education No.2282/D/T/2001.

In addition, FPIK UNDIP also organizes postgraduate education programs, both magister and doctoral programs. They include the study program (PS) of Master of Coastal Resource Management (MSDP) based on the Decree of the Directorate General of Higher Education no.231/DIKTI/Kep./1999, Master of Marine Science (MIK) based on the Decree of the Directorate General of Higher Education No. 185/E/O/2011, Doctor of Coastal Resource Management (DMSDP) based on the Decree of the Directorate General of Higher Education No.3024/D/T/2004, and Doctoral Study Program of Marine Science (DIKL) based on the Rector's Decree no.1126/UN7. P/HK/2016.

Based on the Decree of the Rector of Universitas Diponegoro Number 1122/UN7. P/HK/2016 dated September 20, 2016 on the Determination of departemen at the Faculty in Universitas Diponegoro, the department in the Faculty of Fisheries and Marine Sciences is determined into 6 (six), they are:

- a. Department of Aquatic Resources;
- b. Department of Aquaculture;
- c. Department of Capture Fisheries;
- d. Department of Technology of Fisheries Products;
- e. Department of Marine Science;
- f. Department of Oceanography.

1.2 HUMAN RESOURCES (HR)

The total of human resources in the FPIK UNDIP in 2019 is presented as follows.

Number of lecturers	: 148 people
Number of administrators and technicians	: 75 people
Number of students	: 3,104 people

1.2.1 Lecturer

To support the education, research and community service activities, Faculty of Fisheries and Marine Science is supported by permanent lecturers with the following details:

No.	Name	NUMBER OF PERMANENT LECTURERS WITH HOME BASE IN THE DEPARTMENT BASED ON THE FUNCTIONAL POSITION						FACULTY
		SDA	AK	PT	THP	IK	OSE	
A.	Functional Position :							
1	Lecturer	8	6	8	7	6	7	42
2	Assistant Professor	5	7	4	4	10	5	35
3	Associate Professor	5	9	6	1	23	12	56
4	Professor	5	2	1	2	3	2	15
Total		23	24	19	14	42	26	148

No.	Name	NUMBER OF PERMANENT LECTURERS WITH A HOME BASE IN THE DEPARTMENT BASED ON THE EDUCATION LEVEL						FACULTY
		SDA	AK	PT.	THP	IK	OSE	
A.	Education:							
1	Undergraduate	0	0	0	0	0	0	0
2	Master	10	7	10	11	23	18	79
3	Doctor	13	17	9	3	19	8	69
Total		23	24	19	14	42	26	148

1.2.2 Education Personnel

The number of education personnel, both administrative personnel, technicians and laboratory assistants, is 75 people. The education personnel consists of civil servants and non-civil servants. The category of the education personnel based on the last education level is presented in the following table.

No	Type of Education Personnel	Number of Education Personnel in FPIK Based on the Last Education Level								Total
		Doctor	Master	Undergraduate	D4	D3	D2	D1	High School / Vocational School	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Librarian *	-	-	-	-	1	-	-	-	1
2	Laboratory Assistant / Technician / Analyst / Operator / Programmer	-	-	1	-	3	-	-	3	7
3	Administrator	-	1	21	-	5	-	-	31	58
4	Other: ... Adm. Elementary/Junior High School	-	-	-	-	-	-	-	9	9
Total		0	1	22	0	9	0	0	43	75

1.2.3 Student

The number of students in the Marine Science undergraduate study program of the Faculty of Fisheries and Marine Sciences in 2020 period is presented in the following table:

No.	Study Program	2012	2013	2014	2015	2016	2017	2018	Total Per Study Program
1	MSP	13	4	18	93	97	89	102	416
2	Aquaculture	8	12	69	108	112	126	121	556
3	PT	10	11	27	83	90	87	108	416
4	IK	10	15	58	146	165	182	196	772
5	Oceanography	5	12	32	100	103	109	128	489
6	THP	7	21	65	83	87	96	96	455
Total		53	75	269	613	654	689	751	3104

FPIK UNDIP campuses are spread across 3 (three) locations:

1. Tembalang Campus, Semarang

Facilities available at the Tembalang campus include:

- a. Faculty leaders work space (A building) with its facilities.
- b. Faculty administration work space (A Building) with its facilities.
- c. The work space of the leaders and lecturers of the Department of Marine Science and Oceanography (B Building) with the facilities.
- d. The work space of the leaders and lecturers of the Department of Capture Fisheries and Aquaculture (C Building) with the facilities.
- e. The work space of the leaders and lecturers of the Department of Aquatic Resources and Technology of Fisheries Products (D Building) with the facilities.
- f. Lecture halls (B, C, D, E, F, G and H Buildings)
- g. Library (J Building)
- h. Laboratory (C, D, E, G, H, J Buildings)
- i. Student Executive Board Room and Department Student Association room == Pak Eka
- j. Mosque
- k. Auditorium (I Building)

2. Coastal Development Laboratory (LPWP) Campus, Jepara

Located in Ade Irma Suryani Street (Kartini Beach) Jepara Phone.0291 – 591844, this campus provides several facilities, including:

- a. Campus manager workspace
- b. Administration room
- c. FPIK Laboratory
- d. Seminar room
- e. *Mini hatchery*
- f. Student residence
- g. Home office
- h. Boat pier

3. Teluk Awur Jepara Campus (*Marine Station*)

Located in Jl. Undip, Teluk Awur Village, Jepara, Phone. 0291-591194, this campus provides several facilities, including:

- a. Campus manager workspace
- b. Lecturers, technicians, laboratories and administration workspace
- c. Lecture hall
- d. Seminar room
- e. Meeting hall
- f. Laboratory
- g. *Hatchery*
- h. *Pond experiment*
- i. Student residence
- j. Library
- k. Training ship workshop

- l. Training ship pier
- m. Sports field
- n. Home office
- o. Guest House

CHAPTER II

VISION, MISSION, GOALS AND OBJECTIVES

2.1 VISION

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

2.2 MISSION

- a. Conducting quality education in the field of fisheries and marine,
- b. Carrying out research, scientific publications, and producing Intellectual Property Rights (IPR) in the field of fisheries and marine,
- c. Carrying out community service in the field of fisheries and marine,
- d. Conducting professional and accountable governance,
- e. Carrying out student activities to support the achievement of COMPLETE graduate qualifications.

2.3 GOALS

- a. Producing excellent graduates upholding the characters of professional communicators, future leaders, entrepreneurs, thinkers, educators (*COMPLETE: communicator, professional, leader, entrepreneur, thinker, and educator*) as well as virtuous and preserving Pancasila.
- b. Producing research, scientific publications and IPR.
- c. Producing applied science and technology in the field of marine that benefits the community.
- d. Providing effective, efficient and accountable *Tri Dharma* services of higher education.

2.4 OBJECTIVES

- a. Increase the graduate's quality with superior competitiveness at the national and international level,
- b. Increase the quality of the learning process and academic collaboration;
- c. Increase quality students' activities in the fields of academics, interests and talents, as well as the community welfare;
- d. Increase the resources, productivity and quality of research and scientific publications.
- e. Increase the implementation of research to produce science and technology, scientific publications, and IR in the field of fisheries and marine,
- f. Increase the research collaboration, incubation, downstreaming and commercialization of research results,
- g. Increase the implementation of community service activities to improve the communities' standard of living,
- h. Increase the total unit and value of RGA,
- i. Increase the effectiveness and efficiency of work procedures in the institution and communication development,
- j. Increase the capacity / competence of the education personnel,
- k. Increase the effectiveness, efficiency, and accountability in the financial management.

CHAPTER III

EDUCATION SYSTEM

3.1 GENERAL INTRODUCTION

Education at the Faculty of Fisheries and Marine Sciences Universitas Diponegoro is organized with Credit Points System (SKS). Student's study load, lecturer's workload and the weight of education program organizers are expressed in credit.

1. Semester

Semester is a unit of academic activity starting from the administrative registration until the graduation determination. One semester is a unit of activity for approximately 4 months (16 weeks of lectures).

2. Goals

The goals of applying the credit point system are to provide opportunities for students who are capable and active in the learning process, in order to complete their studies in a short time, and to provide opportunities to take courses that suit the interests, talents and abilities of the students.

3. Credit Point System (SKS)

Credit Point System hereinafter abbreviated as SKS (*Satuan Kredit Semester*) is a measure of learning activity weighted to the students per week per semester during the learning process through various forms of learning or the amount of recognition for the success of students' efforts in participating in the curricular activities in a study program. It is used to represent the students' study load, the amount of cumulative success of a particular program and the number of efforts to conduct an education in the higher education, especially for the educator personnel.

4. Credit Score and Study Load

- a. One SKS is the academic load per week, and is described as follows.
 - 1) For students:
 - a) face-to-face activities of 50 (fifty) minutes per week per semester;
 - b) structured assignment activities of 60 (sixty) minutes per week per semester; and
 - c) independent activities of 60 (sixty) minutes per week per semester.
 - 2) For Lecturers:
 - a) One scheduled face-to-face (lecture) activity with students for 50 minutes;
 - b) One-time structured academic activity planning and evaluation for 60 minutes; and
 - c) One-time learning material development activities for 60 minutes.

- b. Structured activities are carried out by the students for the learning activities, for instance: the assignments on problem solving, paper writing, literature review, and so forth. Independent activities are activities that must be done independently to explore and prepare the academic assignments, such as reading reference books, preparing academic assignments and so forth.
 - 1) One SKS in the learning process in the form of practicum, studio practice, workshop practice, field practice, research, community service, and/or other similar learning processes, 170 (one hundred seventy) minutes per week per semester.
 - 2) One SKS in the learning process in the form of seminars or other similar forms, consisting of:
 - a) face-to-face activities of 100 (one hundred) minutes per week per semester; and
 - b) independent activities of 70 (seventy) minutes per week per semester
 - 3) Planning the preparation and implementation of education programs using the benchmark of credit point system (SKS) as the academic load.
 - a) A course that weighs 3 credits, for example, has a weekly activity load of approximately 3 times as described in the previous section.
 - b) Learning activities in a year are divided into two semesters, they are:
 - i. Odd Semester held from July to December; and
 - ii. Even Semester held from January to June.

3.2 THE EDUCATION IMPLEMENTATION

1. The duration of study provided for the students to complete their education at the Faculty of Fisheries and Marine Sciences is no longer than 14 semesters.
2. Study Plan Filling (IRS)

Study Plan filling which is hereinafter abbreviated as IRS (*Isian Rencana Studi*) is an academic activity plan that will be conducted by a student during a certain semester. Ahead of the academic activities each semester, re-registration and filling in the Study Plan (IRS) will be conducted, which is a registration activity for the students to be able to attend the learning activities and other academic activities in accordance with the academic calendar. The determination of courses follows the following rules:

 - a. Determination of courses in the Study Plan (IRS) at the beginning of each semester is carrying out online by the students with the approval of the Academic Advisor;
 - b. Proof of approval of the academic advisor is a signature on the IRS sheet and online validation on the available form on SIA;
 - c. Courses within the IRS that have been registered *online* may be replaced with other courses or cancelled;

- d. In the first semester, freshmen are required to take the available course packages;
- e. The total of study load for the next semesters is determined based on the total of Grade Point Average achieved in the previous semester by adhering to the following provisions:

Semester	Maximum SKS that can be taken
3.00 - 4.00	24 SKS
2.50 - 2.99	22 SKS
2.00 - 2.49	20 SKS
< 2.00	18 SKS

- f. The IRS will not be approved by the Academic Advisor (PA) if the student:
 - 1) takes courses with overlapping schedules;
 - 2) takes courses with prerequisites that have not been met;
 - 3) takes credits exceeding the number of credits allowed; and
 - 4) takes courses with the number of applicants exceeding the provided capacity.
- g. If the IRS is rejected, students are required to revise the IRS and resubmit for the approval;
- h. The student's name will not be listed in the course participant list if the IRS has not been approved;
- i. Students whose names are not listed in the list of course participants are not permitted to participate in the class, exams and other activities in the course;
- j. Change of courses can be done by students no later than 2 (two) weeks after the learning activities begin;
- k. Cancellation of courses can be done by students no later than the end of the 4th (fourth) week after the lecture activities begin; and
- l. Replacement or cancellation of courses must obtain the PA approval.

3.3 LEARNING ACTIVITIES CODES OF CONDUCT

1. All students of Marine Science study program, FPIK UNDIP are required to attend the lectures and practicum for at least 75% of each of these activities in the running semester (16 times face-to-face).
2. Students who are unable to attend the lecture / practicum due to an urgent matter must send a written notice to the person in charge of the course and a copy to the Head of the Study Program to whom it may concern. If they are unable to do so due to illness, the student must make a letter of excuse attached with a health certificate. The letter is approved/signed by the vice dean of academic and student affairs.

3.4 TEACHING METHODS

1. The teaching materials delivery system is a balanced relationship between:
 - a. Providing knowledge and understanding,
 - b. Developing intellectual skills in the sense of abstract thinking ability and practical problem-solving ability, interpersonal relationships and psychomotor aspects, and
 - c. Self-interest, goals and context and environment in a broad sense.
2. The delivery system is characterized by human interaction that systematically improves the learning initiative and responsibility of the students in accordance with the conception of lifelong education.
3. The learning process is primarily implemented using the *Student Center Learning* (SCL) method, which includes:
 - a. *Problem-based learning*
 - b. *Interactive skill station information and technology*
 - c. *Task-based learning*so that the students are stimulated to be more active in learning various sciences and skills.
4. Face-to-face opportunities are expected to be a balanced relationship between orientation activities, exercises and feedback under the guidance of the lecturers with adequate qualifications and teaching preparation that is always pursued as perfectly as possible.
5. The increase of the exercise intensity is expected to play a pivotal role in improving the quality learning outcomes.

3.5 STUDENT COMMUNITY SERVICE (KKN)

1. Undergraduate students are required to participate in KKN activities;
2. The requirement of KKN participants is the students who have passed the courses and collected a cumulative of at least 100 (one hundred) SKS or credit points;
3. The administration of KKN is coordinated by the university and further regulated in the applicable administration manual;
4. The KKN administration schedule is determined in the academic calendar according to the UNDIP Rector's Decree;
5. Rector can determine certain activities that are recognized and equalized with KKN, as stated in the UNDIP Rector's Decree; and
6. The procedures and requirements for the KKN registration are further regulated in the UNDIP Rector's Regulation.

3.6 FIELD WORK PRACTICES (PKL)

1. Goals

Field Work Practice (PKL) is an activity intended to provide field work opportunities to the students in order to gain practical experience in various aspects of fisheries and marine science.

Experience is obtained by conducting internships at institutions, industries, or community activities through the field work practice activities.

By implementing PKL, students will gain insight and understanding, in order to be able to compare between the theory and the implementation of work practices in the field.

2. Credit point

The credit point for PKL is determined by the regulation of each study program.

3. Requirements

- a. PKL can be implemented by students who have obtained 60 SKS/credits with GPA of ≥ 2.5 .
- b. The concerned student has taken a **Special Competence Course** (MKK) in accordance with the field of PKL.
- c. Students are required to select PKL in the IRS before preparing and implementing PKL.
- d. Internship activities for PKL can be carried out in between two semesters.
- e. PKL activities are carried out in the following order:
 - 1) Approval of Academic Advisor;
 - 2) Appointment of Academic Supervisors;
 - 3) Planning and implementation of PKL; and
 - 4) PKL Report Writing.
- f. The determination of PKL objects and titles, field implementation, report writing and the exam are guided by the supervisors.
- g. PKL activities are documented in the PKL report which is written based on the procedure and systematic presentation according to the applicable regulation of the scientific writing in the Faculty of Fisheries and Marine Sciences UNDIP.
- h. PKL report that has been approved by the Academic Supervisors is submitted to the study program in 3 (three) copies to be examined.

4. Supervisor

- a. PKL activities are coordinated by the Head of Study Program (KPS),
- b. PKL supervisor is 1 (one) person appointed by the vice dean of academic and student affairs, on the proposal of the head of the study program.

- c. Lecturers with the qualification of at least Assistant Professor with additional qualification of master degree are entitled to be the supervisors.
- d. PKL supervisors can be from other agencies with the following requirements:
 - a) Suited the field of expertise.
 - b) Permitted by the head of the agency concerned.
 - c) Approved by the head of study program (KPS)/head of department (*Kadep*) and the vice dean of academic and student affairs.
- a. Supervisors are responsible for the implementation of PKL in the field by conducting a monitoring and evaluation. In the preparation of PKL proposals to the report, the students concerned are required to consult with the supervisors.
- b. The procedure for appointing a supervisor is regulated in the academic procedure manual.

5. PKL Implementation

After the students determine their PKL field of study, they need to follow the procedure manual for the determination of the title / topic of their PKL and the appointment of a supervisor on the document of the FPIK academic procedures manual.

6. Time utilization

- a. PKL activities can be carried out every semester and in accordance with the period of course taking at the IRS. The timing of the PKL implementation is determined by the Study Program.
- b. At the end of each semester, the Study Program evaluates the PKL activities.
- c. PKL supervisors are required to report the progress of the students under their supervision to the Study Program.
- d. Students who are unable to complete the PKL in the period of certain semester, for reasons that can be accounted for, are allowed to complete and take the test in the next semester, if the supervisor still confirms his readiness.
- e. If the students do not complete the PKL without any accountable reasons, then it is considered a failure and they need to repeat the PKL procedure in the next semester.

7. Examination and Assessment

- a. PKL exam may take place after the student submits the PKL report that has been approved by the supervisor no later than 2 (two) weeks before the exam.
- b. PKL exam is conducted by the Study Program in accordance with the applicable requirements.
- c. PKL examiners are the supervisors.
- d. The exam lasts for \pm 1 hour with the evaluation aspects that include:
 - 1) Writing (30%)

- 2) Material Mastery (50%)
- 3) Presentation (20%)
- e. The assessment of these aspects is carried out with a range of scores from 0 (zero) to 4 (four). The guideline for the letters and the descriptions is presented as follows:
 - A: 4
 - B: 3
 - C: 2
 - D: 1
 - E: 0
- f. If the average score is a fractional value that has no letter guidelines, then a rounding should be done with the following guideline:
 - 1) Rounds up for fractional scores of ≥ 0.50 (e.g., 3.68 rounds to 4)
 - 2) Rounds down for fractional scores of ≤ 0.50 (e.g., 2.38 rounds to 2.0)
- g. If the PKL period is exceeded, then the student must provide a letter approved by the Supervisor and Head of Study Program (KPS) to the Vice Dean of Academic and Student Affairs with a copy of the Academic Advisor.
- h. For students who have yet to pass the exam, they are required to retake the PKL exam twice at most.

3.7 FINAL PROJECT

1. Goals

Final project is a scientific work in the form of diploma thesis or other forms in accordance with the applicable provisions, which becomes one of the graduation requirements of a student based on the curriculum of the study program. Diploma thesis is a scientific work based on the results of research / experiments compiled under the guidance of Supervisors. Diploma thesis is accounted for in a diploma thesis defence and is one of the requirements to complete the undergraduate program.

The assignment of diploma thesis writing aims to make the graduates be able to:

- a. Plan and carry out research;
- b. Analyze, discuss and provide conclusions and suggestions; and
- c. Transfer the research results in a proper scientific writing.

2. Credit point

Diploma thesis holds a credit point of 6 (six) credits/SKS consisting of the following activities:

- a. Preparation of research proposal;
- b. Implementation of the research;

- c. Processing of the data;
- d. Writing of the reports / diploma thesis;
- e. Writing of a journal article and submit it to minimum in a journal with ISSN
- f. Diploma thesis defence

3. Requirements

- a. Diploma thesis can be carried out by students who have obtained at least 134 credits/ SKS.
- b. Have taken relevant courses to the field of research with a minimum supporting course score of (B).
- c. Diploma thesis should be carried out in the following order of activities:
 - 1) Approval of academic advisor;
 - 2) Appointment of supervisors;
 - 3) Preparation of a research plan (proposal) that has been registered and obtained the registration number from the head of the study program;
 - 4) Implementation of the research;
 - 5) Preparation of the diploma thesis (report of the research results) guided by the supervisors and must be reported in the Diploma Thesis Monitoring Card; and
 - 6) Writing of the scientific articles guided by the supervisors.

4. Supervisors

- a. Number of final project / diploma thesis supervisors for 1 (one) student is 2 (two) people at most.
- b. The diploma thesis writing is guided by the Supervisor, namely the main supervisor and the co-supervisor who are qualified and appointed by the Vice Dean of Academic and Student Affairs on the proposal of the Head of Department, after considering the proposal of the Head of the Study Program.
- c. The co-supervisor may come from other study programs/ departments/agencies.
- d. The procedure for appointing a supervisor is regulated in the academic procedure manual.
- e. Supervisor requirements
 - i. The main supervisors are:
 - 1. Permanent lecturers with minimum functional positions of assistant professor and hold master degree or equivalent according to the national standards of education; and
 - 2. Have a relevant field of expertise to the final project.

- ii. The co-supervisors are minimum:
 1. University permanent lecturers or non-permanent lecturers, or experts from other institutions equivalent to master's education; and
 2. Have a relevant field of expertise to the final project.
- iii. Co-supervisor from other agencies, need to follow the original rules, and must meet the following requirements:
 1. His area of expertise is relevant to the diploma thesis;
 2. Permitted by the leader of the agency / direct supervisor; and
 3. Approved by the head of the study program / department and vice dean of academic and student affairs.
- iv. The head of the study program assigns lecturers to be the supervisors of final project / diploma thesis for a student based on the expertise and workload of the lecturer concerned;
- v. To ensure the quality of guidance, the workload of lecturers in guiding structured research in the preparation of final project is limited to 12 (twelve) students at most per semester, both as main supervisor and co-supervisor;
- vi. The head of the study program periodically monitors the supervision process and if it does not run well and regularly, then the person in charge of the study program organizer can propose the replacement of the supervisor;
- vii. Supervision is conducted in a campus environment structurally, at least 4 (four) times in one semester, and must be recorded in the guidance book;
- viii. If there is an objection to the appointment of the supervisor of the final project / diploma thesis or the supervision process, it should be solved by the head of the department or vice dean of academic and student affairs;
- ix. The supervisor of the final project / diploma thesis is responsible to strive for the completion of the final project / diploma thesis supervision maximum in 2 (two) semesters.

5. Final Project (Diploma Thesis) Defence

a. Introduction

- 1) Diploma thesis defence is a final stage examination in undergraduate education level (S1). The defence is conducted orally with the subject matter and knowledge closely related to the topic of the diploma thesis.
- 2) If the first defence fails, students could retake the defence twice at most.
- 3) If after two times of defence the students are declared to be failed, then they must repeat the diploma thesis preparation and retake the exam.

b. Diploma Thesis Defence Requirements

Diploma Thesis defence requirements include:

- 1) Students have passed all courses (no D and E grades), both the compulsory and the elective courses required by each study program for curriculum 2020;
- 2) Enrolled as a student taking final project in the current semester (listed in the IRS),
- 3) Submit a diploma thesis draft that has been approved by the Supervisor.
- 4) Submit other administrative evidence to the Study Program, include:
 - a) Free from borrowing laboratory equipment as declared by the laboratory coordinator.
 - b) Free of library business.
 - c) Other requirements specified by the Faculty/Department/Study Program.
 - d) TOEFL certificate with a minimum score of 425.

c. Criteria of Examiner's position

The Examiner that is entitled to examine the diploma thesis defence must meet the following academic position requirements:

- 1) Examiner has the same requirements as the supervisors, at least an assistant professor and holds master degree.
- 2) When the diploma thesis defence is involving adjunct lecturers, and it is not according to the required criteria of academic positions, it must be consulted in advance with the head of the study program and the vice dean of academic and student affairs.

d. Exam Administration

- 1) The exam is conducted by the study program;
- 2) Exam Schedule is created and announced by the study program;
- 3) Examiners consist of:
 - a) Two supervisors;
 - b) Maximum of 2 (two) people outside the supervisors whose field of expertise is appropriate / relevant to the material of the tested thesis;
 - c) The defence is opened and closed by the the Chief Examiner (Main Supervisor) or those representing;
 - d) During the defence, the main supervisor leads the agenda;
 - e) If the main supervisor is unable to attend, it can be replaced by the co-supervisor;
 - f) The defence can last for a maximum of 2 (two) hours; and
 - g) The procedure for the administration of the diploma thesis defence is regulated

in the manual of the diploma thesis defence procedure.

- e. Diploma Thesis Assessment Criteria
 - a. The assessment of diploma thesis is special with presentations in a defence or testing forum.
 - b. Assessment of appearance is conducted based on the following benchmark reference:
 - 1) Writing and mastery of thesis material.
 - 2) The level of ability to analyze and solve various problems in the scope of fisheries and marine sciences that are closely related to the thesis material.
 - 3) Assessment of these aspects has a range of scores from (zero) to 100 (one hundred). The following is the letter and description guidelines:
 - 80 - 100 = A (Excellent)
 - 70 - 79 = B (Satisfactory)
 - 60 - 69 = C (Mediocre)
 - 50 - 59 = D (Insufficient)
 - < 50 = E (Failure)
 - 4) After the assessment, the thesis defence results should be uploaded on the SSO system (guidance and exams). Final score authentication is conducted online (SSO) by the Chief Examiner.

3.8 EXAM AND ASSESSMENT SYSTEM

1. Final Semester Exam Requirements

- a. Registered as a participant of courses / learning activities that are listed in the **List of Courses Participants** (DPK).
- b. Have attended courses / learning activities minimum for 75%.

2. Assessment System

- 1) Assessment of student's learning outcomes aims to measure the achievement of competence determined by the study program.
- b. Assessment of student's learning outcomes should include the aspects of *hardskill* and *softskill* that can be done in the form of:
 - 1) Written exams, oral exams and/or practicum/skills assessment, assignments and portfolios.
 - 2) Final project in the form of diploma thesis (S-1).
 - 3) Based on certain reasons that can be accounted for, the assessment of learning outcomes can be done in other forms.
- c. The final score of the learning outcome is based on several assessment components and is outlined in the formula determined by each Study Program.

- d. The final semester exam schedule is prepared and announced to all lecturers and students. Changes in the schedule and exam location are announced in written announcement.
- e. Misreading of the schedule/exam location cannot be used as a valid reason to request a make-up exam.
- f. The faculty announced the midterm assessment period for lecturers who wish to conduct an assessment through the Midterm Exam (UTS). However, no special committee and schedule is formed for the administration of UTS, yet it is scheduled on the SSO system at the 8th meeting. As for the administration of UAS (final semester exam), committees will be formed and special schedules will be arranged. The administration of UAS in the SSO system is conducted in the 16th week.

3. Assessment Type

- a. The type of assessment and the procedure is adjusted to the nature of the course.
- b. The score of the learning result is expressed by letter and score weight as presented below:
 - A = 4
 - B = 3
 - C = 2
 - D = 1
 - E = 0
- c. Minimum passing grade of a course is C for Undergraduate and Master programs, and B for Professional and Doctoral programs.
- d. Students who get an E are required to retake the learning program and exams in the regular semester.
- e. Students with D, C and B grades can improve their grades in the regular semester, and the grades that will be used are the best grades obtained.
- f. When due to some matters a score cannot be determined yet, then the student is given a TL (*Tidak Lengkap*) or Incomplete score with a score weight of zero (0). If the score remains TL until the next semester IRS filling, the student is considered to fail (E).
- g. Assessment procedure. Assessment can be done using a combination approach of benchmark reference assessment (PAP) and Normal Reference Assessment (PAN). Examples of assessments with a combination approach of PAP and PAN are presented as follows.

Determine the passing grade of C = 60. Example: Mean 50, standard deviation (σ) = 10

$A \geq 80$	or $A = 80 - 100$
$70 \leq B < \langle 70 + (\sigma) \rangle$	or $B = 70 - 79.9$
$60 \leq C < \langle 60 + (\sigma) \rangle$	or $C = 60 - 69.9$
$50 \leq D < \langle 50 + (\sigma) \rangle$	or $D = 50 - 59.9$
$E < 50$	or $E < 50$

Assessment using a combination of PAP and PAN is done by implementing the following teaching and learning process (PBM) activities:

- 1) Basic Competencies and Competency Standards have been formulated properly and correctly;
- 2) Basic Competencies and Competency Standards are communicated to the group of *lecturers* (team teaching) and the students;
- 3) Evaluation is conducted throughout the semester (*Continuous assessment*), not limited to the UTS and UAS;
- 4) Motivational support is provided to the students;
- 5) Enrichment efforts are carried out in the courses; and
- 6) The achievement of the basic competencies and competency standards is evaluated.

h. Success Rate

- 1) Semester Grade Point Average, hereinafter abbreviated as IPS, is a measurement of student academic achievement which is the weighted average score obtained by the students each semester;
- 2) The success rate of the students in one semester is stated by the Semester Grade Point Average (IPS);
- 3) In the calculation of grade point, the credit point weight of each course is only used once as a divisor and the score used is the highest score;
- 4) IPS calculation uses the following formula:

$$IPS = \frac{\sum KN}{\sum K}$$

Where K is the weight of the course credit, and N is the score of the course; and

- 5) Student success rate from the first semester to a specific semester is declared with the Grade Point Average (GPA/IPK).

4. Validity of Test Takers

- a. Final semester exam participants are declared valid to take the exam of a certain course if they meet the following requirements:

- 1) Bring the Exam Card as the participant of the current semester exam.

- 2) The student concerned is not undergoing sanctions that ban him from participating in academic activities.
 - 3) The attendance is not less than 75% of face-to-face (16 times face-to-face) meetings.
- b. A valid exam answer sheet is the one provided by the exam committee at the time of the exam.

5. Semester Final Exam Code of Conduct

During the exam, test takers are required to comply with all applicable exam codes of conduct:

- a. Test takers are not allowed to take the exam if they are present 30 minutes after the exam starts.
- b. Test takers must occupy a seat according to the wall attendance number.
- c. When test takers leave the exam room before the exam ended, it must be under the supervisor's consent.
- d. Test takers who cheat will be warned and or not allowed to finish the exam

6. Supervisor Authority and Responsibility

To maintain the exam administration in a proper order, a supervisor can take measures and actions in accordance with the applicable regulations, especially as described below:

- a) Assigning items/equipment that can be brought by the test taker to their assigned seats.
- b) Rejecting the test taker who attend more than 30 minutes after the exam starts.
- c) Denying the presence of someone who does not serve as a supervisor or who have no interest in the test.
- d) Reporting everything related to the administration of the exam and writing it in the Exam Report (*Berita Acara Pelaksanaan*).
- e) Counting the number of Exam Answer Sheets (LJU) according to the number of test takers.
- f) Filling out the exam report and delivering it to the exam committee and the course coordinator.

3.9 SCORE IMPROVEMENT / MAKE-UP TEST

1. Score improvement

1. Score improvement of the running course can be done through remedial, conducted after the completion of the exam, but before the test scores are submitted to the academic staff of the faculty.
2. The score improvement aims to provide opportunities for students, so it is expected that the students' grades will be better, study period will be shorter, and the Grade

Point Average will be higher.

3. Score improvement is entirely the responsibility of each course coordinator. If the course coordinator does not organize a score improvement / remedial in the running semester, then the students who want to take the remedial can attend the regular course in accordance with the course schedule.
4. Remedial can be given to the students who get grades D, C and B.
5. Students with D grade and have taken remedial for 3 (three) times and fulfilled their responsibilities as well as have completed the assignments are entitled to a minimum test score of C as determined by the head of the study program.

2. Make-up exams

Make-up exams can be provided to the students who for some reasons cannot take the exam in the scheduled time, for instance, being sick (with a proof from the hospital/doctor) or being an UNDIP delegate.

3.10 SHORT SEMESTER (Optional)

The administration of undergraduate program is divided into 2 (two) semesters as regulated in the university academic calendar. Each year, a short semester is administered between the odd semester and the even semester;

1. The intended short semester is administered:
 - a. For at least 8 (eight) weeks;
 - b. Student's study load is maximum 9 (nine) credits; and
 - c. In accordance with the student's study load to meet the predetermined learning achievements.
2. If the short semester is administered in a form of course lectures, face-to-face meeting should be at least 16 (sixteen) times including the midterm exam and the final exam of the short semester.
3. Courses that can be taken in the short semester are re-courses, remedial courses, and/or new courses that have met the prerequisite requirements of courses regulated by the faculty/ school.
4. Courses that cannot be taken in the short semester are courses that have been taken in the running semester.
5. Students who get an E grade must retake the courses and exams in the regular semester or short semester.
6. Students who get D, C, and B grades can improve their scores in the regular semester, remedial in the running semester, or improvement in the short semester and the score used is the best score they achieved.

3.11 EVALUATION OF LEARNING SUCCESS

To find out the progress of students' learning, evaluation is conducted in certain semester units.

1. The evaluation criteria of each stage are as follows:
 - a. Phase I is conducted at the end of the third semester with the following regulation:
 - 1) Must be able to demonstrate English proficiency by providing proof of *Notification Letter prediction pre TOEFL* or equivalent from SEU UNDIP or institution appointed by UNDIP;
 - 2) Must be able to collect at least 35 credits with a GPA of ≥ 2.5 ; and
 - 3) If unable to collect > 35 credits, but the GPA is < 2.5 , then the higher score is selected up to a total of 35 credits with a GPA of ≥ 2.5 .
 - b. Phase II is conducted at the end of seventh semester with the following rules:
 - 1) Must be able to collect at least 85 credits with a GPA of ≥ 2.75 ; and
 - 2) If the students are able to collect > 85 credits, but the GPA is < 2.75 , then the highest score is selected up to a total of 85 credits with a GPA of ≥ 2.75 .
 - c. Phase III is conducted at the end of the program no later than the end of the 14th (fourteenth) semester, and the students must have collected (passed) all of the determined credits weight for the Bachelor's Program and obtain GPA of ≥ 2.00 .
2. Students will receive a written academic warning, if it is doubted that they cannot carrying out the evaluation stage.
3. Undergraduate students who are unable to meet the evaluation requirements are considered incapable of participating in their academic activities;
4. Students who are unable to meet the evaluation requirements above are advised to submit a letter of resignation to the Rector through the dean;
5. The University will publish rector UNDIP's decision on the resignation of students from one of the study programs;
6. If the student does not apply for a resignation, the university will issue a Decree of UNDIP rector on the termination of study relations;

3.12 YUDISIUM AND THE ACADEMIC HONOR

1. Students are declared to have successfully completed the undergraduate program (graduated as a bachelor's degree), that is stated in the graduation **yudisium** at the study program level.
2. **Yudisium** can be conducted if it meets the following academic requirements:
 - a. Has successfully collected a number of credits determined in the curriculum of the study program and has passed the Final Project / Diploma Thesis Defence;
 - b. Demonstrates an English proficiency as described above, and proven by a TOEFL

- score of at least 425;
- c. Has had scientific work published *online*; and
 - d. The minimum courses grade is C.
3. Transcript of undergraduate (S1) graduates from diploma (D3) graduates covers the conversion courses and the courses taken during the undergraduate program.
 4. The academic honors are described as follows:

GRADE POINT AVERAGE	PREDICATE	DESCRIPTION
2.00 – 2.75	No predicate	
2.76 – 3.00	Satisfactory	
3.01 – 3.50	Very Satisfactory	
3.51 – 4.00	With complement (<i>Cumlaude</i>)	a. Maximum study period of 9 (nine) semesters b. TOEFL \geq 425 c. No C grade

5. *Cumlaude* academic honor is also determined by taking into account the maximum study period, which is n year +1 semester (n=4 years).
6. Students with a Grade Point Average of 3.51 – 4.00 who do not meet the criteria in the point 4 and 5, will be awarded a very satisfactory honor.

1. SUPERVISION / ACADEMIC ADVISOR

1. In the Undergraduate Education Program (S-1), for every 20 (twenty) students, one permanent lecturer is appointed as the academic advisor;
2. The academic advisors for undergraduate students are permanent lecturers with a minimum education level of master degree;
3. Academic Advisors hold the duties of:
 - a. Guiding students to prepare a study plan and providing consideration to determine the course to be taken;
 - b. Approving the students IRS in SIA;
 - c. Providing consideration to the students regarding the number of credits that can be taken;
 - d. Following the study progress and evaluating the success of learning per stage for the students under their supervision to be reported to the Head of the Study Program (KPS) / Head of Department (*Kadep*) which will be submitted to the Vice Dean of Academic and Student Affairs.
4. If the academic advisor is unable to do the assigned duties, the Head of the Study Program temporarily takes over the duties of the academic advisor, but the IRS approval is done by the Vice Dean of Academic and Student Affairs;

5. The administration of academic advisor duties is one of the lecturers' performance evaluation components.

2. ACADEMIC LEAVE

Academic leave is the period of not participating in any academic activities for at least 1 (one) semester and maximum of 2 (two) semesters, be it in sequence or not as approved by the dean and the students' will.

1. Requirement of academic leave
During the study, the students are allowed to apply for a temporary leave (academic leave) with the following requirements:
2. Students planning to temporary discontinue their studies are required to submit for academic leave by following the existing rules.
3. Academic leave can be submitted if:
 - a) For undergraduate students, have collected a minimum of 35 sks and GPA $\geq 2,50$
 - b) For master and doctoral students, they may apply for academic leave after completing 1 semester.
4. Academic leave can only be granted to the students who have participated in academic activities for at least 2 (two) semesters, except for academic leave due to special reasons;
5. Academic leave permits are not allowed for the passing semesters (not retroactive);
6. Academic leave does not count as a study period;
7. Academic leave with special reasons is granted to the students who are forced to temporarily stop studying due to inevitable problems, which include:
 - a. Accident by attaching proof of information from the hospital or any information that can be accounted for.
 - b. Sick for more than a month by showing a proof from the hospital.
 - c. Childbirth.
 - d. Student activities that can make Universitas Diponegoro proud and cause the students to be unable to participate in academic activities for a month or more, allowed the studentss to take academic leave after obtaining rector's approval.
8. Students serving prison sentences/suspensions, are taking or will take CTS/twinning program/double degree from Universitas Diponegoro cannot apply for academic leave.
9. Students on leave are required to pay 50 (fifty) percent of the tuition fee per semester.
10. If the applicant has obtained a leave permit but does not pay the tuition fees as required at the registration period, then the leave permit is canceled and the applicant's status changes to inactive student.
11. Procedures for applying for academic leave

The procedures for applying for academic leave are as follows.

- a. Students submit a written application to the dean for the rector's approval for the leave due to special reasons.
- b. The application letter must be known by the Head of the Study Program/Department.
- c. The application must include the following attachment:
 - 1) Academic transcript signed by the academic advisor (S-1).
 - 2) Payment proof of the last UKT (tuition fee)
 - 3) Copy of valid Student ID Card
 - 4) Supporting documents
- d. Applications are submitted no later than 2 (two) months after the learning activities begins except the leave due to special reasons;
- e. Applications that pass the deadline will not be considered / rejected and the concerned student is considered to attend full time academic activities;
- f. Approval of academic leave by the dean is issued in the form of a permit;
- g. Students who obtain leave permits are not allowed to do any academic activities; and
- h. In granting leave approval as mentioned above, the dean delivered a copy to the vice rector of academic and student affairs and vice rector of resources.

3.13 INACTIVE STUDENTS (ABSENT)

1. Students who do not carry out administrative registration and/ or academic registration will get an inactive academic status (absent) in the running semester and the study period is taken into account;
2. Students who are inactive (absent) as referred to paragraph (1) are required to pay 100 (one hundred) percent of the tuition fee during the inactive semester;
3. Students who are inactive (absent) for 2 (two) consecutive semesters or 4 (four) semesters alternately are declared to lose their status as students.

3.14 RESIGNATION AS A STUDENT

Undergraduate students, either due to inability to meet the evaluation requirements or other reasons, can apply for a resignation to the rector through the dean.

For students who resign, he is given a study result card (KHS)/transcript of the scores that covers all courses that have been taken.

If the student does not apply for a resignation, the rector **issues a decree to terminate his status as a student of Universitas Diponegoro.**

The procedures for applying for a resignation are as follows.

- a. Submit a written application addressed to the dean of the faculty approved by the academic advisor / head of the study program.

- b. The application is enclosed with:
 - 1) Letter of consent from the parents / guardians / insurers of the education costs.
 - 2) Letter of approval from the head of the agency / office (valid for students of study permit).
 - 3) Copy of the last tuition fee payment receipt.
 - 4) Original student ID.
 - 5) Certificate of free borrowing of books from the faculty and university libraries.
 - 6) Certificate of free borrowing of faculty laboratory equipment.
- c. The Dean of the Faculty submitted to the rector to issue the rector's decree and remove the student's status as a student of Universitas Diponegoro.

3.15 TRANSFER STUDY TO UNIVERSITAS DIPONEGORO

- 1. Students can transfer to UNDIP if:
 - a. Have participated in academic activities continuously with a study period of at least two semesters.
 - b. The reason to transfer is not due to violating the code of conduct of campus life or any other similar reasons.
 - c. Pass the *placement test* and not color blind for faculty / department / study program that requires it and do not have physical disabilities that may interfere the teaching and learning process.
 - d. Approved by the faculty through the consideration of the home department and /or study program, by filling out the provided form.
 - e. Approved by the faculty through the consideration of the intended department and/or study program by taking into account the capacity capability and/or recognition of the courses that have been taken and/or the rest of the study period.

Transfer study is only allowed once.

- 1) The study period of the transfer students is still taken into account by calculating the total study period of the student.
- 2) Application for transfer study is submitted by the student concerned by attaching the approval form (point d) no later than 4 (four) weeks before the beginning of the odd / even semester in accordance with the academic calendar. Applications that exceed that deadline will be rejected.
- 3) Transfer students is determined by the rector's decree after obtaining approval from the intended Faculty/Department/Study Program.
- 4) The procedures for applying to transfer to Universitas Diponegoro are as follows.
 - a. Submit a written application addressed to the rector and a copy to the intended

dean of the home Faculty and the dean of the faculty.

- b. The application is enclosed with:
 - 1) Study results card (KHS) each semester containing grades, credit points, GPA authorized by the Vice dean of Academic and Student Affairs.
 - 2) Letter of transfer approval from the home faculty / department / program.
 - 3) Letter of approval from the parents / guardians / insurers of tuition fees.
 - 4) Letter of approval from the Head of the Agency / office (valid for students in study permit).
- 5) Transferable course credits must meet the following requirements:
 - a. Content of the materials is equivalent to the courses in the curriculum of the study program that has been attended; and
 - b. If the course taken does not meet the criteria in point a, but is considered to support the achievement of competence, the credits can be transferred as elective course.

3.16 TRANSFER STUDIES FROM STATE UNIVERSITIES

1. General requirements

- a. Universitas Diponegoro accepts transfer students from other state universities (PTN) at the beginning of the odd semester.
- b. The home faculty/department/study program of the PTN must be similar and in line with the intended faculties/departments/study programs within Universitas Diponegoro and possess an equal or higher level of accreditation ratings from the National Accreditation Board for Higher Education (BAN-PT).
- c. Universitas Diponegoro does not accept students who are expelled / dropped out from other State Universities (PTN).
- d. The duration of study and the total of credits obtained from the home university / institution are taken into account. For Undergraduate Programs, the students must have attended the study continuously with a study period of at least 2 semesters and a maximum of 8 semesters, and have accumulated a minimum credit of:

Duration of Study	Total credits	GPA
2 (two) semesters	36	≥ 3.00
4 (four) semesters	72	≥ 3.00
6 (six) semesters	108	≥ 3.00
8 (eight) semesters	135	≥ 3.00

- e. The duration of study from the previous faculty / departments / study programs is still taken into account in the duration of study at the faculty / department / study program within Universitas Diponegoro that received the transfer.

- f. Application for study transfer is submitted no later than 4 (four) weeks before the beginning of the odd semester;
- g. Never commit violations of the code of conduct of university or faculties life or other similar causes, by attaching a certificate from the home institution.
- h. The transfer is due to following the husband / wife (must submit a certificate from the authorized party).
- i. As a regional / university / institution representative (must submit a proosal letter from the concerned local government or rector).

2. Special requirements

- a. At the faculty level, special requirements are required, by considering the capacity of the study program in the FPIK environment, the conversion of courses, and the remaining of the study period.
- b. The students' transfer is determined by the Rector's decree after the transfer faculty/study program/department approved the.
- c. The procedures for applying for a study transfer are as follows.
 - 1) Submit a written application to the rector and the copy to the dean of the intended faculty.
 - 2) The application is enclosed with:
 - a) Academic transcripts approved by the leader of the home PTN.
 - b) Approval letter from the home faculty / department / program that states the student in question is still active and registered as a student and intends to transfer to Universitas Diponegoro.
 - c) Letter of approval from parents / guardians / insurers of the tuition fees
 - d) Letter of approval from the head of the agency / office (for working students).
 - e) Rector may specify other than the above requirements, including: (1) Political cases; (2) Riots; (3) Security

3.17 TRANSFER FROM OVERSEAS INSTITUTIONS

- 1. Universitas Diponegoro accepts transfer students from overseas institutions recognized by the Ministry of Higher Education, and have attended minimum 2 semesters of their study in the home institution, passed the *placement test* organized by the transfer study program and meets the applicable regulations.
- 2. For Foreign Nationals (WNA) who are willing to transfer as students at Universitas Diponegoro must submit the following requirements:
 - a. Curriculum vitae;
 - b. Photocopy/copy of diploma including the academic transcript;

- c. Certificate of financing guarantee during the study in Indonesia in the form of *bank accounts*;
 - d. Copy of valid passport for minimum of 1 year;
 - e. The statement letter of the students concerned to not work while studying in Indonesia;
 - f. The statement letter of the students concerned to comply with the prevailing laws and regulations in Indonesia;
 - g. Recent photos;
 - h. Health certificate from the authorized institution; and
 - i. Permission letter from the Ministry of Higher Education.
3. Procedures for applying for individual WNA who will transfer as a student at Universitas Diponegoro are listed in the explanation of this regulation.

3.18 DROP OUT

1. Undergraduate students are declared to have dropped out of study if:
 - a. Unable to meet the requirements for evaluation of learning outcomes;
 - b. Declared not eligible to continue the study by considering the health tests (both physical and mental health) of the team of doctors appointed by the university leader;
 - c. Sanctioned for serious academic violations; and
 - d. Subject to a court decision with a fixed legal force with a penalty of minimum 2 (two) semesters.
2. Undergraduate students who drop out of study as regulated in paragraph (1) letters a and b may:
 - a. Submit a letter of resignation approved by parents, acknowledged by the academic advisor / head of the study program addressed to the dean;
 - b. The Dean submits a letter of application to the Rector for issuing Rector Undip's decree on the resignation;
 - c. Rector issues the Rector's Decree on resignation according to the dean's proposal;
 - d. If the student concerned does not apply for a resignation within a period of no later than 2 (two) months since he was declared not eligible to continue the study, then the Rector issued a Decree of UNDIP rector on the study termination.
3. Undergraduate students who drop out of study as regulated in paragraph (1) letters c and d then:
 - a. Within no later than 1 (one) month after the decision of Undip's legal team as stated in the Rector's Decree or the court decision is issued, the dean submits a letter of application to the Rector for issuing rector Undip's decree on the drop out; and

- b. Rector published the UNDIP Rector's Decree on the study termination based on the dean's proposal.

3.19 DESIGNATIONS AND DEGREE

The basis for the mention of degrees and their writing is in accordance with the Decree of the Minister of Research, Technology, and Higher Education of the Republic of Indonesia Number 257/M/Kpt/2017 regarding the Name of the Study Program at Universities, and the Regulation of the Minister of Research, Technology, and Higher Education of the Republic of Indonesia Number 63 of 2016 concerning Degrees and Procedures for Writing Degree in Higher Education.

1. General terms
 - a. Academic degrees are awarded to the graduates of the Bachelor's Program.
 - b. The use of academic degrees follows the Rector's Decree.
2. Terms of awarding degree and designation:
 - a. Have completed all obligations and/or duties weighed in attending the undergraduate education program.
 - b. Have completed the administrative and financial obligations related to the attended courses.
 - c. Have been declared to pass the program.
3. The type of academic degree and the designation as well as the areas of expertise and abbreviations are regulated by the Rector's Decree.
4. The use of an academic degree for the Bachelor's Program in the form of an abbreviation is placed behind the name of the students.
5. Undergraduate Program
 - a. Academic degree for graduates of the Aquatic Resources Management Study Program, Aquaculture Study Program, Capture Fisheries Study Program, Fishery Products Technology Study Program is Bachelor of Fisheries, abbreviated as S. Pi.
 - b. Academic degree for the graduates of Marine Science Study Program and Oceanography Study Program is abbreviated as S. Si.

3.20 GRADUATION

1. Universitas Diponegoro holds a Graduation ceremony minimum four periods of graduation in one year.
2. Students declared to have graduated in the Yudisium must attend the University-level graduation ceremony during the graduation period.
3. Every graduate is obliged to pay the graduation ceremony administration with a

determined amount by University

4. All graduation participants are required to pay book donations to the Library through their respective faculties, which are symbolically handed over to the Rector at the graduation ceremony.
5. The procedures and requirements for attending graduation are explained as follows:
 - a. Graduation ceremony participants' registration is conducted in their respective faculties.
 - b. The list of graduates (participants) who will be graduated must be received by the Bureau of Academic Administration maximum 3 (three) weeks before the graduation ceremony.
 - c. Those who registered to attend graduation, if for some reason are unable to attend, then the concerned no longer have their rights and obligations in the next graduation period.
 - d. Graduation ceremony participants' registration is attached with photo in 3 x 4 cm size with the following requirements:
 - 1) 1 (one) copy in color, with red background
 - 2) Photo size 3 x 4 cm
 - 3) Facing straight
 - 4) Not wearing sunglasses
 - 5) Both ears should be visible
 - 6) Wearing an alma mater jacket
 - 7) No headcover allowed
 - 8) Photo for veiled students on official documents / diploma certificates etc., in accordance with the circular letter of the Chief of General Staff of ABRI number B/678.01/30/05/SET dated March 8, 1991 and Circular Letter of the Directorate General of Higher Education addressed to the Board of Leaders of the Indonesian Ulema Council No. 4277/D/T/91 dated October 1, 1991 stated that:
 - a) According to the instructions of the Minister of Education and Culture, a female student, if she wishes to wear a veil / headscarf that covers the ears in a photo.
 - b) If in the future for certain purpose a photo with no veil / headscarf and / or photo where the ears must be visible is required, then Universitas Diponegoro cannot replace the documents and / or provide other information related to the identity of the concerned students due to difficulty in confirming.

6. Best Graduates

- a. To encourage students to learn better and complete their studies relatively faster, Rector awarded the best graduates of each study program within one graduation period.
- b. The best graduation criteria are:
 - 1) Graduates with the highest GPA and shortest study duration.
 - 2) Formula for determining the Best Graduates

$$Nk = \frac{Tm + (Tm - TA)}{Tm} \times (GPA \times C)$$

Description:

Tm: Maximum study duration as programmed (14 semesters)

TA: The actual study duration taken by the student concerned

GPA: Grade Point Average

C: Constants for predicates:

- a. Cumlaude = 3.75 - 4
- b. Very satisfactory = 3.50 – 3.74
- c. Satisfactory = 3 – 3.49

Nk: Graduate's Quality Score

3.21 CHEATING AND ACADEMIC VIOLATIONS

1. Types of Academic Violations

Acts that are categorized as cheating/ violations in the administration of education.

A. Minor Academic Violations:

1. Cheating

Is an act, intentionally or not, of using or attempting to use information materials or other study aids without the permission of a lecturer in charge of the academic exam.

2. Assistance or attempted assistance of minor academic violations.

Is an act, intentionally or not, of helping or trying to help providing facilities or infrastructure that may lead to minor academic violations.

3. Inclusion in Minor Academic Violations

Is an act, intentionally or not, of cooperating or participating in doing or ordering to conduct actions that cause minor academic violations.

B. Moderate Academic Violations:

1) Ghost Writing

Is an act, intentionally or not, of replacing position or performing duties or activities for the benefit of others, at the request of others or of his own volition, in academic activities.

2) Repetition of minor academic violations.

3) Assistance or attempted assistance of moderate academic violations is an act, intentionally or not, of helping or trying to help providing facilities or infrastructure that can cause moderate academic violations.

4) Participation in moderate academic violations

Is an act, intentionally or not, of cooperating or participating in doing or ordering to conduct actions that cause moderate academic violations.

C. Severe academic violations:

1) Plagiarism

It is an intentional or unintentional act of obtaining or trying to obtain credit or score for a scientific work, by quoting part of or the entire work and/ or claiming scientific work of the other parties as his own scientific work, without including the source appropriately and adequately.

2) Forgery

Is an intentional or unintentional act of changing or falsify the name, signature, score or academic transcript, diploma, student id card, assignments, practicum, information, or reports within the scope of academic activities without permission from the authorized party.

3) Gratification

Is an act of giving a gift or promise, while it is acknowledged or should be suspected that the gift or promise is given as an effort to make the lecturer or educational staff to do or not do something in his place, which is contrary to his responsibility.

4) Bribery

Is an intentional or unintentional act of influencing or attempting to influence others by persuading, rewarding or threatening with the intention of influencing the assessment of his academic achievements.

5) Insult

Is an intentional or unintentional act of conveying words, writings or in any

form that basically demeans the dignity of the position of individual student, lecturer, administrative staff and official in the Universitas Diponegoro.

- 6) Crimes that are subject to imprisonment for 1 (one) year or more based on the existing laws and regulations.
- 7) The repetition of moderate academic violation.
- 8) Violations of administration and severe discipline:
Is an intentional or unintentional act, either alone or cooperative, of doing something in contrary to the provisions of discipline and administration issued by the Ministry of Education.
- 9) Assistance or attempted assistance of severe academic violations:
Is an intentional or unintentional act against an individual of helping or trying to help providing facilities or infrastructure that can cause severe academic violations.
- 10) Participation in severe academic violations
Is an intentional or unintentional act of cooperating or participating in doing or ordering to conduct actions that cause severe academic violations.

2. Sanctions Against Academic Violations

A. Academic sanctions for the students

- 1) Sanctions against minor academic violations
 - a) Stern warning orally by officers or written by the Head of Faculty/Department/Study Program.
 - b) Reduction of test scores and or statements of failure on the courses or academic activities carried out by the lecturer concerned at the request of the Head of Faculty/Department/Study Program.
- 2) Sanctions against moderate academic violations
The right / permission to participate in academic activities is temporarily revoked by the leader of Universitas Diponegoro for a maximum of 2 (two) semesters.
- 3) Sanctions for severe academic violations
The highest sanction is dismissal or being expelled (the status as a student is permanently revoked) by the UNDIP leader.

B. Sanctions for alumni who are proven to commit severe academic violations while studying at UNDIP

- 1) Revocation of diplomas, transcripts, and SKPI; and
- 2) Lost his right to pursue further studies at UNDIP.

- C. Sanctions for the lecturers and or administrative personnel involved in academic violations are regulated according to the existing laws and regulations.

3. Procedures of Sanction Determination

- A. The following is the procedures of sanction determination for the students committing minor academic violation.
 - 1) Determination of violation evidence.
 - 2) Confirmation of evidence and violations by the lecturer / head of department / head of the study program.
 - 3) Determination of sanctions by lecturer / head of department / heads of study program.
- B. The procedures of sanction determination for the students committing moderate and severe academic violations are as follows.
 - 1) The Dean appoints Investigator Team to investigate and collect the facts/data/information on the suspected moderate and or severe academic violations;
 - 2) The investigator team is led by the dean with the vice dean of academic and student affairs as the secretary as well as the head of the study program as the member;
 - 3) In order to investigate and collect facts / data / Information, the investigator team has the authority to summon the relevant parties and request data and evidence of the suspected moderate and severe academic violations;
 - 4) The investigation results of the investigator team to the the alleged occurrence of moderate and or severe academic violations are submitted to the dean to be then delivered to the university leaders;
 - 5) After paying attention and considering the investigation report and the collection of facts / data / information on the case, the university leaders and the law office formed an academic violation resolution team;
 - 6) The academic violation resolution team consists of:
 - a) University leaders;
 - b) 3 (three) legal experts appointed by the university leaders on the proposal of the law office;
 - c) Head of the reporting faculty;
 - d) Administrative personnel as the trial registrar.
 - 7) During the investigation process in a special hearing, the students

suspected of moderate and or severe academic violations are granted the right to defend themselves accompanied by legal counsel.

- 8) Based on the results of a special hearing, university leaders can decide on sanctions against the concerned students by taking into account the weight or type of academic violations and sanctions that can be imposed.
- C. The imposition of severe academic sanctions is the permanent termination of the status as UNDIP students, especially against students committing severe academic violations;
- D. If severe academic violations are not processed in court, then the imposition of such severe academic sanctions can still be imposed;
- E. In case of the student suspected of a crime undergoes a period of detention and or has received a District Court ruling which states that the student in question is guilty, then the university leaders may impose a temporary suspension of maximum 2 (two) semesters and be counted as the study period;
- F. In case of the temporary dismissal is completed, and turns out that the student in question is still in detention, then the study period of the student concerned is banned (temporarily not counted) until the issuance of a court ruling with a permanent legal force
- G. The imposition of severe academic sanctions in the form of permanent dismissal of the status as UNDIP student, especially to the students committing criminal acts, can only be imposed after a court ruling with permanent legal force that states the student is guilty and subject to criminal sanctions;
- H. In case of the student who is suspected of a criminal offence, in a court ruling with permanent legal force is still found guilty and subjected to criminal sanctions, then the study period during which the concerned is detained and/or temporarily dismissed, is counted as the period of study; and
- I. Students who are penalized for academic violations at all levels have the right to submit objections and/or administrative appeals with a grace period.

CHAPTER IV CURRICULUM

4.1 LEGAL BASIS

The implementation of undergraduate program education (S1) in the Faculty of Fisheries and Marine Sciences Universitas Diponegoro guided by Law No.12 of 2012 on Higher Education and Regulation of the Minister of Research, Technology, and Higher Education of the Republic of Indonesia Number 44 of 2015 on National Standards of Higher Education, as well as the agreement of the Forum of Leaders of Fisheries Education and Marine Sciences of Indonesia, and the Regulation of the Rector of Universitas Diponegoro No. 15 year 2017 on Academic Regulations in the Field of Undergraduate Program's Education in Universitas Diponegoro.

4.2 STUDY LOAD

Study load for undergraduate (S1) program must meet the provisions with about 144 - 146 SKS, which consists of:

- | | |
|--|------------|
| 1. National Compulsory Courses (MKN) (8 SKS) | : 6 % |
| 2. University Compulsory Courses (MKU) (22 – 24 SKS) | : 15 – 17% |
| 3. Faculty Courses (MKF) (16 SKS) | : 11 % |
| 4. Study Program Courses (98 – 100 SKS) | : 66 -68 % |

4.3 CURRICULUM STRUCTURE

The following section presents the curriculum of each Study Program in the Faculty of Fisheries and Marine Sciences, which includes the course titles, the total credit, the course code and the semesters when the courses are proposed.

4.3.1 Aquatic Resources Management (MSP) Undergraduate Program (S-1)

The number of SKS to complete the undergraduate program in the MSP Study Program is 145 SKS.

Semester 1

No	Course Code	Course Name	SKS
1	IPK31005	Biology	3
2	IMP21300	Aquatic Chemistry	3
3	IMP21301	Aquatic Physics	3
4	UNW00001	Religious Study	2
5	IPK31001	PIPK	3
6	UNW00004	Indonesian Language	2
7	UNW00002	Pancasila	2
8	UNW00003	Civil education	2
T O T A L			20

Semester 2

No	Course Code	Course Name	SKS
1	UNW00005	Sports	1
2	UNW00006	English	2
3	IMP21302	Basics of Aquaculture	2
4	IMP21303	Basics of Fishery Products Technology	2
5	IMP21304	Basics of Capture Fisheries	2
6	IPK31003	Coastal Community Sociology	2
7	IPK31002	Introduction to Economics	2
8	IPK31006	Ikhtology	3
9	IPK31004	Aquatic Ecology	3
TOTAL			19

Semester 3

No	Course Code	Course Name	SKS
1	IMP21305	Limnology	3
2	IMP21306	Oceanography	3
3	IMP21307	Fishery Biology	3
4	IMP21308	Planktonology	2
5	IMP21309	Marine Productivity	2
6	IMP21310	Aquatic Bioecology Practicum	3
7	IMP21311	Aquatic Invertebrate	3
8	IMP21312	Marine Biology	2
9	IMP21313	Coastal Ecology	2
TOTAL			23

Semester 4

No	Course Code	Course Name	SKS
1	IMP21314	Sensory and GIS in Fisheries	3
2	IMP21315	Aquatic Animal Physiology	3
3	IMP21316	Water Quality Management	3
4	IMP21317	Fish Population Dynamics	3
5	IMP21318	Statistics	2
6	IMP21319	Aquatic Ecotoxicology	3
7	IMP21320	Aquatic Plants	3
8	IMP21321	Research Methods	2
TOTAL			22

Semester 5

No	Course Code	Course Name	SKS
1	IMP21322	Aquatic Pollution Control	3
2	IMP21323	Aquatic Resources Management	3
3	IMP21324	Fisheries Resources Bioeconomic	2

4	IMP21325	Economic Valuation of Fisheries Resources	3
5	IMP21326	Experiment Planning	2
6	IMP21327	Aquatic Microbiology	3
7	IMP21328	Work Skills	2
TOTAL			18

Semester 6

No	Course Code	Course Name	SKS
1	IMP21329	Mollusca Bioecology	3
2	IMP21330	Fisheries Resources Management	3
3	IMP21331	Crustacean Bioecology	3
4	IMP21332	Basic of AMDAL	3
5	UNW00008	KKN	3
6	IMP21333	Field Work Practice (PKL)	3
7		ELECTIVE COURSE	3-6
TOTAL			21-24
Course Code		Even Semester Elective Courses *	SKS
IBP21307		Fish Histology	3
IHP21314		Diversification & development of Fisheries Product	3
IMP21345		Aquatic Ecotourism	2
IMP21346		Protected Aquatic Biota	2
IMP21349		Fisheries Policies and Regulations	2
IMP21347		Larvalogy	3
IMP21348		<i>Kapita Selektta</i>	2

Semester 7

No	Course Code	Course Name	SKS
1	IMP21334	Seminar	2
2	IMP21335	Integrated Coastal Area Management	3
3	IMP21336	Marine Resources Conservation	3
4	UNW00007	Entrepreneurship	2
5		ELECTIVE COURSE 1	3
6		ELECTIVE COURSE 2	3
TOTAL			16

Course Code		Odd Semester Elective Courses *	SKS
IMP21339		Models and Simulations of Ecosystems	3
IMP21340		Mangrove Ecosystem	3
IMP21341		Coralogy	3
IMP21342		EIA/ AMDAL	3
IMP21343		Bentos Bioecology	3
IMP21344		Social Research Methods	3

IMP21350	Fish Farming	3
IPP21305	Fishing Methods	3

Semester 8

No	Course Code	Course Name	SKS
1	IMP21337	Final Project/Diploma Thesis	6
TOTAL			6

Note:

The number of compulsory courses that must be taken by students of MSP study program is 136 SKS. The number of elective courses is at least 9 SKS, so the total sks that must be taken to pass is 145 SKS.

4.3.2 Aquaculture (S-1) Undergraduate Program

The total SKS needed to complete the undergraduate program in Aquaculture study program is 144 SKS. The curriculum structure per semester in Aquaculture study program can be seen in the following table:

Semester 1

No	Course Code	Course Name	SKS
1	IPK31005	Biology	3
2	UNW00002	Pancasila	2
3	IPK21301	Introduction to Fisheries and Marine Sciences	3
4	IBP21300	Biochemistry	3
5	UNW00001	Religious Education	2
6	UNW00007	Civil Education	2
7	UNW00004	Indonesian Language	2
8	UNW00006	English	2
9	UNW00005	Sports	1
TOTAL			20

Semester 2

No	Course Code	Course Name	SKS
1	IHP21304	Basics of Fishery Products Technology	2
2	IPP21303	Basics of Capture Fisheries Management	2
3	IPK21004	Aquatic Ecology	3
4	IBP21301	Basics of Aquaculture	2
5	IPK21006	Ikhtiology	3
6	IBP21302	Aquatic Chemistry Physics	3
7	IPK21002	Introduction to Economics	2
8	IBP21303	Statistics	2
9	IPK21003	Coastal Community Sociology	2
TOTAL			21

Semester 3

No	Course Code	Course Name	SKS
1	IBP 21304	Aquaculture Engineering	3
2	IBP21305	Water Quality Management	3

3	IBP21306	Fish Reproductive Physiology	3
4	IBP21307	Fish Histology	3
5	IBP21308	Basics of Aquatic Microbiology	3
6	IBP21309	Fish Nutrition	3
7	IBP21310	Information Technology	2
TOTAL			20

Semester 4

No	Course Code	Course Name	SKS
1	IBP21311	Aquaculture Environmental Management	3
2	IBP21312	Fish Hatchery Technology	3
3	IBP21313	Basics of Fish Genetics	3
4	IBP21314	Parasites and Diseases of Fish	3
5	IBP21315	Natural Feed Cultivation	3
6	IBP21316	Fisheries Laws and Regulations	2
7	IBP21317	Experiment Framework	3
TOTAL			20

Semester 5

No	Course Code	Course Name	SKS
1	IBP21318	Freshwater Aquaculture Management	3
2	IBP21319	Brackish water Aquaculture Management	3
3	IBP21320	Marine Aquaculture Management	3
4	IBP21321	Fish Health Management	3
5	IBP21322	Fish Feeding Technology and Management	3
6	IBP21323	Ornamental Fish Aquaculture Management and Aquascape	3
7	UNW00007	Entrepreneurship	2
TOTAL			20

Semester 6

No	Course Code	Course Name	SKS
1	IBP21324	Principles of Aquaculture Biotechnology	3
2	IBP21325	Aquaculture Business	3
3	IBP21326	Coastal Aquaculture Industry	3
4	IBP21327	Scientific Methods	3
5		Elective course	3
6		Elective course	3
7	IBP21328	Aquaculture Field Practice	3
TOTAL			21

Semester 7

No	Course Code	Course Name	SKS
1	IBP21329	Introduction and Domestication of Potential Fish	3
2	UNW00008	KKN	3
3		Elective course	3
4		Elective course	3

5	IBP21330	Aquaculture Fisheries Extension	3
TOTAL			14

Semester 8

No	Course Code	Course Name	SKS
1	IBP21343	seminar	2
2	IBP21344	Final Task/Thesis	6
TOTAL			8

Elective Courses

No	Course Code	Course Name	SKS
1	IBP21331	Seed Production Management	3
2	IBP21332	Intensification and Mass Production of Natural Feed	3
3	IBP21333	Nutritional Physiology of Aquaculture Organisms	3
4	IBP21334	Fish Feed Technology	3
5	IBP21335	Aquaculture Environment Management	3
6	IBP21336	Aquaculture Geogaphic Information System	3
7	IBP21337	Aquaculture Product Management	3
8	IBP21338	Aquaculture Industry Development	3
9	IBP21339	Non-Finfish Aquaculture	3
10	IBP21340	Finfish Aquaculture	3
11	IBP21341	Fish Quarantine	3
12	IBP21342	Aquaculture Engineering	3

4.2.3 Capture Fisheries (S-1) Undergraduate Program

The total of SKS that must be completed as an undergraduate in Capture Fisheries Study Program is minimum 146 SKS. The curriculum structure per semester is presented in the following table:

Semester 1

No	Course Code	Course Name	SKS
1	UNW00001	Religious Education	2
2	UNW00004	Indonesian Language	2
3	UNW00006	English	2
4	IPP21337	Statistics	2
5	IPK21301	Introduction to Marine Fisheries Science	3
6	IPK31005	Biology	3
7	IPP21302	Physics	3
8	IPK31003	Coastal Community Sociology	2
TOTAL			19

Semester 2

No	Course Code	Course Name	SKS
1	UNW00005	Swimming	1
2	UNW00002	Pancasila	2
3	UNW00003	Civil Education	2
4	IPP21303	Basics of Capture Fisheries Management	2

5	IPK21302	Introduction to Economics	2
6	IMP21307	Fishery Biology	3
7	IHP21304	Basics of Fishery Products Technology	2
8	IBD21301	Basics of Aquaculture	2
9	IPK31004	Aquatic Ecology	3
10	IPK31006	Ikhtology	3
TOTAL			22

Semester 3

No	Course Code	Course Name	SKS
1	UNW00007	Entrepreneurship	2
2	IPP21304	Drawing Maps and Techniques	2
3	IPP21305	Seamanship	3
4	IPP21306	Fishing Methods	3
5	IPP21307	Fish Behavior	3
6	IPP21308	Marine Meteorology	3
7	IMP21306	Fisheries Oceanography	3
TOTAL			19

Semester 4

No	Course Code	Course Name	SKS
1	IPP21309	Extension	2
2	IPP21310	Introduction to GIS	3
3	IPP21311	Fishery Resource and Monitoring Systems	2
4	IPP21312	Fishing Machines and Gears	3
5	IPP21313	Fishing Boat	3
6	IHP21307	Fishery Products Management Technology	3
7	IMP21317	Population Dynamics	3
TOTAL			19

Semester 5

No	Course Code	Course Name	SKS
1	IPP21314	Scientific Method	2
2	IPP21315	Fishing Port	3
3	IPP21316	Capture Gears Design	3
4	IPP21317	Fishing Technology	3
5	IPP21318	Marine Acoustics	3
6	IPP21319	Fishing Area	3
7		Elective	3
TOTAL			20

Semester 6

No	Course Code	Course Name	SKS
1	IPP21320	Capture Fisheries Management and Business	2
2	IPP21321	Field Work Practices (PKL)	3
3	IPP21322	Navigation	3
4	IPP21323	Fishing Operations Management	3
5	IPP21324	Fishery Industry Planning	3
6	IPP21325	Fisheries Bioeconomy	3

7	IPP21326	Fishery Data Processing	3
8	IPP21327	Standardization	2
TOTAL			22

Semester 7

No	Course Code	Course Name	SKS
1	UNW00008	Community Service (KKN)	3
2	IPP21328	Applied Statistics	2
3	IPP21329	Seminar	2
4	IPP21330	Capture Fisheries Technology and Information System	2
5	IPP21331	Marketing	3
6		Elective Courses	3
7		Elective Courses	3
TOTAL			18

Semester 8

No	Course Code	Course Name	SKS
1	IPP21332	Final Project/ Diploma Thesis	6

Elective Courses

No	Course Code	Course Name	SKS
1	IPP21333	Capture Fisheries Operations Research	3
2	IPP21334	Fishing Boat Machinery	2
3	IPP21335	Fishing Port Management	3
4	IPP21336	Experiment Framework	3
5	IHP21316	Refrigeration Techniques	3
6	IPP21339	Sensory Application	3
7	IPP21338	Fisheries Economy	3
TOTAL			20

4.2.4 Fishery Products Technology (S-1) Undergraduate Program (THP)

The total SKS that must be completed to obtain a degree in fisheries undergraduate program at THP study program is 144 SKS, consists of 133 SKS of compulsory courses and 11 SKS of elective courses, with the following curriculum structure per semester.

Semester 1

No	Course Code	Course Name	SKS
1	UNW00001	Religious Education	2
2	UNW00002	Pancasila	2
3	UNW00003	Civil Education	2
4	UNW00004	Indonesian Language	2
5	IPK21301	Introduction to Fisheries and Marine Sciences	3
6	IPK21305	Biology	3
7	IHP21301	Chemistry	3
8	IHP21302	Physics	3
TOTAL			20

Semester 2

No	Course Code	Course Name	SKS
1	UNW00005	Sports	1
2	UNW00006	English	2
3	IPK31002	Introduction to Economics	2
4	IPK21303	Coastal Community Sociology	2
5	IPK21304	Aquatic Ecology	3
6	IPK21306	Ikhtiology	3
7	IHP21303	Basics of Biochemistry	3
8	IBP21301	Basics of Aquaculture	2
9	IPP21302	Basics of Capture Fisheries Management	2
10	IHP21304	Basics of Fishery Products Technology	2
TOTAL			22

Semester 3

No	Course Code	Course Name	SKS
1	UNW00007	Entrepreneurship	2
2	IHP21305	Biochemistry of Fishery Products	3
3	IHP21306	Food Chemistry and Fish Nutrition	3
4	IHP21307	Fishery Products Management Technology	3
5	IHP21308	Basics of Microbiology	3
6	IHP21309	Information of raw materials	2
7	IHP21310	Introduction to Laboratory Equipment Usage	2
8	IHP21311	Statistics	2
TOTAL			20

Semester 4

No	Course Code	Course Name	SKS
1	IHP21312	<i>Food Additive</i>	3
2	IHP21313	Microbiology of Fishery Products	3
3	IHP21314	Product Diversification and Development	3
4	IHP21315	Traditional Fishery Products Processing Technology	3
5	IHP21316	Refrigeration Technology	3
6	IHP21317	Thermal Process Technology	3
7	IHP21318	Information Technology	2
TOTAL			20

Semester 5

No	Course Code	Course Name	SKS
1	IHP21319	Fermentation Technology	3
2	IHP21320	Fishery Products Biotechnology	3
3	IHP21321	Fishery Products Toxicology	3
4	IHP21322	Fishery Products Packaging	3
5	IHP21323	Sanitation and Hygiene	3

6	IHP21324	Fishery Waste Utilization	3
7	IHP21325	Scientific Methods	2
TOTAL			20

Semester 6

No	Course Code	Course Name	SKS
1	IHP21326	Fishery Products Standardization	2
2	IHP21327	Fishery Products Quality Control	3
3	IHP21328	Fishery Products Industry Management	3
4	IHP21329	Experiment Framework	3
5	IHP21330	Field Work Practices (PKL)	3
6		Elective course 1	3
7		Elective course 2	3
TOTAL			20

Semester 7

No	Course Code	Course Name	SKS
1	UNW00008	KKN	3
2	IHP21331	Hydrocolloid Industrial Technology	3
3	IHP21332	Seminar	2
4	IHP21333	Fishery Products Integrated Quality Assurance	3
5		Elective course 3	3
6		Elective course 4	3
TOTAL			17

Semester 8

No	Course Code	Course Name	SKS
1	IHP21334	Final Task/Thesis	6
TOTAL			6

Odd Semester Elective course

No	Course Code	Course Name	SKS
1	IHP21338	Functional Food	3
2	IHP21339	Surimi Industrial Technology	2
3	IHP21340	Fishery Products Drying Technology	3
4	IMP21332	Basics of EIA/AMDAL	3
5	IMP21322	Water Pollution Control	3

Even Semester Elective course

No	Course Code	Course Name	SKS
1	IHP21335	Thermodynamics Process	3
2	IHP21336	Marketing of Fishery Products	3
3	IPP21306	Fishing Methods	3
4	IHP21337	Layout and Factory Planning	3
5	IPP21313	Fishing Boat	3
6	IPP21309	Extension	2
7	IBP21340	Finfish Farming	3

4.2.5 Marine Science Undergraduate Program (S-1)

The total SKS for Undergraduate Program (S-1) in Marine Science Study Program is 144 SKS, consists of 129 SKS of compulsory courses and 15 SKS of elective courses. The curriculum structure per semester in Marine Science Study Program is presented in the following table:

Semester 1

No	Course Code	Course Name	SKS
1	PIIK6001	Oceanography	3
2	PIIK6002	Marine Botani	3
3	PIIK6003	Marine Geology	3
4	PIIK6004	Marine Organism Biomolecule	2
5	U UW00011	Religious Education	2
6	U UW00004	Indonesian Language	2
7	U UW00006	Internet of Things (IoT)	2
8	U UW00008	Entrepreneurship	2
9	U UW00005	Sports	2
TOTAL			20

Semester 2

No	Course Code	Course Name	SKS
1	PIIK6006	SCUBA Diving & basic rescue	2
2	U UW00007	English	2
3	U UW00003	Pancasila and Civil Education	3
4	PIIK6007	Marine Invertebrates	3
5	PIIK6008	Planktology	3
6	PIIK6009	Marine Sedimentation	3
7	PIIK6010	Biochemistry	3
8	PIIK6011	Statistics	2
TOTAL			21

Semester 3

No	Course Code	Course Name	SKS
1	PIIK6012	Coralogy	3
2	PIIK6013	Marine Vertebrates	3
3	PIIK6014	Biotechnology	3
4	PIIK6015	Tropical Marine Ecology	3
5	PIIK6016	Marine Climatology	3
6	PIIK6017	Marine Microbiology	3
7	PIIK6018	Exploration of Marine Bioactive Compounds	3
TOTAL			21

Semester 4

No	Course Code	Course Name	SKS
1	PIIK6019	Basics of EIA	2
2	PIIK6020	Scientific Methodology	2
3	PIIK6021	Quantitative Bioecology	3
4	PIIK6022	Mariculture	3
5	PIIK6023	Marine Biotechnology	3
6	PIIK6024	Marine Pollution	3
7	PIIK6025	Geographical Information System	3
8	PIIK6026	Conservation of coastal and marine resources	3
TOTAL			22

Semester 5

No	Course Code	Course Name	SKS
1	PIIK6027	Stock Assessment	3
2	PIIK6028	Project Feasibility study	3
3	PIIK6029	Algae Bioindustry	3
4	PIIK6030	Coastal and Marine Spatial Planning	3
5	PIIK6031	Rehabilitation & Restoration of Ecosystem	2
6	PIIK6032	Fisheries and Marine SDGs	2
7	PIIK6033	Ecotourism	3
8	PIIK6034	Sociology of Coastal Community	2
TOTAL			21

Semester 6

No	Course Code	Course Name	SKS
1		ELECTIVE COURSE 1	3
2		ELECTIVE COURSE 2	3
3		ELECTIVE COURSE 3	3
4		ELECTIVE COURSE 4	3
5		ELECTIVE COURSE 5	3
6		ELECTIVE COURSE 6	3
7		ELECTIVE COURSE 7	3
TOTAL			21

Semester 7

No	Course Code	Course Name	SKS
1		ELECTIVE COURSE 8	3
2		ELECTIVE COURSE 9	3
3	UUW00009	Community Service (KKN)	3
4	PIIK6035	Field Work Practice (PKL)	3
5	PIIK6036	Final Project (Diploma Thesis)	6
TOTAL			18

TOTAL SKS	144
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Course Code	Elective Courses Name	SKS
LIIK6040	Integrated Coastal Management	3
PIIK6041	Mariculture Engineering	3
PIIK6042	Captive Breeding & Restocking of Endangered Species	3
LIIK6043	Environmental Toxicology & Risk Assessment	3
LIIK6044	Diving Skills	3
PIIK6045	EIA/AMDAL	3
PIIK6046	Modelling of Marine and Coastal Environment	3
PIIK6047	Marine and Coastal Disasters Mitigation	3
LIIK6048	Marine Bioprospecting	3
PIIK6049	Marine Pharmacology	3
PIIK6050	Analysis of Organic Substance	3
PIIK6051	Bioremediation & Waste Management	3
LIIK6052	Host-Microbiome Interaction	3
LIIK6053	Health Assessment of Marine Environment	3
PIIK6054	Toxin of Marine Invertebrates	3
LIIK6055	Marine Biosystematics	3
PIIK6056	Probiotics Technology	3
LIIK6057	Advance Coral Reef Science	3
PIIK6058	IT-based Marine Bio-preneur	3
PIIK6059	Valuasi Ekonomi SDL Economy Valuation of Marine Resources	3
PIIK6060	Marine Biomolecules	3
PIIK6061	Process of Marine and Coastal Ecosystem	3
PIIK6062	Remote sensing	3
PIIK6063	Organization and Leadership	3
PIIK6064	Sosialization and Dissemination of the Program	3
PIIK6065	Sertification of Marine Competence	3
PIIK6066	Analysis Technique and Project Report Writing	3
PIIK6067	Marine Business Management	3
PIIK6068	Bioecology and Genetics of Marine Megafauna	3

4.2.6 Oceanography (OSE) Undergraduate Program (S-1)

The total sks that must be completed for undergraduate programs in Oceanography study program is 146 SKS, consists of 134 SKS of compulsory courses and 12 SKS of elective courses. The curriculum structure per semester is described in the following table.

Semester 1

No.	Course Code	Course Name	SKS
1	UUWN6-006	Internet of Things (IoT)	2
2	UUWN6-005	Aquatic Sport (Swimming)	1
3	PIOC1-111	Calculus	2
4	PIOC1-121	Fluid Mechanics	2
5	PIOC1-131	Physical Oceanography	2
6	PIOC1-141	Remote Sensing and Ocean Mapping	3
7	PIOC1-151	Marine Geology	3
8	PIOC1-161	Marine Biology	3
9	PIOC1-171	Marine Environment Chemistry	2
T O T A L			20

Semester 2

No.	Course Code	Course Name	SKS
1	PIOC1-211	Marine Ecology	3
2	PIOC1-221	Physical Mathematics	2
3	PIOC1-231	Aquatic Sport (Diving)	2
4	PIOC1-241	Statistics	2
5	PIOC1-251	Hydrodynamics	2
6	PIOC1-261	Marine Analytical Chemistry	3
7	PIOC1-271	Numerical Methods	2
8	PIOC1-281	Geological Oceanography	2
9	PIOC1-291	Biological Oceanography	2
T O T A L			20

Semester 3

No.	Course Code	Course Name	SKS
1	PIOC1-311	Introduction to Student Creativity Program (PKM)	1
2	PIOC1-321	Tidal	3
3	PIOC1-331	Ocean Waves	3
4	PIOC1-341	Ocean Current	3

5	PIOC1-351	Marine Geographic Information System	3
6	PIOC1-361	Fisheries Oceanography	2
7	PIOC1-371	Chemical Oceanography	3
8	PIOC1-381	Marine Meteorology and Climatology	2
T O T A L			20

Semester 4

No.	Course Code	Course Name	SKS
1	PIOC1-411	Marine Geophysics	2
2	PIOC1-421	Oceanography Modelling	3
3	PIOC1-431	Oceanography Methods	3
4	PIOC1-441	Marine Sedimentology	3
5	PIOC1-451	Oceanography Engineering	3
6	PIOC1-461	Coastal Hydrolics	2
7	PIOC1-471	Colloquium	1
8	PIOC1-481	Marine Geochemistry	2
9	PIOC1-491	Marine and Coastal Disaster Mitigation	2
T O T A L			21

Semester 5

No.	Course Code	Course Name	SKS
1	UUWN6-0*1	Religious Education	2
2	UUWN6-003	Pancasila and Civic Education	3
3	UUWN6-004	Bahasa Indonesia	2
4	UUWN6-007	English	2
5	UUWN6-008	Entrepreneurship	2
6		ELECTIVE 1	2
7		ELECTIVE 2	2
8		ELECTIVE 3	2
9		ELECTIVE 4	3
T O T A L			20

SEMESTER 6

No.	Course Code	Course Name	SKS
1		ELECTIVE 1	2
2		ELECTIVE 2	2
3		ELECTIVE 3	2
4		ELECTIVE 4	2
5		ELECTIVE 5	2
6		ELECTIVE 6	2
7		ELECTIVE 7	2

	ELECTIVE 8	3
	ELECTIVE 9	3
TOTAL		20

Semester 7

No.	Course Code	Course Name	SKS
1		ELECTIVE 1	2
2		ELECTIVE 2	2
3		ELECTIVE 3	2
4		ELECTIVE 4	2
5		ELECTIVE 5	2
6		ELECTIVE 6	2
7		ELECTIVE 7	2
8		ELECTIVE 8	3
9	UUWN6-009	Community Service (KKN)	3
TOTAL			20

Semester 8

No.	Course Code	Course Name	SKS
1	PIOC1-811	Final Project/Diploma Thesis	4
2	PIOC1-821	Research Methods and Scientific Writing	1
TOTAL SKS			146

Elective Courses *

No.	Course Code	Course Name	SKS
1	LIOC1-011	Oceanography Programming	3
2	LIOC1-021	Marine Environmental Modelling	3
3	LIOC1-031	Web-based GIS Application for coastal and marine	3
4	LIOC1-041	Coastal and Marine Multi Hazard Analysis	3
5	LIOC1-051	Spatial Model of Coastal Disaster Risks	3
6	LIOC1-061	Hydrography Survey and Sea floor Exploration	3
7	LIOC1-071	Coastal Structure	3
8	LIOC1-081	Marine and Coastal Spatial Planning	3
9	LIOC1-091	Marine Energy	2
10	LIOC1-101	Climate Change & Global Warming	2
11	LIOC1-111	Atmospheric and Oceanic Interaction	2
12	LIOC1-121	Estuary Dynamics	2

13	LIOC1-131	Marine Resources Conservation	2
14	LIOC1-141	Marine Resources Exploratio	2
15	LIOC1-151	HSE/ Working Safety at Sea	2
16	LIOC1-161	The Cadastre and the Law of the Sea	2
17	LIOC1-171	Coastal Sociology	2
18	LIOC1-181	Marine Pollution	2
19	LIOC1-191	Marine Radionuclide	2
20	LIOC1-201	Sediment Transport	2
21	LIOC1-211	Reclamation and Dredging	2
22	LIOC1-221	EIA/AMDAL	2
23	LIOC1-231	Marine and Oceanographic Instrumentation	2
24	LIOC1-241	Feasibility Study and Project Management	2
25	LIOC1-251	Economy of Coastal Resources	2
26	LIOC1-261	Integrated Coastal Zone Management	2
27	LIOC1-271	Applied Ichthyology	2
28	LIOC1-281	Marine Information and Technology System	2
29	LIOC1-291	Coastal Rehabilitation and Protection	2
30	LIOC1-301	Satellite Oceanography	2
31	LIOC1-311	Analysis and Interpretation of Oceanography Data	2
32	LIOC1-321	Marine Debris	2
33	LIOC1-331	Marine Acoustics	2
34	LIOC1-341	Advanced Communication	2
35	LIOC1-351	Dosimetry	2
36	LIOC1-361	Advanced Entrepreneur	2

4.4 Syllabus

Syllabus in the Faculty of Fisheries and Marine Sciences UNDIP is presented in the following section, which includes the course title, the total SKS/credit points, course codes and a brief description of the course.

4.4.1 National Compulsory Courses

1. Religious Education

a. Islamic Religion UNW00001A 2 SKS

Knowledge, understanding and appreciation of aspects related to the existence of beings, the implementation of Islamic teachings. Increase of faith in the apostolic Khaliq and carry out Islamic sharia.

b. Catholicity UNW00001C 2 SKS

Knowledge of people who believe in God through Christ in the Church, living in worship and society in order to develop one's personal attitude and mentality.

c. Protestantism UNW00001B 2 SKS

Understanding and appreciation of the self existencen as faithful being who believe in Allah. Able to express the faith in daily life, in the relationship with Allah, fellow human, universe and the nation and state.

d. Hinduism UNW00001D 2 SKS

Steady understanding of religion to Sang Hyang Widhi Wasa / One and Only God, so they are able to control themselves in thinking, speaking and act in the devotion to the homeland, nation and state.

e. Buddhist UNW00001E 2 SKS

Understanding of Buddhism and its practice in religious communities, dharma and devotion to the Faith (sadha) in maintaining the survival of religion, nation and state based on Pancasila and the UUD 1945.

2. Pancasila UNW00002 2 SKS

Comprehensive understanding of National Security Defense Issues (Hankamnas), including: National Security, National Resilience, *Hankamnas* Politics and Strategy, and Universal People's Defense.

3. Civic Education UNW00003 2 SKS

Comprehensive understanding of national security defense issues (Hankamnas) which include: National Security, National Resilience, Politics and Strategy of *Hankamnas*, and Universal People's Defense

4. Bahasa Indonesia UNW00004 2 SKS

Understanding basic knowledge of writing, spelling and grammar, reasoning in essays, word choice and definitions, effective sentences, paragraph development and essay planning.

4.4.2 University Compulsory Courses

1. English UNW00006 2 SKS

Subjects to provide students with basic skills for reading English. Understanding sentence forms: auxiliaries, reported speeches, gerunds, infinitives phrases, adverbs and conditional sentences.

2. Sport (Swimming) UNW00005 1 SKS

This course contains swimming knowledge and skills to base diving skills and provide skills for water safety. The materials provided are mainly about swimming techniques and floating on the water surface effectively with or without swimming gears, including how to get into the water, swimming underwater, knowing and wearing basic diving gears (masks, snorkels and fins)

3. Entrepreneurship UNW00007 2 SKS

Entrepreneurship course teaches the comprehensive concept of entrepreneurship, from creativity, business innovation, marketing, human resources, law, business institutions, operations and finance

4. Community Service (KKN) UNW00-008 3 SKS

It is a field lecture activity begins with briefing (lectures) in faculties and universities, and work practices in the community for a month. Students can attend KKN if they have passed courses minimum 100 SKS/credits. The implementation of KKN is managed by LPPM based on special guidelines.

5. Final Project (Diploma Thesis) 4-6 SKS

Final Project / Diploma Thesis is a scientific work based on the results of research / experiments compiled under the guidance of the Supervisor. Diploma Thesis is a requirement of final project to achieve a degree through research design, literature study, sampling and data measurement, data analysis, data interpretation techniques and scientific writing techniques.

4.4.3 Compulsory Courses at the Faculty of Fisheries and Marine Sciences

1. Biology IPK310053 SKS

Biology course studies genetics, adaptation, evolution of organism interactions, and physiology, systematics and taxonomy of organisms

2. Introduction to Fisheries and Marine Sciences IPK31001 3 SKS

Understanding the concept of fisheries and marine science as a system / ecosystem of the sea water mass properties and characteristics, circulation of water mass (global and regional, Indonesia cross-flow (ARLINDO) and Indonesian monsoon current (ARMUNDO), tools and types of fishing equipment, fishing vessels and fishing methods, the basics of aquaculture

(introduction to aquacultured fish, seed production, fish nutrition, fish health and environment), product management, types of fishery product processing (traditional and modern), packaging of fishery products, and quality control.

3. Ichthyology IPK31006 3 SKS

This course studies classification, structure and function of organ for the survival, reproductive process, behavior, distribution and fish growth.

4. Aquatic Ecology IPK31004 3 SKS

This course studies abiotic and biotic factors in tropical aquatic environments with a wide range of knowledge about the concept of biota with a hierarchy of species, populations, communities and ecosystems, including the structure, energy flow, type of interaction and dynamics, studying biogeochemical cycles and their relation to the concepts of biota concepts and environmental laws.

5. Coastal Community Sociology IPK31003 2 SKS

Studying the characteristics of coastal communities, typology, activities, and problems of coastal communities to models of coastal community development related to the management of fishery resources.

6. Introduction to Economics IPK21302 2 SKS

Science that studies the basics of economics, both microeconomic (production theory, *supply, demand*) and macroeconomics (economic growth, labor, unemployment and welfare).

4.4.4 Aquatic Resources Management Study Program (MSP) Courses

1. Aquatic Physics IMP21-301 3 SKS

This course is a basic course that contains particle equilibrium, moment of force, straight motion, motion in hydrostatics, surface tension, hydrodynamics and viscosity, waves and acoustic phenomena.

2. The Basics of Aquaculture IMP21302 2 SKS

The basic concepts and principles of aquatic ecosystems exploitation and the management of fish and other eco-friendly aquatic organisms aquaculture and the impacts due to internal and external activities.

3. Basics of Fishery Products Technology IMP21303 2 SKS

Fishery Product Handling Technology includes explanations about methods of handling fishery products since lifted from water, handling on board, handling on land (in TPI, in traditional processing, in the processing industry of fishery products), types of ice to preserve and comparison, the transportation of live fish from distribution to the last consumer.

4. Basics of Capture Fisheries IMP21304 2 SKS

Course on Basics of Technology and Management of Capture Fisheries provides and/or equips knowledge about the basic concepts and terminology

of technology and management of capture fisheries science.

5. Planktonology IMP21308 2 SKS

Studies the ecology, physical and chemical factors of aquatic related to the existence of plankton (phytoplankton and zooplankton), the structure and role of plankton, and their role as aquatic productivity, terminology, classification, distribution, adaptation and growth of phytoplankton and zooplankton, feed-predatory relationships and succession of plankton, periphytons, protozoans, and bacteria and quantitative biological approaches, indicators and analytical methods.

6. Fish Population Dynamics IMP21317 3 SKS

Studies the basic concepts of population dynamics and stock, growth estimation, recruitment, natural mortality and fishing. Stock estimation methods, fishing gears selection curves, production models and analytical models.

7. Marine Biology IMP21312 3 SKS

This course studies the distribution, association, adaptation and role of marine biota (flora and fauna) in various marine ecotypes (coastal, mid-water, and deep sea)

8. Aquatic Invertebrates IMP21311 3 SKS

Studies taxonomy, morphology, anatomy and physiology of invertebrate animals

9. Fishery Biology IMP21307 3 SKS

Fishery Biology is a science that studies fish as a resource that can be harvested by humans, this science covers aspects of fish biology related to population, growth, fecundity, TKG, IKG, survival, mortality, natality, and spawning ground. Fishery students need to be equipped with knowledge and skills about fishery biology so that they are able to understand fishery resources and how to use those resources optimally and sustainably.

10. Water Pollution Control IMP21322 3 SKS

Provides discussion on aquatic pollution problems in fresh water and sea by studying the concept of pollution, resources and characteristics of contaminants, processes experienced by polluting materials in the water, including the indications, effects for aquatic organisms and concepts of the estimation of contaminant's weight and the concepts water pollution prevention and control.

11. Water Productivity IMP21309 2 SKS

Providing knowledge and understanding to students that fishery activities are the implementation of primary productivity so that it is necessary to strengthen the concept and application of aquatic productivity aspects to strengthen fisheries science. Thus, the teaching of Water Productivity is intended for

students to obtain a foundation / theory and can implement it in the field of Fisheries with the ability to create and predict the relationship of aquatic physical, chemical and biological properties.

12. Aquatic Ecotoxicology IMP21319 3 SKS

Studies the acute and chronic effects of various types of toxic substances (toxic) contained in the environment; testing techniques; toxic effects to individuals, populations and ecosystems; utilization of toxicology as a method to predict environmental risks and develop water quality criteria for the management of aquatic environments.

13. Oceanography IMP21306 3 SKS

This course studies the processes and dynamics of the marine environment and its influence on the behavior and abundance of fish. Migration of fish and their association with the oceanographic process. Analysis and application of oceanographic parameters to the exploration of fishery resources.

14. Limnology IMP21305 3 SKS

Science that studies freshwater, processes and forces that maintain the integrity of these aquatic and the relationship between soil, water and aquatic organisms that live within.

15. Water Quality Management IMP21316 3 SKS

This course studies how to manage water quality in the aquatic environment that is the habitat of aquatic plants and animals, so that the aquatic environment can be a viable habitat for aquatic plants and animals. The management is carried out on a variety of key variables that greatly affect the sustainability of aquatic plants and animals in the environment, including engineering techniques that can be done to maintain water quality to remain viable as a habitat for aquatic plants and animals.

16. Aquatic Animal Physiology IMP21315 3 SKS

Studies the Concept of Physiology: cell physiology and metabolism. Concepts of Homeostasis, circulation, respiration, digestion, osmoregulation, and reproduction. Osmoregulation of aquatic animals.

17. Sensory and Fisheries GIS IMP21314 3 SKS

Basic concepts of sensory and its application to fishery resources, remote sensing multispectral systems and analysis the types of satellite data and classification of supervise and unsupervised

18. Aquatic Plants IMP21320 3 SKS

This course covers the structure and role of aquatic plants / phylogenetics, habitat and behavior / useful and disruptors (weeds) plants for the field of fisheries, so that students are able to identify aquatic plants

19. Fishery Resources Management IMP21330 3 SKS

Studies the planning of fishery resource management; evaluation of fishery resource exploitation rate; Implementation of arrangement and regulation of fish stock utilization in an effort to preserve and develop fishery resources.

20. Aquatic Resources Conservation IMP21366 3 SKS

This course discusses the scope, usefulness and role of marine resource conservation for fisheries use. This course comprehensively examines many /complexity of ecosystem problems, especially related to the function and usefulness of fisheries and resources, with an emphasis on the basic principles of aquatic resources conservation and the application of its concept in location determination planning, the requirements of location determination, and the implementation of spatial policies in the allocation of land / aquatic areas for the protection of marine fishery resources, both in natural and artificial aquatic ecosystems, in marine, freshwater and brackish water environments.

21. Coastal Ecology IMP21313 3 SKS

Studies coastal areas based on the identification and interaction of biotic components, abiotic components of the area, able to explain the function and utilization of coastal areas, able to recognize the characteristics / features of problems that often occur in coastal areas as a result of human activities, and able to explain the Law of the Republic of Indonesia intended to manage and protect coastal areas.

22. Integrated Coastal Area Management IMP21335 3 SKS

This course studies: the potential and problems of coastal and small islands development; zoning planning, spatial planning and utilization of coastal and small island spaces; integrated concepts and strategies of annual strategic plan (*renstra*) of coastal and small islands

23. Mollusca Bioecology IMP21329 3 SKS

Mollusca bioecology studies the evolution, biological characteristics, ecological functions and economic value of marine mollusca phylum particularly the protected species and species associated with fishery activities. The subject concerns geographical distribution for conservation strategies, habitats, niches, diversity of forms, homing *behaviour*, *spawning*, *deaths*, the Law on the protection and utilization of fishery activities for commercial species in the Mollusca phylum.

24. Experiment Planning IMP21326 2 SKS

This course discusses the design of experiments commonly used in fisheries field. The lecture begins with the introduction of experimental design, then a single factor experiments in The Complete Randomized Plan (RAL), Group Randomized Design (RAK), comparison between treatments, assumption testing, factorial experiment, and variety analysis.

25. Aquatic Bioecology Practicum IMP21310 3 SKS

This course is a complement of four compulsory courses on planktonology,

marine biology, coastal ecology and aquatic productivity. Students are trained in basic skills, including: getting to know aquatic biome properly and the biological and non-biological (chemical-physical) characteristics of coastal, able to select and prepare gears according to the physics, chemical and biological type of data to be obtained, perform several sampling techniques correctly, know the characteristics of morphology for the basis of classification and identification of organisms, calculate and translate the meaning of community structure index, recognize habitats, types of distribution, niche organisms in food pyramids, ecological functions and economic values of planktonic organisms as well as various types of biota - mainly from coastal critical communities (mangroves, seagrasses, corals). In addition, able to calculate the primary productivity of a water body (freshwater and coastal) from the chemical and biological data (plankton, chlorophyll, oxygen levels), analyze key chemical variables to determine the quality of aquatic physics-chemistry and ultimately be able to estimate the aquatic productivity.

26. Basics of EIA/ AMDAL IMP21332 3 SKS

Studying the scope of the AMDAL, identification, forecasting and evaluation of hypothetical critical impacts, Scoping of study areas and environmental impact forecasts, and exercises in drafting AMDAL documents (KA, ANDAL, RKL and RPL)

27. Aquatic Microbiology IMP21327 3 SKS

Studies aquatic microbial bodies that include taxonomy, morphology, metabolism, and reproduction of bacteria, viruses, mushrooms, and protozoans.

28. Crustacean Bioecology IMP21331 3 SKS

Bio crustaceanecology discusses the biological characteristics, ecological functions and economic value of crustaceans, especially species that are economically important and or related to fishery activities. Subjects concern habitat, life cycle, reproduction, anatomy, structure and function, classification, osmoregulation, and adaptation and the exploitation of commercial species of crustaceans for fishery activities.

29. Economic Valuation of Fishery Resources IMP21325 3 SKS

Studies the concepts and theories of economic valuation and practicing economic valuation models and techniques to improve the selection of alternative policies for the exploitation of aquatic resources

30. Bioeconomic of Fishery Resources IMP21324 2 SKS

This course contains bioeconomic knowledge, from the history, concepts, underlying theories, bioeconomic models and bioeconomic-based policies

31. Research Method IMP21321 2 SKS

This course describes the general types and patterns of research, problem identification, literature studies, theories and hypotheses, research methods (with and without design), ways of data collection and its management, ways

of writing research reports.

32. Craftsmanship IMP21328 2 SKS

This course is provided with the aim of preparing students to work/ create, so that the competencies taught are competencies that must be possessed by workers that include: Collecting, organizing and analyzing information; Communicating ideas and information; Planning to organize activities; Working with others and groups; Using mathematical ideas and techniques; Troubleshoot problems; Using technology.

33. Aquatic Resources Management IMP21323 3 SKS

This course covers the principles of aquatic resource management for the purposes of sustainable aquatic resource management.

34. Field Work Practice IMP21333 3 SKS

Field Work Practice (PKL) is an activity intended to provide field work opportunities to students in order to gain practical experience in various aspects of fisheries and marine science. Experience is gained by conducting internships at institutions, industries, or community activities, through field work practice activities.

35. Seminar IMP21334 2 SKS

Covers the understanding of scientific meetings, various scientific meetings, how to prepare seminar papers and scientific articles, seminar procedures and seminar practice.

36. Final Project/Diploma Thesis IMP21337 6 SKS

Studying and problem solving according to the rules of scientific work in a form of research

Syllabus of Elective Courses of MSP Study Program

1. Protected Aquatic Biota IMP21346 2 SKS

Explaining the basics of determining the protection of a type of biota, recognizing protected aquatic biota through classification/identification techniques of species/genera, especially from Mollusk, Anthzoa, Pisces, Reptilia and mangrove based on biogeographic distribution, habitat characteristics, and explaining physiological, reproductive and conservation techniques according to IUCN Red List and Law of the Republic of Indonesia intended to manage and protect aquatic biota (PP no. 7/1999, Law no. 5/1990).

2. Fish Histology IBP21307 3 SKS

Understand the normal tissue structure of different types of fish organs with an emphasis on tropical aquatic fish

3. Diversification and Development of Fishery Products IHP21314 3 SKS

This science covers methods of managing fishery products, diversification and

development of fishery products.

4. Fishing Method IPP21305 3 SKS

Definition of fishing and types of activities, classification of fishing methods, principles of fishing methods based on the type and habitat of fish.

5. Water Ecotourism IMP21345 2 SKS

Provide a scientific basis on concepts, basic principles, character and tourism capital for the analysis of planning, implementation and evaluation of the development of water ecotourism planning, especially marine ecotourism.

6. EIA/AMDAL IMP21342 3 SKS

Application practice of EIA/AMDAL documents (KA, ANDAL, RKL and RPL) and the implementation of AMDAL in fisheries and marine sciences. Introduction to various regulations and applications related to the preparation of ANDAL, RKL-RPL, UKL-UPL and Environmental Audit. Implementation of AMDAL studies and their implementation in Environmental Management and Environmental Monitoring, particularly in fishery and marine development projects

7. Mangrove Ecosystem IMP21340 3 SKS

Mangrove systematics, Mangrove ecology, Mangrove ecosystem analysis method

8. Ecosystem Model and Simulation IMP21339 3 SKS

This aquatic ecosystem model and simulation course will provide explanations and discuss about the scope, usefulness and role of modeling and simulation in the study of aquatic ecosystems. This course is studied primarily as a tool to comprehensively examine the many / complexity of ecosystem problems, especially related to the function and usefulness for fisheries and resources, with an emphasis on the basic principles of modeling and simulation of aquatic ecosystems, elements of modeling and simulation design on aquatic ecosystems, and implementation of modeling and simulation on aquatic ecosystems.

9. Larvalogy IMP21347 3 SKS

This course studies the process of identification of larvae and the factors affecting the development and survival of larvae

10. Fishery Policy and Regulation IMP21349 2 SKS

This course explains the regulations and policies both customary and written (law) on fisheries, the environment and the management of coastal areas

11. Bioecology Bentos IMP21343 3 SKS

This course studies the structure and function of phytos and zoobentos in aquatic environments as well as the reciprocal relationship between plants and

animals and their environment. This includes physiological adaptations of phytos and zoobentos to stress in bentic environments.

12. Social Research Method IMP21344 3 SKS

This course studies sampling methods and techniques, data collection and analysis of social research data in the field of coastal community empowerment and research in order to provide consideration of coastal problem decisions.

13. Fish Farming IMP21350 3 SKS

This course discusses the concept of biotech fish farming that has important economic value of various types of freshwater, brackish and marine fish in an effort to achieve maximum production and economically profitable and environmentally friendly.

14. Coralogy IMP21341 3 SKS

This course explains the systematics and characteristics of coral reef ecosystem constituents, coral nutrition, coral reproduction, environmental factors that affect coral animal life, formation of reef ecosystems and geomorphology, coral reef ecology, and the influence of human activity on coral reef ecosystems.

15. Kapita Seleкта IMP21348 2 SKS

This course covers a collection of essences from materials or learning materials in the field of aquatic resource management in order to broaden insights and prepare students to prepeate the final project. Provide the ability to be able to integrate these fields to support the research to be made. It is expected that students are able to write about selected topics and skillfully present them in seminars

4.4.5 Aquaculture Study Program Courses

1. Biochemistry IBP21-300 3 SKS

Studies the concepts and processes of anabolism and catabolism; anabolism and catabolism in aquatic organisms, as well as anabolism and catabolism processes that occur in the aquaculture environment

2. Basics of Fishery Products Technology IHP21304 2 SKS

Studies the principles of deterioration of the quality of fishery products, the basic principles of traditional and modern processing and quality control of fishery products

3. Basics of Technology & Management of Capture Fisheries IPP21302 2 SKS

Studies various fishing gears, fishing vessels, fishing methods and Culture Base Fisheries (CBF) activities that support aquaculture activities

4. Basics of Aquaculture IBP21-301 2 SKS

This course studies the basic concepts of aquaculture systems, technology and

basic management of aquaculture activities

5. Aquatic Physical Chemistry IBP21-302 3 SKS

Studies theories, concepts of basic chemistry and physics, as well as aquatic chemistry and physics, including: alkaline acid theory, hydrodynamics and hydrostatics; primary productivity, salinity, dissolved gases and nutrients in aquaculture waters; temperature, waves, currents and tides

6. Statistics IBP21-303 2 SKS

Studies theories and concepts and the use of parametric and non-parametric statistics in aquaculture

7. Aquaculture Engineering IBP21-304 3 SKS

Studies the design-construction of aquaculture containers, including ponds, pool, floating net cages, RAS in accordance with texture and hydrotopographic; calculating the production capacity of an aquaculture container, as well as apparatus for supporting carrying capacity of aquaculture containers, such as pumps, pipes, and aeration systems.

8. Water Quality Management IBP21-305 3 SKS

Studies and able to solve the problem of water quality (physics-Chemistry-Biology) in aquaculture activities; demonstrate various models of aquaculture water quality management and its application to support aquaculture sustainability

9. Fish Reproductive Physiology IBP21-306 3 SKS

Studies the basic concepts of reproductive physiology; endocrine and exocrine glands; hormones and reproductive mechanisms in fish, crustaceans, and mollusks as well as the application of hormones in cultural organisms

10. Fish Histology IBP21-307 3 SKS

Studies the basic concepts of tissues and cells; normal tissue structure in external and internal organs, as well as blood tissue in fish, crustaceans and mollusks.

11. Basics of Aquatic Microbiology IBP21-308 3 SKS

Studies taxonomy, morphology, metabolism, and reproduction of aquatic microbiological growth (bacteria, viruses, fungi and protozoa); isolation techniques and isolation media, as well as the role of microorganisms in aquaculture environments and other organisms.

12. Fish Nutrition IBP21-309 3 SKS

Studies Science and Technology on the role of Nutrition parameter (Macro and micronutrient needs, energy, as well as additive substances for aquaculture fish); relationship between nutritional parameters, material selection, formulation and feed preparation against aquaculture organism's growth manipulation efforts

13. Information Technology IBP21-310 2 SKS

Studies the types of software and hardware, intranets, extranets, internet and ethics of their use, as well as their applications (Bio, Informatik, and GIS) for Aquaculture.

14. Management of Aquaculture Environment IBP21-311 3 SKS

Studies the basic concepts of environmental support capacity, calculation of the carrying capacity of the aquaculture environment, modelling and mitigation of problems in aquaculture activities.

15. Fish Hatchery Technology IBP21-312 3 SKS

Studies the basic concepts and principles of hatchery of fish, crustaceans and clams

16. Basics of Fish Genetics IBP21-313 3 SKS

Studies the basics of genetics and breeding of fish, including: selection process, hybridization and manipulation of chromosomes-genes.

17. Fish Parasites & Diseases IBP21-314 3 SKS

Studies various diseases (parasitic, bacterial, viral, genetic, non-infectious and environmental) in seeding and breeding of aquatic organisms.

18. Natural Feed Cultivation IBP21-315 3 SKS

Studies the theory and design of natural feed cultivation, including phytoplankton, zooplankton and annelids required in aquaculture activities and enrichment techniques

19. Fishery Law and Regulation IBP21-316 2 SKS

Studies laws and regulations related to coastal and marine spatial planning, environmental conservation, fisheries and aquaculture.

20. Experiment Design IBP21-317 3 SKS

Studies the concept of experimental design (Treatment, Experimental Unit, Experimental Error), experimental design and model application, diversity and median of various Experimental Models/Designs and software operations for data processing in aquaculture research

21. Freshwater Aquaculture Management IBP21-318 3 SKS

Studies the principles of location selection, selection of aquaculture organisms, biotech aspects, management and governance of aquaculture containers; principles and techniques of breeding and methods of sustainable growing of freshwater fish

22. Brackish water Aquaculture Management IBP21-319 3 SKS

Studies the location selection, selection of aquaculture organisms, biotech aspects, management and governance of aquaculture containers; breeding principles and techniques as well as methods of sustainable growing of brackish

water fish

23. SeaWater Aquaculture Management IBP21-320 3 SKS

Studies the selection of location, aquaculture organisms, biotech aspects, management and governance of aquaculture containers; principles and techniques of breeding and methods of sustainable growing of marine fish.

24. Fish Health Management IBP21-321 3 SKS

Studies the principles of fish health and environmental management, fish diagnosis and control and treatment of various diseases in aquaculture organisms as well as the immune system and vaccination of fish.

25. Technology and Management of Fish Feeding IBP21-322 3 SKS

Studies and implements feed quality standards, feeding management, feeding technology and feeding strategy on seeding and growing.

26. Management of Ornamental Fish Cultivation and Aquaculture IBP21-323 3 SKS

Studies theory and design, design / construction of containers, management and governance of aquaculture containers, techniques of seeding and growing of ornamental fish, environmental manipulation, feed and genetics as well as *aquascaping* techniques.

27. Entrepreneurship UNW00-007 2 SKS

Studies the elements of entrepreneurship, business feasibility and innovation in the field of entrepreneurship.

28. Principles of Aquaculture Biotechnology IBP21-324 3 SKS

Studies the basic concepts of biotechnology, bioprospection, methods, PCR and the application in the fields of diseases, genetics, organisms and aquaculture media.

29. Aquaculture Business IBP21-325 3 SKS

Studies the basic theories and concepts of planning, operation and evaluation of aquaculture business, including: HR management, finance and marketing.

30. Coastal Aquaculture Industry IBP21-326 3 SKS

Studies the theory and concept of regional planning, selection of leading commodities, regional governance, operation and evaluation of the activities of an aquaculture industry in coastal areas

31. Scientific Method IBP21-327 3 SKS

Studies the concept of science development, excavation of ideas and thoughts, scientific writing, presentation, review of journals and citation techniques

32. Aquaculture Field Practice IBP21-328

Conducting field work practices in aquaculture in the industry / institution / office,

evaluating the management and technical aquaculture at the site in accordance with the existing standards and the writing of the report.

33. Introduction and Domestication of Fish Potential IBP21-329 3 SKS

Studies the theory of introduction and domestication, indigenous, non indigenous and invasive species, introduction techniques for non indigenous and invasive species as well as select potential fish domestication techniques for aquaculture activities

34. Aquaculture Extension IBP21-330 3 SKS

Studies the basics, administration, methodology and evaluation of counseling and its application in aquaculture

35. Seminar IBP21-343 2 SKS

Studies the article writing techniques, communication techniques and conduct scientific presentation activities

36. Final Project/Diploma Thesis IBP21-344 6 SKS

Designing, implementing and analyzing and writing down the results of research in aquaculture area in accordance with the determined standard procedures

Elective Courses of Aquaculture Study Program

1. Seed Production Management IBP21-331 3 SKS

Studies the concept, design, needs of facilities and infrastructure, needs of broodstock and feed at a Hatchery

2. Intensification and Mass Production of Natural Feed IBP21-332 3 SKS

Studies the basic concepts, design-construction and design of containers, culture media and techniques of natural feed mass culture with good nutritional quality

3. Nutritional Physiology of Aquaculture Organisms IBP21-333 3 SKS

Studies the role of the five senses and digestive glands, digestive mechanisms and nutrient absorption, nutrient metabolism and bio-energetic concepts in aquaculture organisms

4. Fish Feed Technology IBP21-334 3 SKS

Studies Science and Technologi (IPTEKS) and its application in the needs analysis, formulation and manufacture of artificial fish feed for aquaculture organisms on the households and industrial scale

5. Aquaculture Environment Management IBP21-335 3 SKS

Studies the concept and application of conservation, aquaculture environmental waste management through the use of appropriate technology and environmentally friendly aquaculture

- 6. Aquaculture Geographic Information System IBP21-336 3 SKS**
Studies the theory and application of GIS in aquaculture activities, by understanding basic concepts, the use of vector and cluster data, and spatial analysis and modeling
- 7. Aquaculture Product Management IBP21-337 3 SKS**
Studies the methods of general fishery products management in aquaculture products, including packaging technology and transportation of eggs, seeds and living fish consumption.
- 8. Aquaculture Industry Development IBP21-338 3 SKS**
Studies the concepts and development plans of aquaculture industry based on SWOT analysis, leading commodities, technology, marketing and product diversification.
- 9. Non Finfish Aquaculture IBP21-339 3 SKS**
Studies how to select locations, biotech aspects, management and governance of aquaculture containers; breeding principles and techniques as well as growing methods of superior non-fish, including: crustaceans, turdence, mollusks and seaweed
- 10. Finfish Cultivation IBP21-340 3 SKS**
Studies how to select locations, biotech aspects, management and governance of aquaculture containers; principles and techniques of breeding and growing methods of freshwater and marine finfish in tropical and sub-tropical countries
- 11. Fish Quarantine IBP21-341 3 SKS**
Studies the theory and basic concepts of fish quarantine, rules or regulation of fish quarantine in Indonesia and other countries, fish quarantine installations, and invasive species management.
- 12. Aquaculture Engineering IBP21-342 3 SKS**
Studies the theory and basic concepts of aquaculture engineering, both engineering containers, fish, feed and maintenance media for the increase of aquaculture production

4.4.6 Courses of Capture Fisheries Study Program

- 1. Statistics IPP21337 2 SKS**
Statistics course provides and or equips students with knowledge of basic statistical concepts that include the definition and basic terminology of statistics, the collection and presentation of data as well as descriptive measurements, permutations and combinations of probability theory and probability distribution, parameter estimation, hypothesis testing and regression correlation.
- 2. Physics IP21302 3 SKS**
This course is a solidification of classical physics material that includes the

theme of Newton's Law on motion, the application of Newton's Law on motion, the concept of effort and energy, the mechanics of two objects and fluids.

3. Basics of Capture Fisheries Management IPP21303 2 SKS

The Basics of Capture Fisheries Management provides and/or provides knowledge about buoyancy facilities, environmentally friendly fisheries, the use of acoustic technology, as well as basic concepts and terminology of science, technology, and management of catch fisheries.

4. Fishery Biology IMP21307 3 SKS

Fishery Biology is a science that studies fish as a resource that can be harvested by humans, this science covers aspects of fish biology related to population, growth, fecundity, TKG, IKG, survival, mortality, natality, and spawning ground. Fishery students need to be equipped with knowledge and skills about fishery biology so that they can understand fishery resources and how to use those resources optimally and sustainably.

5. Basics of Fishery Products Technology IHP21304 2 SKS

Course that provides basic knowledge about the theory of fishery products technology (how to process fishery products, diversification of fishery products, packing of fishery products, fish preservation technology)

6. Basics of Aquaculture IBD21301 2 SKS

Course that provides basic knowledge of aquaculture theory (technology, biotechnology, parasites and diseases and natural and artificial feed)

7. Drawing Maps and Techniques IPP21304 2 SKS

The course on Drawing Maps and Techniques provides and /or equips knowledge about the basics of drawing fishing tools and sea maps, techniques & classification of scale maps and projections, systems and meanings of coloring to be able to practice.

8. Seamanship IPP21305 3 SKS

Seamanship course provides and/or provide knowledge about basic concepts and terminology of seamanship.

9. Fishing Method IPP21306 3 SKS

The fishing method course discusses the definition of fishing and its types of activities, the classification of fishing methods, the principles of fishing methods based on the type and habitat of fish.

10. Fish Behavior IPP21307 3 SKS

Fish Behavior course provides and/or equips knowledge about the basic concepts of fish behavior related to physiological factors caused by internal and external factors, grouping activities, migration and distribution as well as their relationship to fishing gears, methods and tactics.

11. Marine Meteorology IPP21308 3 SKS

The Marine Meteorology course provides and/or equips knowledge about the basic concepts of the process of the occurrence of weather elements, their influence on the coastal and how to measure these elements and their relationship to capture fisheries.

12. Fisheries Oceanography IMP21306 3 SKS

Fisheries oceanography is a science that studies the condition of water in the sea (physical, chemical and biological) related to the habitat and ecosystem of fishery resources as an information to know the migration and distribution of fish.

13. Extension IPP21309 2 SKS

Extension course equips students with the basics of theory, concept and application form of the extension knowledge and empowerment of fishery communities in a comprehensive manner as well as its importance in fishery development.

14. Introduction to Geographic Information System (GIS) IPP21310 3 SKS

Introduction to Sensory and GIS course provides knowledge about Geographic Information Systems (GIS) which is a computer-based information system used to process and store geographic information data using ArcGIS software, and provides knowledge about Remote Sensing, including photogrammetry, photographic remote sensing, multispectral remote sensing, thermal remote sensing, radar remote sensing, satellite remote sensing and remote sensing applications.

15. Fishery Resource Monitoring and Surveillance System IPP21311 2 SKS

Studies the monitoring and surveillance system of fishery resources based on legal sources, laws / regulations in the field of fisheries, especially related to the exploitation of fishery resources both conducted in Indonesian waters and ZEE. Applying the concept of MCS (*Monitoring, Controlling, and Surveillance*) in accordance with the applicable legislation nationally and internationally for the monitoring and surveillance system of fishery resources in Indonesia.

16. Fishing Machine and Gears IPP21312 3 SKS

Fishing Gears course provides and/or equips knowledge about the types of fishing machines and gears, construction and how they operate.

17. Fishing Boat IPP21313 3 SKS

This course provides a basic understanding of fishing vessels (such as ship propulsion engine, ship parts, coefficients of ship body shape, Gross Tonnage/GT, holding, docking) and how to take care of them.

18. Fishery Products Management Technology IHP21307 3 SKS

Fishery Product Management Technology includes explanation of methods in managing fishery products since lifted from water, handling on board, handling on land (in TPI, in traditional processing, in the processing industry of fishery

products), types of ice to preserve and comparison, the transport of live fish from distribution to the last consumer.

19. Fish Population Dynamics IMP21317 3 SKS

The basic concept of population and stock dynamics, growth estimation, recruitment, natural mortality and fishing. Stock estimation methods, fishing tool selection curves, production models and analytical models.

20. Scientific Method IPP21314 2 SKS

This course discusses the nature of science and research, research as a scientific process, types of research, research proposals, conceptualization of problems, research objectives, drafting hypotheses and testing, research design, literature studies, methods of data collection and analysis, sampling techniques. Writing research reports, compiling scientific papers and articles, and preparing presentation materials of the research results.

21. Fishing Port IPP21315 3 SKS

Teaching about the role and function of fishing ports as the basis of fishing activities in conducting fishing operations and learning various aspects in the aspects of port planning and management.

22. Fishing Rods Prototype IPP21316 3 SKS

Fishing Rods Design is a course that studies Fishing Rods Materials, Fishing Gears, prototype and design of Fishing Gears.

23. Fishing Technology IPP21317 3 SKS

Fishing Technology course provides and/or equips knowledge about the concept of fishing technology due to the influence of the aquatic environment, construction / design of nets and the pull of ships / boats.

24. Marine Acoustics IPP21318 3 SKS

The Marine Acoustics course provides and/or equips knowledge on the principles of acoustics, echo sounders, fishfinders, sonar, net sonde, interpretation of acoustic data, installation of acoustic equipment and its maintenance.

25. Fishing Area IPP21319 3 SKS

The Fishing Area course provides and/or equips knowledge about the basic concepts of *Fishing Ground*, fishing ground variables, regional surveys, determination of pelagic, demersal and coral fishing ground as well as the use of remote chastening (satellites) in the search for fishing ground.

26. Management and Business of Capture Fisheries IPP21320 2 SKS

Management and business of capture fisheries course provides and / or equips knowledge about the motivation and leadership of the business, the principles of *planning, implementing, evaluation*, as well as the characteristics and business of capture fisheries.

27. Field Work Practice IPP21321 3 SKS

Field Work Practice course is a course in the form of working practices in fisheries research institutes, fishery supervisory institutions, fishery ports, fish auction sites, fishing industries/ businesses, fishery businesses or other institutions, for 1 month.

28. Navigation IPP21322 3 SKS

Navigation course provides and/or equips knowledge about the basics of knowledge and navigation applications in general and their application to sea navigation (maps and mapping, compass and other navigation equipment, bows, ship positioning).

29. Management of Fishing Operations IPP21323 3 SKS

Provides knowledge and understanding to students about management in general, basics of management such as Planning, Organizing, Actuating and Controlling in fishing operations to support fishing business.

30. Fishery Industry Planning IPP21324 3 SKS

Fishery Industry Planning course expects students to be able to master the fishing industry especially regarding capture fisheries and its management in supporting the industry in general.

31. Bioeconomy of Fisheries IPP21325 3 SKS

The use of economic thinking for fishery resources, bioeconomic theories and able to plan, analyze the data of capture fisheries and their utilization for economic-based policy making.

32. Fishery Data Processing IPP21326 3 SKS

Fishery Data Processing course expects the students to be able to understand and review some data processing and analysis techniques for the benefit of capture fisheries.

33. Standardization IPP21327 2 SKS

Standardization course equips students to standardize fishing gears, fishing boat in accordance with SNI (Indonesian National Standard) standard

34. Applied Statistics IPP21328 2 SKS

Applied Statistics course provides and/or equips students with knowledge about statistical fishery data processing for the decision making in capture fishery management

35. Seminar IPP21329 2 SKS

Seminar is a course organized for the students to be able to hold scientific seminars of the research results. Contains the understanding of scientific meetings, various scientific meetings, how to prepare seminar papers, seminar procedures and accompanied by seminar practice.

36. Capture Fisheries Technology and Information System IPP21330 2 SKS

This course explains about the system and information in the exploitation of fishery resources, including the activities of designing and applying data base of communication structure from capture fishery activities data.

37. Fishery Products Marketing IPP21331 3 SKS

This fishery product marketing is a course that combines marketing science or marketing applied in the fishery sector, with the study materials, including: fishery marketing management, fishery marketing institutions, strategic marketing of fishery products and export import trade of fishery commodities.

38. Final Project/Diploma Thesis IPP21332 6 SKS

Final Assignment /Thesis course is a course on the session of presentation and accountability of research results by students in front of the Final Task Exam Test Team / Thesis (TPUS) as a final evaluation of the process of implementation of the Final Task Exam / Thesis (US). In this activity, students presented the results that have been obtained during the IMPLEMENTATION OF THE US process; answers or responses to questions submitted by TPUS.

Syllabus of Elective Courses Capture Fisheries Study Program

1. Capture Fisheries Operation Research IPP21333 3 SKS

Operation Research courses provide and/or provide knowledge about the theories of operations research in general (Linear Programming, Goal Programming, Queue Theory, and others) in analyzing catch fishery problems, especially optimization.

2. Fisheries Vessels Machine IPP21334 2 SKS

Fisheries Vessels Machine course provides and/or equips knowledge about machinery in solving problems in fishing boat machines.

3. Fishery Port Management IPP21335 3 SKS

The role and function of the port as the basis of fishing operations, distribution of fishing products and the fishing industry. Aspects of port planning, management, and development.

4. Experimental Design IPP21336 3 SKS

The experimental design course will discuss the concepts of designing experimental processing on the use of design statistical formulas, experimental models and diversity analysis, single factor experiments and two or more factors related to the processing of fishery data using The Complete Randomized Design, Group Randomized Design, and Latin Square Design with many factors as a tool to draw conclusions.

5. Refrigeration Techniques IHP21316 2 SKS

Refrigeration techniques studies the refrigeration in the field of fisheries, the

design of various types of freezers and cold storage, freezing methods, the influence of freezing on the physical, chemical and biological properties of products. This includes refrigeration on board and indicators of damage to frozen products.

6. Sensory Application IPP21339 3 SKS

This course provides about remote sensing applications, including photogrammetry, photographic remote sensing, multispectral remote sensing, thermal remote sensing, radar remote sensing, satellite remote sensing and remote sensing applications of geographic information systems and geospatial databases.

7. Fishery Economics IPP21338 3 SKS

Fishery economics course teaches about the basic principles of microeconomy to be presented in the field of capture fisheries.

4.4.7 Fishery Products Technology Study Program (PS. THP)

1. Physics IHP21302 - 3 SKS

This course is a basic course that contains about particle equilibrium, force moments, straight motion, motion in the field of hydrostatics, surface tension, hydrodynamics and viscosity, waves and acoustic phenomena.

2. Statistics IHP21311 2 SKS

This course discusses the basic concepts of statistics which include the definition and basic terminology of statistics; parametric and non-parametric statistics; conference and presentation of data and descriptive measurements, permutations and combinations of probability theory, parameter estimation, hypothesis testing and regression correlation

3. Scientific Method IHP21325 2 SKS

Scientific Method courses study how students have effective communication in writing and oral to explore ideas and ideas based on group dynamics and based on public ethics for mental readiness and student motivation.

4. Information Technology IHP21318 2 SKS

The Information Technology course explains the principles and terminology, ethical impact and security of the use of information technology components as well as various aspects of information technology ranging from computers, telecommunications, web development for E-commerce, information technology applications and artificial intelligence in the daily life and the business world.

5. Basics of Aquaculture IBP21301 2 SKS

Understand the concept and be able to apply knowledge related to the scope and world of fisheries and marine, including knowledge about fish, morphology and physiology, oceanography, aquatic ecology, the basic of catch fisheries, the basics of aquaculture fisheries, the basics of processing water products, and

socioeconomic fisheries.

6. Basics of Capture Fisheries Management IPP21302 2 SKS

Understand the concept and be able to apply knowledge related to the scope and the world of fisheries and marine, including knowledge about fish, morphology and physiology, oceanography, aquatic ecology, the basics of capture fisheries, the basics of aquaculture fisheries, the basics of processing of aquatic products, and socioeconomic fisheries.

7. Trial Design IHP21329 3 SKS

The Experiment Design course will discuss the concepts of experimental design, experimental models and diversity analysis, single factor experiments and two or more factors related to the processing of fishery data using The Complete Randomized Design, Group Randomized Design and Factorial Design as a tool to draw conclusions.

8. Basic Microbiology IHP21308 3 SKS

Basic Microbiology courses study the scope of microbes (microbial classification, distribution of microorganisms, applied microbiology), reproduction, growth, growth factors, sources of nutrition, culture and identification, genetics, metabolism of microorganisms.

9. Biochemistry Basic IHP21303 3 SKS

The Basic Biochemistry course discusses the relationship between biochemistry and nutrition, the structure and function of carbohydrates, fats, proteins, vitamins and minerals; and factors that affect reactions attributed by enzymes. Nutrient needs for humans, metabolism of basic foodstuffs (glycolysis, krebs cycle, fatty acids, degradation of amino acids and urea). Muscle structure and composition (chemical composition and changes that occur during the conversion of muscles into meat).

10. Raw Material Knowledge IHP21309 2 SKS

Learn about some forms of raw materials biota fisheries in the form of animals (fauna) and plants (flora) both in the form of fish (fin fish) and shellfish (crustaceans, molluscs, echinodermata, coelenterata), amphibians, reptiles and seaweed and their characteristics.

11. Introduction to The Use of Laboratory Equipment IHP21310 2 SKS

Introduction to Laboratory Equipment includes explanations of *good laboratory practices* as well as physical and chemical properties testing equipment in food, which includes equipment to test fish freshness, viscosity, food nutrition, transition glass temperature, texture, *data logger* and thermostat, separation, powder dryer, morphology, spectrophotometry, and chromatography.

12. Biochemistry Of Fishery Products IHP21305 3 SKS

Biochemistry courses of Fishery Products study changes in macromolecular

compounds of fishery products due to the influence of chemistry, physics, microbiology and enzymatics.

13. Basics of Fishery Products Technology IHP21304 2 SKS

Learn about the basics of product damage and product handling, types of processing (traditional and modern), packaging of fishery products.

14. Food Chemistry and Nutrition Fish IHP21306 3 SKS

The course of Food Chemistry and Nutrition of Ikani includes an explanation of the physical, chemical and biological properties of fish in particular and foodstuffs in general, its relation to stability, quality, processing, safety, benefits, nutritional value including changes that occur due to environmental influences, factors that affect the occurrence of changes both at the time before processing and after processing.

15. Food Additive IHP21312 3 SKS

Food Additive courses discussing Food Additives include explanations of various types of additives, functions and benefits of their use, risks due to misuse, regulations on the use of additives.

16. Microbiology of Fishery Products IHP21313 3 SKS

Fermentation technology includes explanations of various types of microorganisms in beneficial and harmful fishery products (sources, types, roles), analytical methods (qualitative and quantitative), isolation and identification of microorganisms (Lactic acid bacteria and pathogenic bacteria), factors that can control the growth of microorganisms in fishery products (aw, temperature, pH, sanitation etc.).

17. Biotechnology Fishery Products IHP21320 3 SKS

The Fishery Products Biotechnology course studied the scope of biotechnology of fishery products, extracts of natural ingredient compounds (seaweed, seagrass, marine animals) as antimicrobial and antioxidation, enzyme isolation and enzyme engineering, DNA, and the use of bioreactors.

18. Fermentation Technology IHP21319 3 SKS

The Fermentation Technology course explains the methods of fermentation processing domestically and abroad (intact forms such as raw materials, paste forms and liquid forms), factors that affect the fermentation process (media, microorganisms, fermentors, process control and bioseparation), kinetics of fermentation processes and the speed of reaction of fermentation product formation.

19. Refrigeration Technology IHP21316 3 SKS

Refrigeration Technology courses study refrigeration in fisheries, tool design of various types of freezers, freezing methods, calculating freezing speed, the effect of freezing on physical, chemical and enzymatic properties as indicators of damage to frozen products.

20. Thermal Process Technology IHP21317 3 SKS

Learn about thermal processes related to the processing of fishery products, factors that affect the process, basic theories about heat transfer, as well as the conversion of heat penetration related to long heating and microbiological conditions while evaluating the level of safety of the process and the type of damage to thermal products, knowledge of containers, media and raw material requirements.

21. Utilization of Waste From Fisheries IHP21324 3 SKS

Utilization of Waste Fishery Products includes explanations about the types of byproducts of solid and liquid fishery products as well as the utilization of byproducts.

22. Industrial Hydrocolloid Technology IHP21331 3 SKS

Studying hydrocolloids from the water (agar, karagenan and alginate) post-harvest and processing (Extraction, Blending), hydrocolloid characteristics for application in food and non-food products and including cultivation technology that affects the quality of hydrocolloids, as well as the application of HACCP requirements, waste treatment and utilization.

23. Standardization of Fishery Products IHP21326 2 SKS

Studying standardization organizations, standard setting processes, conformity assessment, metrology, standard economics, standard relationships with patents.

24. Industrial Management Hasi Fisheries IHP21328 3 SKS

Studying inventory management, production management including mass balance, human resource management and financial management in the fishery products industry.

25. Traditional Fishery Products Processing Technology IHP21315 3 SKS

Traditional Fishery Products Processing Technology includes explanations of various methods of processing traditional fishery products (smoking, salting, drying, and manufacturing), quality requirements / quality of traditional fishery products, and damage to traditional fishery products.

26. Toxicology of Fishery Products IHP21321 3 SKS

Toxicology courses Fishery results study (definition, mechanism, influence on humans, symptoms of maximum toxin levels, testing methods, ways of prevention of toxins in foodstuffs) derived from fisheries, heavy metals, chemicals, microorganisms in the waters.

27. Packaging of Fishery Products IHP21322 3 SKS

Fishery Product Packaging course explains the purpose and function of packaging, interaction of packaging materials with food products. Knowledge of various types of packaging materials, the ability to choose and use packaging

materials. Aseptic packaging technology, atmospheric modification packaging, active *packaging* and *intelligent packaging*. Selection of packaging types for fishery products. Estimation of shelf life, labeling and regulations regarding labeling and packaging.

28. Sanitation and Hygiene IHP21323 3 SKS

This course discusses the meaning and role of sanitation and hygiene in fish processing units: Surrounding areas, work environment, Design, Workspace, Equipment, Workers), Raw materials and auxiliary materials, Food Additives, Water Resources, Ice, Waste, Sanitizer, Functions and Handling, Sanitation equipment and cleaning systems.

29. Fishery Products Handling Technology IHP21307 3 SKS

This course explains the methods of handling fishery products since being lifted from the water, handling on board the ship, handling on land (TPI, traditional processing, fishery products processing industry), decreased quality of fishery products, types of ice to preserve and comparison, the transport of live fish from distribution to the last consumer.

30. Diversification and Development of Fishery Products IHP21314 - 3 SKS

Diversification and Development of Fishery Products include explanations of the process and stages and methods of product development (QFD, HoQ), the basics of surimi processing technology, surimi-based product processing technology, processing technology of value-added products including: kamaboko, meatballs, naget, ekado, dashi (flavoring), imitation products, jelly candy, imitation products and non-consumption products.

31. Quality Control of Fishery Products IHP21327 - 3 SKS

This course discusses advanced chemical tests (freshness test, fat oxidation test) on fishery results, *sensory test on fishery results*, *statistical process control*, *acceptance sampling*, *quality tools*, *total quality management*, *six sigma*

32. Integrated Quality Assurance of Fishery Products IHP21333 3 SKS

Mastering the knowledge of standardization system and able to design fishery product safety management system, fish processing unit basic feasibility assessment (GMP and SSOP), HACCP and ISO 22000.

33. Field Work Practice IHP21330 - 3 SKS

Academic activities to increase knowledge and train students' skills in conducting observation, sampling, surveying and writing reports and field practices are carried out in the fishery products processing industry.

34. Seminar IHP21332 - 2 SKS

Seminar includes about exploring ideas and ideas of a problem to be the topic of seminars, scientific writing techniques, presentation techniques whether it's a proposal thesis. So that the students are able to develop themselves, responsibilities, confident, work in teams and independently, have effective

communication skills in writing and oral and have a strong desire to develop science and technology.

35. Diploma Thesis IHP21334 6 SKS

Final Project/Diploma Thesis courses as final assignment requirements to achieve a Bachelor's degree through research design, sampling and data measurement, technical data analysis, data interachievement techniques and scientific writing techniques.

36. Community Service Program UNW00-008 3 SKS

As a prospective bachelor of Fisheries and Marine Science who obeys the law, disciplined in social life and able to conduct environmental studies, health studies and improve the quality of life

Elective Courses of THP Study Program

1. Functional Food IHP21338 -3 SKS

Functional Food includes explanations of the definition, history and character of functional food, development and regulation of functional food, sources, types, and activities of functional compounds from fishery products, analysis and testing of functional compound activity, development of functional food-based bacteria, enzymes, carbohydrates, proteins, fats, vitamins, minerals, fiber, antioxidants and phytochemicals of fishery organisms, effects of various processing on the activity and stability of functional compounds, formulation technology, processing and marketing of functional food.

2. Surimi Industrial Technology IHP21339 - 2 SKS

This course explains the types of fish proteins involved in the process of surimi gel formation and its characteristics, the process of making surimi from various types of raw materials and additives used and quality evaluation both physically, chemically and sensor sensory as well as surimi microstructures and surimi-based products

3. Fishery Products Drying Technology IHP21340 - 3 SKS

Fishery Result Drying Technology includes an explanation of the type of water material and Labuza graph, psikrometric curve, as well as kinetics and drying rate of materials.

4. Basic Environmental Impact Assessment IMP21332- 3 CREDITS

Principles of theory and implementation of Environmental Impact Assessment in the field of fisheries and marine science. Introduction of various methods for amdal studies and their application for the preparation of Environmental Impact Assessment, RKL (Environmental Management Plan), RPL (Environmental Monitoring Plan), ALP (Aquatic Environment Audit and UPL (Water Environmental Monitoring Efforts). The main point of discussion is emphasized on fishery/marine development projects that have an important impact on the aquatic environment.

5. Fishing Method IPP21305 - 3 SKS

Definition of fishing and types of activities, classification of fishing methods,

principles of fishing methods based on the type and habitat of fish

6. **Fishing Boat** IPP21333 - 3 SKS
This course provides a basic understanding of fishing vessels, how to maintain ships, hatch storage on the ship.
7. **Process Thermodynamics** IHP21335 - 3 SKS
This course studied the processes and laws of thermodynamics: temperature (isothermal, adiabatic), heat type and energy exchange, application in the fishery world including quality deterioration
8. **Marketing of Fishery Products** IHP21336 - 3 SKS
Fishery Products Marketing courses study the mix of marketing, market research, brand development, macro marketing and marketing / export of foreign fishery products.
9. **Factory Layout and Planning** IHP21337 - 3 SKS
Layout and Factory Planning includes learning about plant site planning, room planning and arrangement, material flow, process flow, inter-room interrelationship, fishery products factory layout to achieve an effective and efficient factory operational layout.
10. **Water Pollution Control** IMP21322- 3 SKS
Provide discussion on pollution problems in both fresh and marine waters by studying the concept of pollution, sources and characteristics of contaminants, the process experienced by polluting materials in the water including indications, effects for aquatic organisms as well as concepts about the alleged load of pollutants and concepts of prevention and control of water pollution.
11. **Counseling and Empowerment of Fisheries Community** IPP21308 - 3 SKS
This course learns the principles and importance of counseling, along with the target of counseling, the role of extension, extension qualifications, communication, adoption, and diffusion of innovation in counseling, counseling materials, counseling methods, counseling equipment, Organization and administration of counseling, Extension work areas, Extension program planning strategies and evaluation of extension programs.
12. **FinFish Cultivation** IBP21340 - 3 SKS
This course discusses the concept of biotechnical cultivation of finned fish (finfish) which has important economic value of various types of freshwater, brackish and marine fish in an effort to achieve maximum production and economically profitable and environmentally friendly.

4.4.8 Marine Science Study Program

1. **Statistics** IOC21331 3 SKS
Descriptive statistics: introduction to the function of opportunity understanding of

populations and examples, data, frequency distribution, deployment size, sampling and hypotheses. Statistical interference for the test of diversity, population, correlation, regression

2. Basic Chemistry IKK00302 3 SKS

Introduction to chemistry, stoichiometry, chemical energetics, atomic structures and periodic systems, molecular structures, solids, chemical balance. Solution chemistry, elemental chemistry and organic chemistry in natural materials

3. Marine Biology IOC21337 3 SKS

Organization of life, cell life, marine area, marine environmental factors, marine life (plants and animals). Marine and coastal ecosystems, the relationship of organisms in the sea

4. Basic Physics IOC21312 3 SKS

Important concepts, principles and basic laws, include kinetic and mechanical, vibration, wave, thermodynamic properties, sound, alatoptic, disperse, interference, diffraction, polarization, photometry, static electric, flowing electric, electromagnetic field, GGL induction, alternating current, atomic physics and core physics.

5. Marine Geology IKK00304 3 SKS

This course contains knowledge of basic concepts of geology, tectonic plates, the roman form of the earth and its processes, the properties and characteristics of earth's constituent materials (minerals and rocks), the connection between the earth's body extension units (stratigraphy), as well as the basic principles of observation, research and application in marine science and oceanography

6. Marine Meteorology and Climatology IKK00314 3 SKS

Concepts and terminology of climate and weather, ocean interaction and atmosphere, climate and hydrological cycles, lanina and elnino phenomena, global warming

7. Biochemistry IKK00305 3 SKS

This course studies metabolism, enzymeology, biomolecules and the metabolism of carbohydrates, lipids, proteins, vitamins and minerals

8. Planktonology IMP21308 2 SKS

Studies the ecology, physical and chemical factors of waters related to the productivity of plankton (phytoplankton and zooplankton), the structure and role of plankton, as well as their role as aquatic productivity, terminology, classification, distribution, adaptation and growth of phytoplankton and zooplankton, feed-predator relationships and succession of plankton, periphytons, protozoans, and bacteria as well as quantitative biological approaches, indicators and methods of analysis

9. Diving IKK00306 2 SKS

Learn basic knowledge and practice of skin and Scuba diving equipment, diving environment, dangerous marine animals, adjustment to the underwater world, diving physics, medical aspects of diving, decompression diseases, diving tables

10. Marine Instrumentation IOC21346 2 SKS

Operating system, the use and maintenance of marine and oceanographic instruments

11. Scientific Methodology IKK00325 2 SKS

Basic concepts of research methodology, the fundamentals of logic and philosophy of science, outlines of scientific research problems, measurements in scientific research, validity and reliability of scientific research, methods of data collection, sampling and variable, processing and analysis of data, preparation of scientific reports.

12. Marine Sedimentology IOC21355 3 SKS

Sedimentation systems and related subsystems in general, sedimentological applications related to marine science, Stoke's Law, Impact's, Reynolds, Bernoulli and Prandtl, sediment supply, sediment Transport, Shoreline equilibrium, clastic sediment, non-Clastic, pyroclastic, statistical analysis of sedimentary grain size, analysis of MPT, Alluvial / terrestrial sediment, transition sediment, Nectric sediment, litoral, bathyal, abysal, shallow and deep carbonate sediment.

13. Marine vertebrates IKK00318 3 SKS

This course contains classification, morphology and anatomy of marine vertebrates, including groups of fish organisms (finfish), cetaceans and sea turtles and understand their presence in habitats in their interaction systems with the environment.

14. Marine Vertebrates IKK00312 3 SKS

This course contains general concepts of invertebrates and marine invertebrates, phyla which includes marine invertebrates, evolution and phylogeny of invertebrates, characteristics of morphology and taxonomy of marine invertebrates, distribution of phyla in marine invertebrates, concept of biological function in general (feeding, reproduction, predation), ecological values in general and economic value in general.

15. Chemical Oceanography IOC21353 3 SKS

This course contains knowledge of the understanding and scope of chemical oceanography which includes Conservative, minor and major elements as well as trace elements, primary productivity, Respiration and productivity cycle, Nutrients, Speciation, Resident Time, Buffer System, and estuarine chemistry.

16. Physical Oceanography IOC21333 3 SKS

This course provides a basic understanding of the principles of physical oceanography, including: the physical properties of seawater, atmospheric

interactions and hydrosphere, tides, waves, sediment and the influence of human activity on the marine environment

17. Information Technology IOC21313 2 SKS

This course provides theories, concepts and practices regarding computer hardware and software and communications related to marine information systems.

18. Remote Sensing and Marine Mapping IKK00321 3 SKS

This course provides knowledge and understanding of the definition, concept and history of the development of remote sensing, providing insight into the remote sensing technology of satellite systems, spaceshuttle and aerial shooting. Provides knowledge of the characteristics and applications of multispectral remote sensing sensors, microwaves/RADAR, thermals, LASER and photographic remote sensing sensors. This course is also equipped with the provision of understanding and concepts on remote sensing data processing techniques, such as radiometry and geometry correction, sharpening and fusion, the use of filters and algorithms, mosaic, and colour balancing and interpretation techniques for studies and research in coastal and marine areas.

19. Coralogy IKK00317 3 SKS

This course contains the bioecology of hard coral coral constituents of coral reefs that is to know the types of hard corals, sexually and asexual reproduction of corals, coral nutrition, coral symbiosis with algae (zooxanthellae) and coraldesease disease (coraldesease).

20. Stock Assessment IKK00332 3 SKS

This course contains knowledge about the definition and calculation of fish stocks, recruitment, mortality, migration and efforts to conserve marine resources by setting an optimal and sustainable exploitation rate (MSY).

21. Marine Resources Conservation IKK00320 3 SKS

Conservation history, conservation concept and its relationship with systems in the sea, the principle of conservation importance, asarselection for protection areas, coastal biosphere reserve, marine protection area (MPA), type of MPA and management objectives, zoning area monitoring, process and general planning in the implementation of MPA, design instructions MPA, international instruments within the framework of MPA facilities.

22. Biotechnology IKK00328 3 SKS

The Biotechnology Fundamental course introduces and describes modern biotechnology as a multi-discipline, how its research in this field is conducted, and how it is likely to have an impact on human life in the future. In line with the direction of modern biotechnology development, marine students need to be equipped with basic knowledge about molecular methods and techniques that must be mastered and genetically engineered. To stimulate the creative power of students will be given examples of biotechnology research results in several

fields of study. And at the end of the subject will be given knowledge on bioethics and biosafety about how a researcher will behave in the flow of scientific progress in this field.

23. Marine Biotechnology IKK00319 3 SKS

Biotechnology as a multidisciplinary science is developing very rapidly so adjustments are needed with its development. This course covers an understanding of the application of biotech in the marine environment with the development of bioremediation techniques, genetic engineering of marine bioactive materials in micro and macro organisms, and biotechnology-based mariculture engineering with a multidisciplinary approach that includes the preparation of healthy parents, superior seeds, vaccine development, probiotics, local feed development.

24. Marine Pollution IKK00329 3 SKS

Properties of various contaminants/ toxic materials, such as: nutrient, trace metal, synthetic organic compound (pesticide and polychlorinatedbiphenyl/PCB), natural and synthetic organic materials, and radioactive materials, suber,distribution and toxicity materials in the marine environment. Several case studies will be used to complement insights into major marine pollution occurrence that are driving changes in marine ecosystems (such as: Exxon Valdez and Amaco Cadiz oil spil)

25. Marine Acoustics IOC21402 3 SKS

Knowledge of marine acoustics which includes the basic concept, the principle of acoustic instruments, the character of transducer,acoustic equations, the basic concept of data acquisition and processing and measurement of target strength.

26. Coastal and Marine Resource Management IKK00335 3 SKS

Concepts and definitions of coastal and marine resource management, understanding, limitations of resource management, potentials, obstacles and problems in management. Wisdom and management strategy, the economic value of resources. Aspects of planning and management of marine resources and economic value of resources, environmental services. Aspects of institutionality and law in the management of coastal and marine areas. Economic value is reviewed from the planning aspect (B/C, IRR, NVP,cash flow). Integrated coastal planning processes and mechanisms, coastal area management through the approach of structuring marine space, coastal and small islands.

27. Remote Sensing and Marine Mapping IKK00321 3 SKS

This course provides knowledge and understanding of the definition, concept and history of the development of remote sensing, providing insight into the remote sensing technology of satellite systems, spaceshuttle and aerial shooting. Provides knowledge of the characteristics and applications of multispectral remote sensing sensors, microwaves/RADAR, thermals, LASER

and photographic remote sensing sensors. This course is also equipped with the provision of understanding and concepts on remote sensing data processing techniques, such as radiometry and geometry correction, sharpening and fusion, the use of filters and algorithms, mosaic, and colour balancing and interpretation techniques for studies and research in coastal and marine areas.

28. Field Work Practice IKK00323 2 SKS

This course aims to introduce students to the world of work in the field of Marine Science. After attending this course, students are expected to get used to facing and solving problems together, working together in teams, communicating actively, working professionally with discipline and responsibility. Work practice experience is obtained through activities such as internships, namely conducting observations by directly involved in various processes or procedures of activities in an organization / management of marine work.

29. Colloquium IOC21364 2 SKS

This course is designed to guide students in writing proposals and presenting them in scientific forums (Colloquium). The lecture begins with a briefing of scientific writing material accompanied by hands-on practice through structured exercises and assignments. The results of each student's proposal work presented in colloquium at the end of the course are considered as official proposals of final projects / diploma thesis of the student concerned after approval by the prospective supervisor of final projects / diploma thesis. The materials that will be discussed in the briefing of this course are literacy studies, paragraph making, readability, downloading and utilizing marine electronic journals, application of marine research methods, preparation of presentation materials, presentation techniques.

30. Marine Biological Materials IKK00324 3 SKS

This course contains knowledge about various classes of bioactive compounds/materials (such as: macrolides, alkalodes, steroids, ace fats) from various marine biota both microbes, algae, invertebrates, hemicordata and marine vertebrates.

31. Feasibility Study of Coastal and Marine Projects IKK00333 3 SKS

Understanding and aspects in the feasibility study of the project. The relationship of project feasibility studies with investments. Feasibility study design, analysis of legal, socioeconomic and cultural aspects. Analysis of technical and technological aspects (targeting, project location determination, determination of building models, facilities and technologies, layout determination, operation scaling). Analysis of management aspects and market aspects (timing of implementation, management in operations), analysis of spatial aspects (needs and allocation of costs, sources and capital costs, estimated cash flow, analysis of assessment of proposed investment projects, consideration of risk factors).

32. Final Project (DiplomaThesis) IKK00342 6 SKS

Implementation of research in accordance with the field of science in the form of

scientific studies, observations or experimentation as well as the preparation of scientific reports, based on theory and hypothesis, and is the completeness of the final task

Elective Courses of Marine Science Study Program

1. Marine Biodiversity PKK486P 3 SKS

This course contains the concepts of biodiversity, the interaction of biodiversity with the environment, the distribution of biodiversity based on latitudinal, spatial and temporal gradients, methods of approaching the concept of species biodiversity, the economic value of species biodiversity, the concept of biodiversity management, methods and approaches in sustainable biodiversity management.

2. Breeding & Restocking PKK489P 3 SKS

This course provides knowledge about the breeding of marine organisms as well as restocking efforts in the framework of marine resource conservation efforts.

3. Biomonitoring PKK490P 3 SKS

This course contains knowledge, understanding of monitoring activities of aquatic ecosystems using biota. In addition, it is also learned about the community response due to environmental changes.

4. Mariculture Engineering PKK488P 3 SKS

This course contains the principles of mariculture engineering with all aspects, including, scope and prospects, system and technology, location selection, design and construction, media and water quality, feed nutrition and growth, environmental health and biota diseases.

5. Bioremediation PKK502P 3 SKS

This course contains the basic concepts of bioremediation, bioremediation technology, application of technology in the field, phytoremediation, biosorption and bioaugmentation technology.

6. Phycology PKK487P 3 SKS

This course provides an understanding of algae (micro and macroalgae) with an emphasis on macroalgae (seaweed), biology & classification, physical processing (alginate, agar, and carrageenan), benefits (chemical & real), culture (fragmentation and spores) and the way of preservation / manufacture of herbarium.

7. Ecotoxicology PKK491P 3 SKS

This course discusses the contaminants/toxins present in the environment/ecosystem and their effects on biological organisms in those environments or ecosystems. This lecture begins by studying the cycle of toxic materials in different ecosystems. Furthermore, ecotoxicology tries to combine and study the effects of contaminant materials at various levels of biological

organization, from the molecular level (biochemical trajectory in the metabolic system, detoxification process), the level of organisms (target organs, effects on behavior), and ecosystem level (species diversity). The purpose of ecotoxicology course is to provide a basic knowledge about the global ecosystem and the properties and effects of toxic materials / contaminants caused by human activities.

8. AMDAL/ EIA PKK493P 3 SKS

This course learns about the understanding of AMDAL, Identification, evaluation, and forecasting of important impacts, scoping of study areas and impact forecasts, preparation, environmental hue, preparation of Environmental Management Plan (RKL) and Environmental Monitoring Plan (RPL) mainly on activities in coastal and marine areas.

9. Coastal and Marine Spatial Planning PKK494P 3 SKS

This course contains the basic understanding of coastal and marine areas and spaces as well as the spatial arrangement of coastal and marine areas. Understanding the concept of space, understanding the concept of territory, territorial boundaries and space pesisir. Theory of location in coastal and marine planning. Regional Economics and Development Economics, Base Economic Model, Economic Growth and Input-Output Model. Issues and problems in the utilization of spatial; spatial planning function in regional development policy; scope of the planning area. Principles and principles of spatial planning, aspects of the legislative planning of the layout and its relation to the spatial area. Institutional spatial arrangement of coastal and marine areas. The process of drafting spatial planning of coastal and marine areas.

10. Coastal and Marine Disaster Mitigation PKK495P 3 SKS

This course contains the identification of types and locations of potential natural disasters in coastal and marine areas and how to anticipate such disasters both technologically and using local wisdom.

11. Coastal and Marine Resource Modeling PKK496P 3 SKS

This course contains the ecological phenomena, quantification of ecological parameters, (physics, chemistry, biology and geology) Estimation of energy stocks and flows. The basic concept of Modelling. Application of ecological parameters into model units.

12. Beach Geomorphology PKK497P 3 SKS

This course contains the basic conception of geomorphology and coastal geomorphology, various classifications of coastals, coastal land forms and coastal dynamics.

13. Diving Expertise PKK492P 3 SKS

This course studies the application of SCUBA diving techniques for underwater scientific activities or known as *scientific diving* which includes observation, measurement, data collection and sample collection, shooting/ video. Related

disciplines include oceanography, biology, geology, and underwater archaeology.

14. Ecotourism PKK498P 3 SKS

This course contains the utilization of marine resources for tourism purposes. Understand and review the potential of marine tourism, zoning, environmental sanitation, principles of aquatic tourism parks, environmental fundamentals and resource conservation. Planning and development of environmental distribution technology, rehabilitation and remediation in the marine environment.

15. Mariculture Engineering PKK488P 3 SKS

This course discusses engineering in marine culture both in the genetic aspect, prototype and feed.

16. Marine Bioprospection PKK499P 3 SKS

This course contains a discussion of the process of discovery and commercialization of various types of bioactive materials from the sea, both as medicine and cosmetics and nutraceutical.

17. Marine Pharmacology PKK500P 3 SKS

This course will study the interaction between chemical compounds and biological systems. It studies active substances, biological work, medicinal materials, drugs, toxins (destructive materials), potential work, intrinsic activities (work activities) and their properties of all marine biological materials (micro organisms, flora, fauna) in healthy or sick organisms.

18. Identification of Natural Marine Compounds PKK501P 3 SKS

This course contains the knowledge of NMR spectra analysis, Mass, Infrared, Ultra violet and data base methods so that students are able to identify marine biological compounds/materials.

19. Bioremediation PKK502P 3 SKS

This course discusses the use of microorganisms from the sea to overcome pollution both organic and inorganic. This course will explain the types of bioremediation, functions, mechanisms and prospects.

20. Biodeterioration PKK503P 3 SKS

This course will discuss the weathering processes involving microorganisms, disadvantages, advantages and countermeasures.

4.4.9 Courses (MKDK, MKK) in Oceanography (OSE) Study Program

Scientific and Skills Courses (MKK)

1. Calculus IOC21-311 (2 SKS)

Real number system, inequality, coordinate system, real function, composition and inverse functions, limit and continuity of functions, derivatives, and Integral

- 2. Basics of Physics IOC21-312 (3 SKS)**
Important concepts, principles and basic of laws, include kinetic and mechanical, vibration, wave, thermodynamic properties, viscosity, sound, light, interference, diffraction, polarization, photometry, electrical static, electromagnetic field, alternating current, atomic physics and core physics.
- 3. Information Technology IOC21-313 (2 SKS)**
Introduction of computers and the internet, computer hardware, computer software, communication networks within computer unit systems, internet and websites, information technology applications.
- 4. Chemistry IOC21-314 (3 SKS)**
Basic concepts of chemical science such as acid-base, redox reaction, solubility, chemical kinetics, chemical equilibrium, and changes in the state of a substance. In addition, it is also equipped with a way of preparing solutions in various concentration units and using them in simple quantitative chemical analysis (volumetrics/ titrations).
- 5. Aquatic Sport (Swimming) UNW00-005 (1 SKS)**
Freestyle swimming techniques and fin swimming equipment, techniques of entering the water, understanding and using the basic equipment for diving, sliding techniques and foot movements without tools or with tools, techniques of using snorkel clearing, mask clearing, some style techniques in swimming.
- 6. Physical Mathematics IOC21-321 (3 SKS)**
Vector analysis, ordinary differential equations, series solving, differential equations and eigen value issues, typical functions and error functions, partial differential equations, as well as complex functions and analytical functions.
- 7. Fluid Mechanics IOC21-322 (3 SKS)**
Properties of fluids, static fluids, buoyancy and floatation, fluid flow concept, ideal fluid flow, incompressible fluid flow, Rotational and Irrotational flow, fluid flow in pipes, fluid machines, boundary layer theory, open channel fluid flow, dimensional analysis, and similitude.
- 8. Introduction to Economics GPA21-002 (2 SKS)**
Basic concepts of economics both micro and macro include economic understanding, market mechanisms (demand and supply), elasticity concepts, producer behavior theory, consumer behavior theory, production theory, production cost theory, and company balance.
- 9. Aquatic Sport (Diving) IOC21-323 (2 SKS)**
Basic knowledge of skin basic equipment and SCUBA diving, diving environment, dangerous marine animals, adjustment to the underwater world, diving physics, medical aspects of diving, decompression diseases, diving table, skill training in the pool. Know some surface *entry* techniques, giant *stride* techniques, front *roll* techniques, and *back roll*, depth *entry* techniques, perform *duck dive* techniques,

tuck dive techniques, and *surface dive*, *water trappen floating techniques*, and underwater swimming techniques(*apnea*),

10. Statistics IOC21-331 (2 SKS)

Descriptive statistics: introduction to the function of opportunity understanding of populations and examples, data, frequency distribution, deployment size, sampling and hypotheses. Statistical interference for test of diversity values, population, correlation, regression.

11. Hydrodynamics IOC21-332 (3 SKS)

Basic concepts of definitions and basic concepts of continuity equations, vectors and tensor cartesis, inertia forces, viscosity, kinematics and equations of the Navier-Stokes Equation, bernouli and laplace.

12. Physical Oceanography IOC21-333 (3 SKS)

The study of aspects of physics in the sea which includes the properties of physic and dynamics of the sea. The properties of seawater physic include temperature, salinity, density, interaction of sea water and atmosphere, mass circulation of sea water. The dynamics of sea water include: the motion of sea water which includes ocean currents, ocean waves and tides of the sea.

13. Remote Sensing and Ocean Mapping IOC21-334 (3 SKS)

Remote sensing principles include remote sensing and sensor technology, photogrammetry concepts of imagery data processing and interpretation, mapping and cartography, remote sensing applications in marine and oceanographic fields, and coastal and marine map cartographic techniques.

14. Marine Water Analytical Chemistry IOC21-335 (3 SKS)

Introduction to analytical chemistry, safety in the laboratory, stages of analyzing seawater chemistry, division of chemical analysis, accuracy, and accuracy of seawater chemical analysis (precision and accuracy), quality control in chemical analysis, thoroughness of chemical analysis methods, Instrumentation (Spectrophotometer, AAS, Chromatography, Introduction to use, Theory, Specifications, Standard / working process, curve calibration of standardized solutions).

15. Marine Geology I IOC21-336 (3 SKS)

Earth constituent materials (lithosphere) which includes the concept of tectonic plate base, geological basic concept, earth skin constituent material geological processes, coastal and marine geomorphology, geological structures, mineralogy, rock-forming minerals, igneous rocks, metamorphic rocks, sedimentary rocks, geological time, sedimentation basins, hazards, and potential natural resources.

16. Marine Biology IOC21-337 (3 SKS)

Cell identification, Cell metabolism, Growth and development, Marine biota nomenclature, Marine biota diversity (flora and fauna in the sea, Plankton, Nekton, Benthos), Marine life (Marine biota habitat, Marine nutrients, Environmental factors

in the sea), Inter-organism relationships (intra and inter specific)

17. Introduction to Student Creativity Program IOC21-338 (1 SKS)

Introduction to student creativity programs, PKM program tips, proposal writing guidelines, theme selection, PKM proposal writing.

18. Numerical Method IOC21-341 (3 SKS)

Basic concepts of numerical methods, numerical solutions: the roots of equations (nonlinear equations, Half-interval/bisection methods, Newton-Raphson methods, iteration methods), numerical integrals, ordinary differential equations (Euler Method, Runge-Kutta Method order 2 and order 4), Partial differential equations.

19. Tidal IOC21-342 (3 SKS)

Tidal power generation, factors that affect the ups and downs, tidal types, tidal components, tidal data processing methods (admiralty, least square), tidal data analysis.

20. Ocean Waves IOC21-343 (3 SKS)

Wave theory (Stokes's wave theory, Cnoidal Wave Theory, Single Wave theory), wave parameters, wave classification, reasoning mechanism, wave deformation, wave spectrum and wave forecasting.

21. Marine Geophysics IOC21-344 (2 SKS)

Interior of the earth, the basic principles of geophysical methods, earthquakes and tsunamis, seismic methods (seismic reflection and refractive, encroachment of seismic waves, seismic data retrieval and stacking charts), processing and interpretation of seismic data, rock-forming minerals, hazard and geological natural resources.

22. Ocean Currents IOC21-345 (3 SKS)

Current drive factors, characteristics of ocean currents, Types and types of ocean currents, sea current dynamics, geotropic currents, Ekman currents, density currents, longshore currents, tidal and non-tidal currents, thermal winds equations, absolute current speed determination.

23. Marine Instrumentation System IOC21-346 (2 SKS)

Introduction to electronics (direct current and alternating current, characteristics of diodes, transistors, power amplifiers), operating systems, working principles of sensors, use and maintenance of marine and oceanographic instruments (Tsunami warning system, Side scan sonar, remotely operated vehicle), signal conditioning.

24. Marine Environmental Chemistry IOC21-348 (2 SKS)

Global environmental problems, atmospheric chemistry (heat balance chemical reactions in the atmosphere, nitrogen cycles, oxygen, sulfur in the atmosphere, atmospheric pollution), aquatic chemistry (water properties, water bodies, chemical reactions occurring in the environment, gas solubility, alkalinity,

acidity), soil/sediment chemistry (chemical reactions occurring in soil/sedimentary environments, Carbon cycles, phosphorus in soil/sedimentary environments, pollution-causing factors and their impacts).

25. Oceanography Modeling IOC21-351 (3 SKS)

Model generator equations (advection equations, diffusion, and dispersion), model equation solving (explicit methods, Crank Nicholson implicit methods), model discretization, modeling scenarios, model design and modeling quality (calibration and verification model) in the field of oceanography.

26. Oceanography Method IOC 21-352 (3 SKS)

Methods of location determination, determination of survey techniques, selection of survey equipment as well as methods of field data processing and data analysis for the field of physical oceanography (ocean currents, ocean waves, tides, bathymetry), geological oceanography (sediment, TSS, sedimentation rate), chemical oceanography (water quality, Heavy Metals and Oil Spills, Radioactive), fishery oceanography (interpretation of fishery satellite imagery to detect upwelling, chlorophyll, and sea level rise).

27. Chemical Oceanography IOC 21-353 (3 SKS)

Dynamics and distribution of all chemical parameters in the sea (Salinity and Chlorinity, Major and minor elements, micronutrient, Nitrates, Phosphate and Silicate), Up take and nutrient regeneration; nutrient spread, gas-dissolved gas (DO, BOD, COD), Speciation: nutrient, analysis and calculation, nutrient enrichment, eutrophication, anoxic conditions, Redfield ratio and limiting factor, Nuclear at Sea/Radionuclide of the sea, fluctuation and flux element at sea, trace element, resident time, primary, secondary productivity and new production.

28. Geological Oceanography IOC21-354 (3 SKS)

Geodynamics, Composition of seabed formation, theory of sea formation (convection theory, seabed shift theory, plate tectonic theory), composition of seabed formation, marine geomorphology (static, dynamic, genetic), seabed formation structure (primary and secondary), basic principles of rock deformation, tectonics involved in rock deformation, deposition basins (Phases of deposition, stratigraphic sequences, stratigraphic recordings, precipitation dynamics)

29. Marine Sedimentology IOC21-355 (3 SKS)

Introduction to sedimentology, sedimentary texture, granulometric analysis, sedimentary structure, current system, precipitation environment, delta classification, shelf environment, alluvial fan on continental shelf, carbonate deposits, reef morphology, deep sea sediment.

30. Ichthyology GPA21-006 (2 SKS)

Classification, structure and function of organs for survival, reproductive processes, behavior, distribution and growth offish.

31. Fisheries Oceanography IOC 21-356 (2 SKS)

The history of fish life, fish behavior, fish migration, is associated with oceanographic aspects. Some modern tools/methods applications such as radar, satellite remote sensing, in the management of fishery resources.

32. Biological Oceanography IOC21-357 (2 SKS)

Interaction of biotic organisms and their environment (phytoplankton, zooplankton and fish), biogeochemicals in the sea (the role of phytoplankton against carbon cycles, biogeochemical cycles, primary productivity).

33. Oceanography Engineering IOC21-361 (3 SKS)

Study of waves, tidal and currents for engineering purposes (onshore and offshore structures planning), engineering for breaking and non-breaking waves, engineering for wave rupture plans, calculation of wave run-ups for marine building planning, sediment transport mechanisms for building planning on the in shore and off shore

34. Coastal Hydraulics IOC21-362 (3 SKS)

Types of beaches, coastal processes and their issue, types and properties of coastal sediment, mechanisms of transport of sediment, balance of coastal sediment, abrasion and accretion processes on the beach, the concept of coastal hydraulics caused by coastal buildings, reclamation, sand mining and ecosystem damage, as well as case studies of coastal processes and hydraulic mechanisms.

35. Research Methods and Techniques of Scientific Writing IOC21-363 (2 SKS)

The nature of science and research, research as a scientific process, types of research, research proposals, conceptualization of problems, research objectives, drafting hypotheses and testing, research design, literature studies, data collection and analysis methods, sampling techniques. Writing research reports, preparing scientific papers and articles, as well as preparing presentation materials of research results, as well as the rules of writing scientific works and scientific publications.

36. Colloquium IOC21-364 (2 SKS)

Direction and objectives of the field of physical oceanography, biological oceanography, chemical oceanography, geological oceanography and fishery oceanography, research plan direction and purpose, procedures for submitting research proposals and discussing them in a scientific forum, writing proposals, presenting proposals, and being able to guide presentations in scientific forums.

37. Marine Geochemistry IOC21-365 (2 SKS)

The division of sediment based on its size and shape, the role of water that enters the seabed sediment both in bacteriological processes such as the formation of biopolymers; biochemical degradation and other conditions such as oxic and anoxic, factors that influence early diagenesis and the sequence of diagenesis processes, marine chemical minerals that have important economies and explain the process of formation of marine minerals, the process of formation of nodules (Mn) and crust deposits, the formation of massive deposits of sulfide in the sea, distribution and its relationship to dissolved organic matter (DOM) and its benefits of studying cinnabar, understanding, cycles, equations and characteristics of

Anamox on the seabed , as well as its application, the formation of sediment and marine minerals

38. Internship IOC21-366 (1 SKS)

Introduction to the world of work in the field of oceanography, facing and solving problems together, working in teams, communicating actively, working professionally disciplined and responsible. Work practice experience is obtained through activities such as internships, namely conducting observations by directly involved in various processes or procedures of activities in an organization / management of work in the field of Oceanography.

39. FieldWork Lecture IOC21-367 (2 SKS)

Field Work Lecture (KKL) is an activity intended to provide opportunities for students to gain practical experience in various aspects of the field of Marine Science and Oceanography. Experience is obtained by conducting activities such as observation, information collection, observation of various processes or procedures that take place in the field through field work lectures. By implementing KKL, students will gain information, insight and understanding so as to be able to compare between theory and the implementation of work lectures in the field. KKL is also intended as a means of training in the writing of scientific works.

40. Coastal and Marine Disaster Mitigation IOC21-371 (3 SKS)

Basic knowledge of disasters, types of disasters (Earthquakes and tsunamis, sea level rise, abrasion and sedimentation, tidal waves), the process of occurrence, losses caused, disaster distribution, impact analysis, disaster mapping, understanding disaster mitigation, methods of measuring and analyzing disaster mitigation data, determination of vulnerability, hazards and disaster risks, disaster adaptation and mitigation strategies, physical and non-physical reconstruction of coastal and marine environments.

41. Marine Meteorology and Climatology IOC21-372 (2 SKS)

Definition, concept and scope of meteorology and climatology of the sea, Atmosphere and solar radiation, Elements of heat balance weather, shifting seasons, Air temperature, air pressure, air stability, Atmospheric and wind circulation, Precipitation of clouds and humidity, Front, air mass and micro meteorology, Cyclone and Anti-cyclone, Weather map and map symbols, Weather record and weather news, Classification of world and Indonesian climate, Impact of human activity on climate change.

42. Feasibility Study and Project Management IOC21-373 (2 SKS)

Understanding and aspects in the feasibility study of the project. The relationship of project feasibility studies with investments. Design feasibility study analysis of legal, socioeconomic and cultural aspects. Analysis of technical and technological aspects (targeting, project location determination, determination of building models, facilities and technologies, layout determination, operation scaling). Analysis of aspects of market spec fund management (timing of implementation, management in operations), analysis of spatial aspects (needs and allocation of

costs, sources and capital costs, estimated cash flow, analysis of assessment of proposed investment projects, consideration of risk factors).

43. Diploma Thesis IOC21-381 4 SKS

The implementation of research in accordance with the field of science in the form of scientific studies, observations or experimentation as well as the preparation of scientific reports, based on theory and hypothesis, and is the completeness of the final task.

Syllabus of Elective Courses Oceanography Study Program

1. Oceanography Programming IOC21-401 (3 SKS)

Basic programming (Types of programming languages, Algorithms, Programming language syntax), image processing, signal processing and statistical programming (Numeric linear algebra, Linear and non-linear regression, Random number generation).

2. Marine Acoustics IOC21-402 (3 SKS)

The basic principles of marine acoustics and their applications include: the nature of underwater sound waves and their basic equations, the ramifications of sound waves in the sea, the mechanism of action of sonar, measurement of strength targets, observation and measurement of fish abundance, acoustic surveys and analysis of their data.

3. Hydrographic Survey IOC21-403 (3 SKS)

Tidal theory and its measurements, basic principles of geodesy, oceanography, and meteorology, application of Geographic Information Systems (GIS) in hydrographic surveys, coastal surveys (tides, coastal slopes, coastal formations, estuary, deltas, coastal sediments and coastal parallel currents), surveys of offshore waters (sedimentary and transport types of sediment, waves, bathymetry), survey methods, instruments and accuracy of measurement instruments in coastal and offshore water surveys.

4. Coastal Structures IOC21-404 (3 SKS)

Definition and concept of coastal building, Beach damage, Classification of coastal buildings, Types and functions of coastal buildings (sea walls and revetment, offshore breakwaters, groin, jetty, seawall, artificial headland, beach nourishment, artificial coral reefs), oceanographic aspects in coastal building planning, general design of coastal buildings (Basic concepts and applications, Suitability and feasibility of design, risk analysis of beach buildings).

5. Marine and Coastal Spatial Planning IOC21-405 (3 SKS)

Basic understanding of coastal and marine areas and spaces, concepts of space and territory, location theory in coastal and marine area planning, regional economy and development economy, basic economic model, economic growth and input-output model, potential, opportunities, impacts and impacts, Issues and problems as well as spatial planning functions, principles and principles of spatial

administration, institutional and spatial law, preparation of integrated coastal zone management (RZWP3K), preparation of preliminary documents (basic and thematic maps for data sets RZWP3K), preparation of intermediate documents / final (concrete analysis of space utilization, analysis of land design, determination of space allocation and draft for regional regulations)

6. Ocean Energy IOC21-406 (3 SKS)

Basic concepts and principles of alternative energy, types of energy forms, potential and kinetic energy from nature, Energy potential of the sea in Indonesia, alternative energy from the sea (OTEC, waves, currents and tides, marine biological materials), Conversion of motion energy in the sea into electrical energy, Understanding and basic concepts of marine energy efficiency, Working principle of marine energy converter, Criteria for design and utilization of alternative energy.

7. Climate Change IOC21-407 (3 SKS)

Definition and concept of climate parameters, Climate change parameters (precipitation, air humidity, air pressure, cloud formation), Spatial and temporal climate change models, Global climate change models, Impacts of climate change (on environmental, social, economic and infrastructure aspects), Mitigation of greenhouse gas effects, Technologies in climate change mitigation, Key strategies of climate change mitigation.

8. Environmental Modelling IOC21-408 (3 SKS)

Hydrodynamic and environmental model equation, Boundary requirements, Grid system, Model descriptor, Numerical stability, Model calibration, Model verification, Model application and marine pollution model case.

9. Oceanic and Atmospheric Interaction IOC21-409 (3 SKS)

Basic principles and concepts of atmosphere, atmospheric-ocean interaction and convection dynamics in the ocean, El Nino Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD), Monsoon system and the role of atmospheric-ocean interactions, and atmospheric-ocean interactions in the Earth's climate system.

10. Estuary Dynamics IOC21-410 (3 SKS)

Scope and definition of estuary, Basic concept of estuary dynamics, process formation and ecosystem of delta, Classification and types of estuaries (mixed, fjords, inverse), Hydrodynamics of estuary area, circulation and mixing in estuary, tidal dynamics in estuary, dispersion of pollutants and salt intrusion in estuary, Sediment transport process in estuary, tidal bore, biological aspects, physics and chemical aspects of river estuary.

11. Marine Resources Conservation IOC21-411 (3 SKS)

Basic concepts of conservation and environmental technology, History and policies in conservation, the purpose and importance of conservation, the impacts and benefits of conservation, the technologies used in conservation efforts, the utilization of biological natural resources and their ecosystems, measures taken in biodiversity conservation, conservation relationships with various aspects (economic, social and

cultural) and Marine Protection Area (MPA).

12. Marine Resources Exploration IOC21-412 (3 SKS)

Principles and concepts of sea exploration, Types of marine resources, concepts of exploration of marine non-biological resources, concepts of exploration of marine biological resources, types of marine biodiversity and biodiversity in Indonesia, conservation and exploration of marine biological natural resources, technology of exploration of marine biological and non-biological resources, and technology in exploration of marine resources.

13. HSE IOC21-413 (3 SKS)

Basic concepts and scope of work safety at sea, work safety management at sea, work safety objectives at sea, humans in the work environment, equipment / instruments in the work environment, procedures and briefing emergency situations, active and passive monitoring, Basic concepts of hazards and risks, physical hazards, hazards from chemicals, biological hazards (organisms and microorganisms), hazard and risk management in the marine environment, Mitigation of hazards and risks in the marine environment.

14. Cadastre and Law of the Sea IOC21-414 (3 SKS)

Introduction to the law of the sea, the history and development of the law of the sea internationally (The Hague Codification Conference 1930, Geneva Sea Law Conference 1958, Djuanda Declaration), Exclusive Economic Zone (ZEE), Indonesian sovereign territory, maritime defense systems, and maritime boundaries in Indonesia, determination of the line of origin and continental shelf.

15. Diving Expertise IOC21-415 (3 SKS)

Diving Level (Academic diving education, Pool and open Skills Training, Diving Certification), Basic knowledge of fish and coral reef transect, underwater video / photography, Underwater Pipe Installation, diving tourism guidance techniques, underwater inspections all conducted by diving using Scuba Diving equipment.

16. Marine Pollution IOC21-416 (3 SKS)

Fundamental concepts are needed to interpret the difference between contamination and pollution. The basic ecological principles relevant to water pollution are explained as knowledge of the influence of contaminants on the marine environment. The topics that will be explained in the course are the properties of various contaminants, such as: nutrients, trace metal, synthetic organic compound (pesticide and polychlorinated biphenyl/PCB), natural and synthetic organic materials, and radioactive materials. Several case studies were used to supplement insights into major marine pollution events that spur changes in marine ecosystems (e.s.: Exxon Valdez and Amoco Cadiz oil spill). It is also equipped with practicum in the field.

17. Marine Radionuclide IOC21-417 (3 SKS)

The basic theory of active radio, its nature, distribution and activity; it also explains the distribution and source of radionuclide at sea, as well as its benefits and impacts on the marine environment.

18. Sediment Transport IOC21-418 (3 SKS)

Scope of sediment transport, Types, properties and characteristics of basic sediments and suspensions, basic flow and sedimentary characteristics, basic sediment dynamics and kinematics, basic and suspended sediment transport, basic and suspended sediment transport volume, classification of basic sediment transport, suspended flow and sedimentary characteristics, dynamics and kinematics of basic and suspended sediment, Coastal parallel currents and sedimentary transport, coastal equilibrium, coastal equilibrium and sedimentary transport, coastal equilibrium.

19. Reclamation and Dredging IOC21-419 (3 SKS)

Concept, the role of geological aspects, morphological aspects, and their role in reclaiming coastal areas which is a science in explaining the return of damaged land to its original state, rules and regulations of reclamation based on existing regulations, feasibility of reclamation (technical, socioeconomic environment), document reclamation.

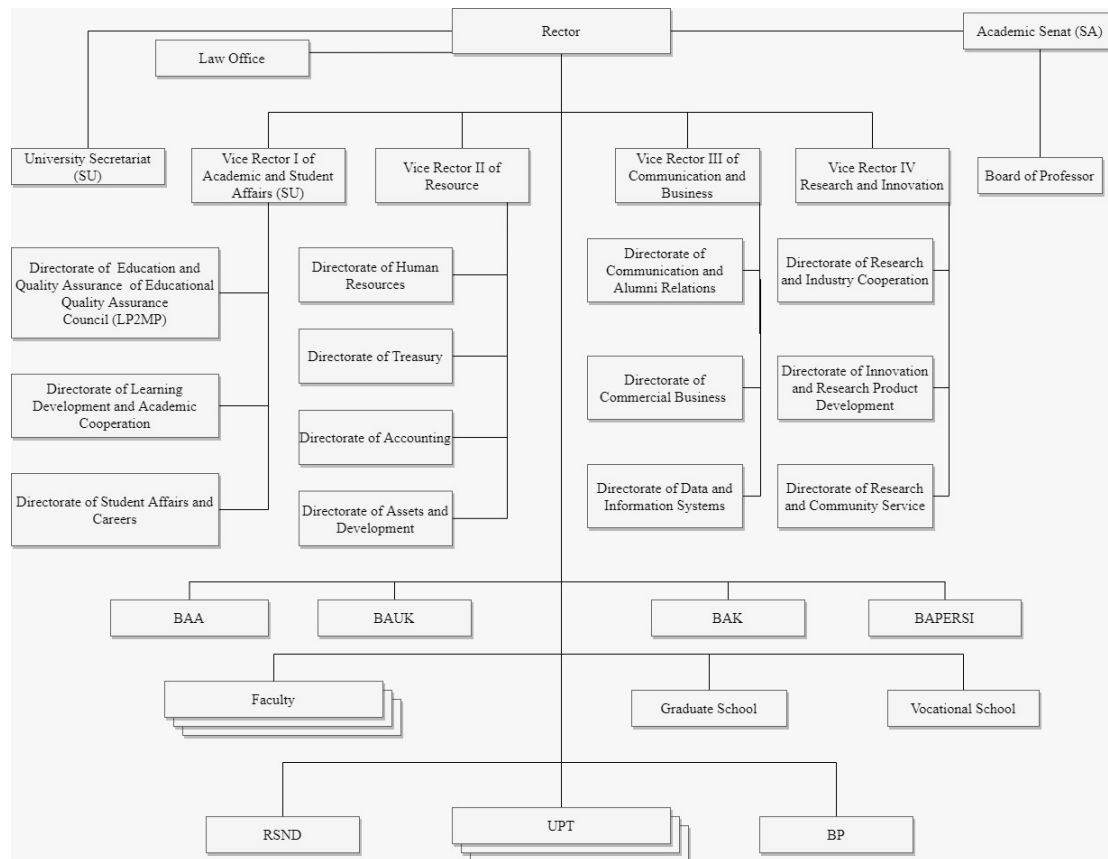
20. AMDAL/EIA IOC21-420 (3 SKS)

Principles of theory and implementation of AMDAL in the field of fisheries and marine science. Introduction of various methods for amdal studies and their application for the preparation of RELIABLE, RKL (Environmental Management Plan), RPL (Environmental Monitoring Plan), ALP (Aquatic Environment Audit and UPL (Water Environmental Monitoring Efforts). Discussions are emphasized on fishery/marine development projects that have an important impact on the aquatic environment.

CHAPTER V ORGANIZATION

5.1 ORGANIZATIONAL STRUCTURE OF UNIVERSITAS DIPONEGORO

The organizational structure of Universitas Diponegoro is as follows:



Universitas Diponegoro Organization consists of:

1. Board of Trustees (MWA)

The Board of Trustees hereinafter abbreviated as MWA is Undip organ that establishes, gives consideration to the implementation of general policies, and carries out supervision in the nonacademic field.

2. Academic Senate

The academic senate hereinafter abbreviated as SA is Undip organ that determines policies, gives consideration, and conducts supervision in the academic field.

3. The leadership elements consist of:

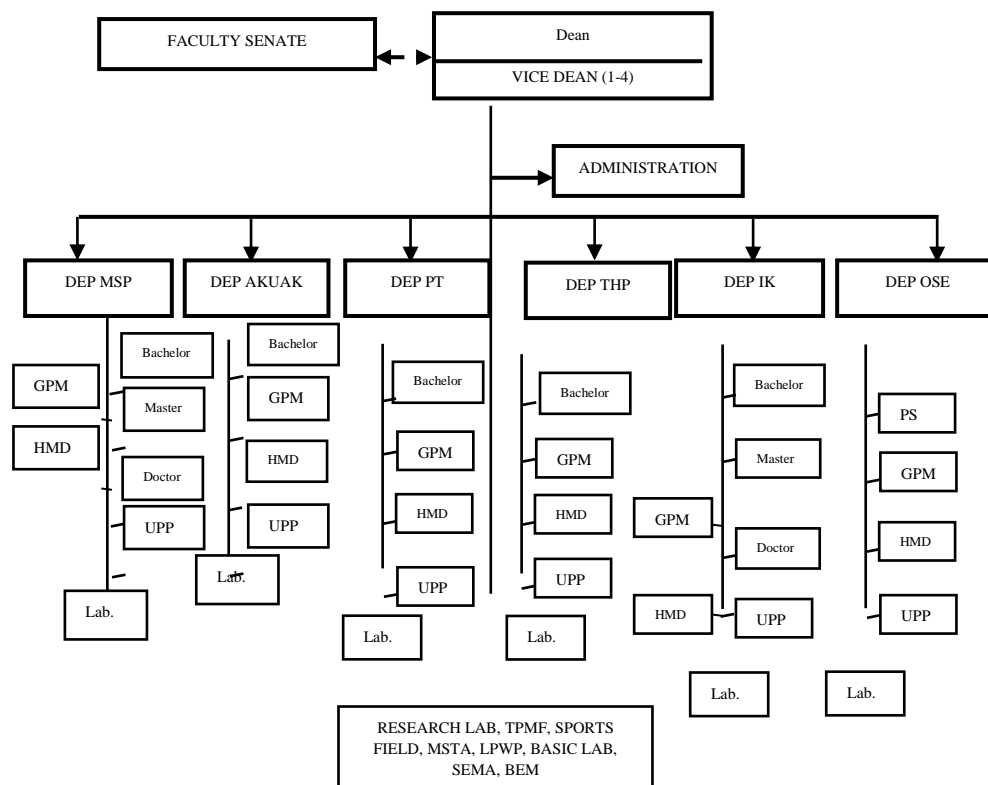
- a. Rector;
- b. Vice Rector

4. Universitas Diponegoro Academic Senate consists of:

- a. Representative of UNDIP Professor;
 - b. Representative of non-professor lecturers;
 - c. Rector (ex officio);
 - d. Vice Rector (ex officio);
 - e. Dean (ex officio);
 - f. Other members appointed by the university's academic senate
5. Executive elements of university administration:
- a. General Administration Bureau;
 - b. Academic Administration Bureau;
 - c. Financial Administration Bureau;
6. Executive elements of the faculty consists of:
- a. Leadership elements (dean and vice dean);
 - b. Faculty senate;
 - c. Executive elements of academic in departments / study programs, laboratories;
 - d. Administrative sub division;
 - e. Supporting elements include:
 - 1) LPWP Kartini Beach Jepara,
 - 2) Marine Station Teluk Awur Jepara

5.2 ORGANIZATIONAL STRUCTURE OF FACULTY OF FISHERIES AND MARINE SCIENCES

5.2.1 The organizational structure of FPIK is as follows.



Description:

DEP : Department

GPM : Quality Assurance Group

HMD : Student Association Department

UPP : Research and Service Unit

LAB : Laboratory

5.2.2 Faculty Executive Elements

1. A faculty is a cluster of supporting resources, which can be grouped by department that organizes and manages academic, vocational, or professional education in a single discipline group of science, technology, arts, and/or sports.

a. The Faculty of Fisheries and Marine Sciences of Universitas Diponegoro is led by a dean, assisted by 4 (four) vice deans, namely the vice dean of academic and student affairs or can be called vice dean I, the vice dean of resources or can be called vice dean II, the vice dean of communications and business or vice dean III, and the vice dean of research and innovation or vice dean IV.

b. Faculty Senate

The faculty senate is the highest normative body within the faculty, which holds the authority to lay out UNDIP policies and regulations for the benefit of the faculty. The Senate Faculty is chaired by a Chair of the Senate, assisted by a Secretary of the Senate. Members of the faculty senate consist of: professors, faculty leaders (deans and vice deans), head of each department and lecturer representatives.

c. **Vice dean of academic and student affairs**, has the duty, function and authority to assist the dean in leading the implementation of activities in the field of education and learning; academic quality assurance; accreditation of study program; coaching of academic community, student affairs and career.

d. **Vice dean of resources**, has the duty, function and authority to assist the dean in leading the implementation of activities in the field of human resources, finance, assets and logistics.

e. **Vice dean of communications and business** has the duties, functions and authorities to assist the dean in leading the implementation of promotion and admission, governance in the field of communication, information technology, business and alumni.

f. **Vice dean of research and innovation** has the duties, functions and authorities to assist the dean in leading the implementation of activities in the field of planning and development, research governance and dissemination (seminars, scientific journals, Intellectual Property Rights), innovation, cooperation, and community service.

g. Administration Division (TU)

Has the duty of carrying out administrative and household affairs of the faculty. To carry out the duties, TU needs to:

1) Conduct administrative, correspondence, household, equipment, staffing and treasury affairs,

- 2) Conduct academic administration affairs covering education and teaching, research and community service,
- 3) Conduct administrative affairs of student coaching and alumni relations.
- 4) In carrying out its functions and duties, Head of TU is assisted by:
 - a) Academic sub-division
 - b) Staffing and treasury sub-division
 - c) UMPA sub-division
 - d) Student affairs sub-division

h. Department

A department is a cluster of supporting resources, which organizes and manages academic, vocational, or professional education in a group of disciplines in science, technology, arts, and/or sports.

Based on the Decree of the Rector of Universitas Diponegoro Number 1122/UN7. P/HK/2016 dated September 20, 2016 concerning the determination of departments in the Faculty in Universitas Diponegoro, sets the name of departments in the Faculty of Fisheries and Marine Sciences to 6 (six) departments, namely:

- 1) Department of Aquatic Resources,
- 2) Department of Aquaculture,
- 3) Department of Capture Fisheries,
- 4) Department of Fisheries Products Technology,
- 5) Department of Marine Science,
- 6) Department of Oceanography.

In carrying out its duties, the Head of Department is assisted by a secretary, and entitles to form activities implementation units, such as laboratory coordinators, Research and Service Units (UPP), Quality Assurance Groups (GPM), departmental student associations and so forth.

i. Study program is an educational and learning activities unit that have a specific curriculum and learning methods in one type of academic education, professional education, and/or vocational education. The Faculty of Fisheries and Marine Sciences has 6 (six) bachelor study programs (S-1), 2 (two) master study programs (S-2) and 2 (two) doctoral study programs (S-3), which consist of:

- 1) Undergraduate Study Programs (S-1), include:
 - a) Aquatic Resources Management (MSP)
 - b) Aquaculture
 - c) Capture Fisheries (PT)
 - d) Fishery Products Technology (THP)
 - e) Marine Science (IK)
 - f) Oceanography (OSE)
- 2) Master study programs, consist of:
 - a) Master of Coastal Resource Management (MMSDP)
 - b) Master of Marine Science (MIK)
- 3) Doctoral study programs consist of:
 - a) Coastal Resource Management (DMSDP)
 - b) Marine Science (DIK)

j. Laboratory

Laboratory is a supporting facility for the implementation of education in the department in academic and / or professional education, with the duty to carry out activities in certain branches of science and technology to support the implementation of basic tasks.

- 1) The laboratory is led by a coordinator of functional personnel whose expertise has met the requirements in accordance with the branch of science and technology. The Head of Laboratory is directly responsible to the head of the department.
- 2) To carry out these duties, the laboratory has functions in:
 - a. Preparing supporting facilities to carry out education and teaching,
 - b. Preparing supporting facilities to carry out research and development of science.
- 3) The Faculty of Fisheries and Marine Sciences has the following laboratory:
 - a. Basic Laboratory, consists of sub Laboratories of Biology, Chemistry, Physics and Computing;
 - b. Fish Resources and Environment Management Laboratory;
 - c. Aquaculture Technology and Management Laboratory;
 - d. Laboratory of Fishing Technology and Management;
 - e. Laboratory of Processing and Testing of Fishery Products Quality;
 - f. Fisheries Agribusiness Laboratory;
 - g. Marine Resources and Biodiversity Laboratory;
 - h. Coastal and Tropical Oceanography Laboratory.

k. Supporting Facilities

In addition to the Tembalang campus, the Faculty of Fisheries and Marine Sciences also has a campus in Jepara Regency, namely LPWP (Coastal Development Laboratory) campus in Kartini Beach Jepara and *Marine Station* Campus in Teluk Awur Jepara. Both campuses serve to support academic activities for FPIK academic community, especially to support the research activities of lecturers and students as well as for the student's practicum.

Currently, Marine Station Teluk Awur is developed into Marine Science Teckno Park, as a place for the development and downstream of research and innovation products, business incubation and production processes.

l. Lecturer

- 1) Lecturers are faculty members in the faculty environment who are under and responsible to the Dean. The main duties of the lecturers include:
- 2) Lecturers as the members of the academic community is responsible for transforming the science and /or technology they master to the students by realizing the learning atmosphere and learning activities for the students to actively develop their potential.
- 3) Lecturers as scientists is responsible for developing a branch of science and/or technology through reasoning and scientific research and disseminating it.
- 4) Lecturers individually or in groups must write textbooks, published by universities and/or scientific publications as one of the learning resources and for the development of academic culture and the refinement of reading and

- writing activities for the academic community
- 5) The lecturer groups consist of:
- a) Regular/permanent lecturers
 - b) Contract/non-permanent lecturer

5.2.3 Names of Leadership Elements in the Faculty of Fisheries and Marine Sciences Universitas Diponegoro

- 1) Leaders of the faculty of fisheries and marine sciences
 - Dean : Prof. Dr. Ir. Agus Sabdono, M.Sc.
 - Vice dean I : Dr. Ir. Suradi Wijaya Saputra, M.S.
 - Vice dean II : Ir. Baskoro Rochaddi, M.T.
 - Vice dean III : Ir. Irwani, M.Phil.
 - Vice dean IV : Tita Elfitasari, S.Pi., M.Sc., Ph.D.
- 2) Leaders of Aquatic Resources Department
 - Chairman : Dr. Ir. Haeruddin, M.Si.
 - Secretary : Dr. Ir. Suryanti, M.Pi.
 - a. Bachelor of Aquatic Resource Management Study Program (S1)
 - Chairman : Ir. Siti Rudiyantri, M.Si
 - Secretary : Churun A'in, S.Pi., M.Si.
 - b. Master of Coastal Resource Management Study Program (S2)
 - Acting Chairman : Dr. Ir. Haeruddin, M.Si.
 - Secretary : Dr. Ir. Pujiono Wahyu Purnomo, M.S.
 - c. Doctor of Coastal Resource Management Study Program (S3)
 - Acting Chairman : Dr. Ir. Haeruddin, M.Si.
 - Secretary : Dr. Ir. Frida Purwanti, M.Sc
 - d. Fish Resources and Environment Management Laboratory
 - Coordinator : Dr. Ir. Suryanti, M.Pi.
- 3) Leaders of Aquaculture Department
 - Chairman : Dr. Ir. Sarjito, M.App.Sc.
 - Secretary : Dr. Ir. Diana Rachmawati, M.Si.
 - a. Aquaculture Undergraduate Study Program
 - Acting Chairman : Dr. Ir. Sarjito, M.App.Sc.
 - Acting Secretary : Dr. Ir. Diana Rachmawati, M.Si.
 - b. Aquaculture Technology and Management Laboratory
 - Coordinator : Dr. Ir. Desrina, M.Sc.
- 4) Leaders of The Capture Fisheries Department
 - Chairman : Dr. Aristi Dian Purnama Fitri, S.Pi.,M.Si.
 - Secretary : Dr. Abdul Kohar Mudzakir, S.Pi., M.Si.
 - a. Bachelor of Catch Fisheries Study Program (S1)
 - Acting Chairman : Dr. Aristi Dian Purnama Fitri, S.Pi.,M.Si.
 - Acting Secretary : Dr. Abdul Kohar Mudzakir, S.Pi., M.Si.
 - b. Laboratory of Fishing Technology and Management
 - Coordinator : Dr. Dian Wijayanto, S.Pi.,M.M.,M.S.E.
- 5) Leaders of Fishery Products Technology Department
 - Chairman : Prof.Dr. Ir. Eko Nurcahya Dewi, M.Sc.
 - Acting Secretary : A. Suhaeli Fahmi, S.Pi., M.Sc.
 - a. Bachelor of Fishery Products Technology Study Program (S1)
 - Acting Chairman : Prof.Dr. Ir. Eko Nurcahya Dewi, M.Sc.
 - Acting Secretary : A. Suhaeli Fahmi, S.Pi., M.Sc.

- b. Laboratory of Processing and Testing of Fishery Products Quality
Coordinator : Apri Dwi Anggo, S.Pi., M.Sc.
- 6) Leaders of the Marine Science Department
 - Chairman : Dr. Ir. Diah Permata Wijayanti, M.Sc.
 - Secretary : Dr. Ir. Munasik M.Sc.
 - a. Bachelor of Marine Science Study Program (S1)
 - Chairman : Agus Trianto, S.T., M.Sc., Ph. D.
 - Secretary : Ir. Chrisna AS, M.Phil.
 - b. Master of Marine Science Study Program (S2)
 - Acting Chairman : Dr. Ir. Diah Permata Wijayanti, M.Sc.
 - Acting Secretary : Dr. Ir. Munasik M.Sc.
 - c. Doctor of Marine Science Study Program (S3)
 - Chairman : Drs. Rudhi Pribadi, Ph. D.
 - Secretary : Dr. Drs. Subagiyo, M.Si.
 - d. Marine Laboratory
Coordinator : Drs. Ali Ridlo, M.Si.
- 7) Department of Oceanography
 - Chairman : Dr. Denny Nugroho Sugianto, S.T., M.Si
 - Secretary : Dr. Kunarso, S.T., M.Si.
 - a. Bachelor of Oceanography Study Program (S1)
 - Chairman : Dr. Denny Nugroho Sugianto, S.T., M.Si
 - Secretary : Dr. Kunarso, S.T., M.Si.
 - b. Oceanographic Laboratory.
Coordinator : Dr. Sc. Anindya Wirasatriya, ST., M. Si., M.Sc.
- 8) Faculty-managed laboratories
 - a. Physics Laboratory
Coordinator : Lilik Maslukhah, ST, M.Si.
 - b. Biology Laboratory
Coordinator : Dr. Ir. Ervia Yudiati, M.Sc.
 - c. Chemistry Laboratory
Coordinator : Ima Wijayanti, S.Pi., M.Si.
 - d. Computer Laboratory
Coordinator : Dr. Muhammad Helmi, S. Si., M.Si.
 - e. MSTA Laboratory
Coordinator : Drs. Heryoso Setiyono, M.Si.
 - f. Coastal Development Library (LPWP)
Coordinator : Bogi Budi Jayanto, S. Pi, M. Si
- 9) Head of Administrative Department
 - a. Head of Administrative Division: Ratna Wahyu Setyaningtyas, S.H., M. Si.
 - b. Head of Academic : Dra. Kusriyah
 - c. Head of Staffing and Treasury sub-div: A. Ronin Hidayatullah, SKM
 - d. Head of General and Asset Management sub-div: Sri Windriyati, S.H.
 - e. Head of Student Affairs sub-di : Drs. Eka Surana

CHAPTER VI STUDENT AFFAIRS

Student organizational structure at the Faculty of Fisheries and Marine Sciences Universitas Diponegoro is presented in Figure 6.1.

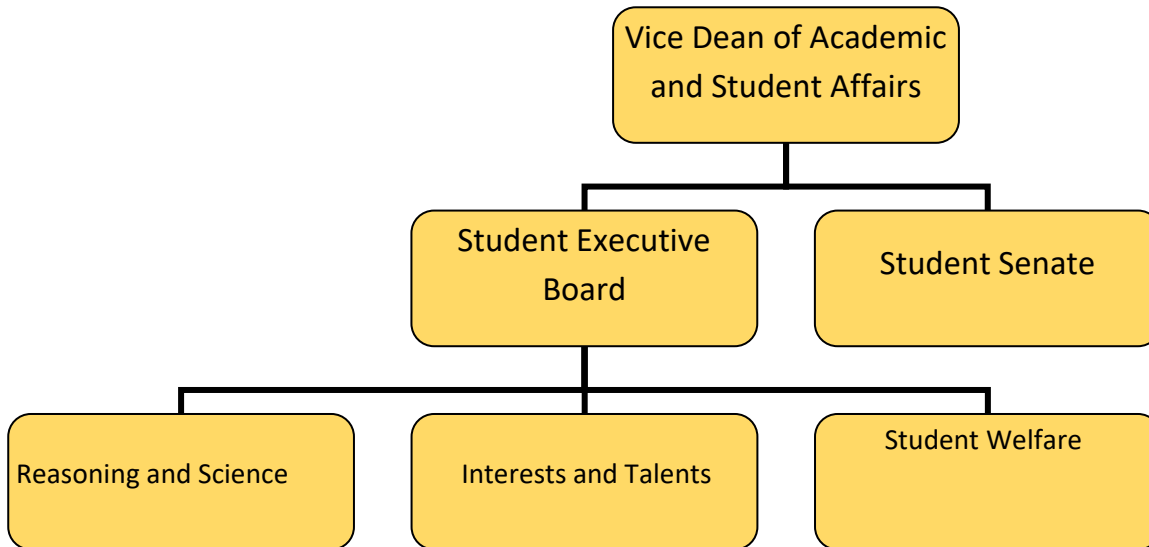


Figure 6.1. Student Organizational Structure at the Faculty of Fisheries and Marine Sciences Universitas Diponegoro

Student Affairs includes 3 (three) Sub-Divisions, namely:

1. Sub Division of Reasoning and Scientific Development;
2. Sub-Division of Interest and Talent Development; and
3. Sub-Division of Student Welfare.

These three divisions are administered in 3 Pillars and 5 Programs, namely:

- Pillar 1. Equalization and expansion of access to education,
Pillar 2. Improvement of quality, relevance and competitiveness, and
Pillar 3. Reinforcement of governance, accountability and public branding.

Program 1. Student Scientific Development / Improvement of Student Research Activity, Scientific Meetings, and Art.

Program 2. Development of Soft Skills and Student Entrepreneurship;

Program 3. Students Institutional Development;

Program 4. Student Welfare Development;

Program 5. Alumni Empowerment.

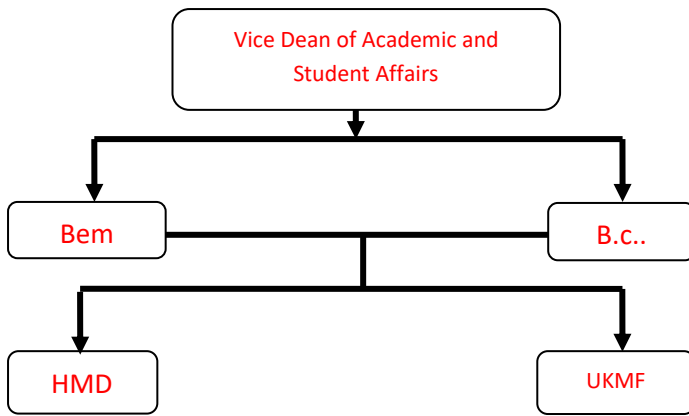
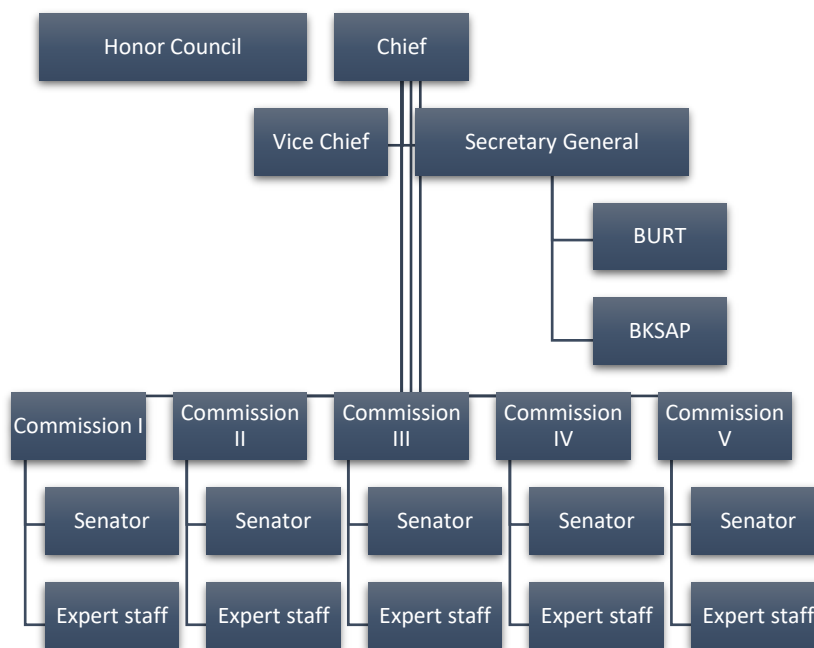


Figure 6.2. Accountability Structure of Student Organization at the Faculty of Fisheries and Marine Sciences Universitas Diponegoro

The student senate is a student legislature, which main duties and functions are drafting the rules and regulations of the implementation of student organizations, supervision and evaluation of the rule's implementation. The organizational structure of the Student Senate is presented in Figure 6.3.



Description:

BURT: Domestic Affairs Agency; BKSAP: Inter-Parliamentary Cooperation Agency

Figure 6.3. Student Senate Organizational Structure of the Faculty of Fisheries and Marine Sciences, Universitas Diponegoro

Student Executive Board (BEM) is an executive body, which carries out and coordinates all student activities in the faculty of fisheries and marine sciences. The activities carried out by FPIK students must refer to the 3 (three) sub-divisions as presented in Figure 6.1. In order to carry out these responsibilities, the Student Executive Board organizes the following organizations:

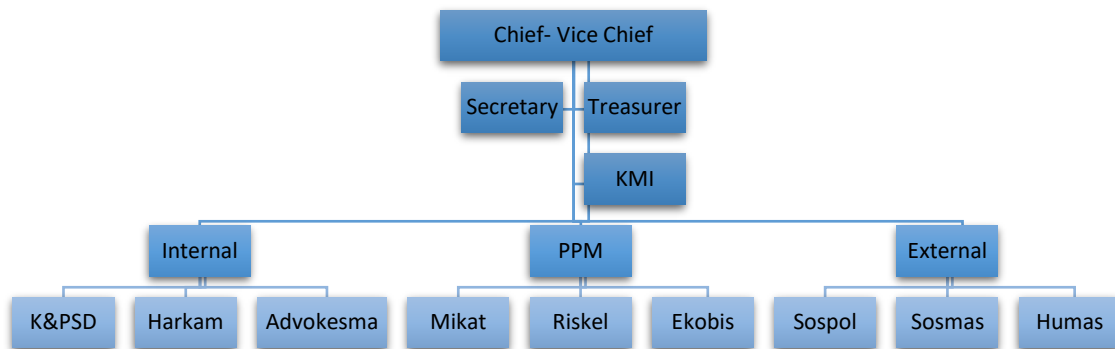


Figure 6.4. Organizational Structure of Student Executive Board (BEM) Faculty of Fisheries and Marine Sciences Universitas Diponegoro.

Description:

- KMI : Information Media Office
- PPM : Student Potential Development
- K&PSDM : Organization and Student Resource Development
- Advokesma : Student Advocacy and Welfare
- Mikat : Interests and Talents
- Ecobis : Economy Business
- Sospol : Social Politics
- Humas : Public Relations
- Sosmas : Social Community
- Harkam : Harmonization of Campus
- Riskel : Research and Science

6.1 SUB DIVISION OF REASONING AND SCIENTIFIC DEVELOPMENT

College graduates are required to possess academic knowledge, thinking skills, management skills, and communication skills. Lacking one of the four skills can lead to a decrease in the quality of graduates. Synergism will be reflected through the graduate's ability in the pace of finding solutions to problems they encountered. The behaviors and thoughts shown by the graduates will be constructive realism, which means creative (unique and useful) and can be realized. The ability to think and act creatively can essentially be done by every human being especially those with a privilege of pursuing higher education. Creativity is the integrative incarnation of three main factors in human beings, namely: minds (cognitive), feelings (affective), and skills (psychomotor). In the mind factor there are imagination, perception and reasoning. The feeling factor consists of emotion, aesthetics and harmonization. While the skill factor contains talent, physiology and experience. Therefore, in order to prepare the students in achieving the creative level, the three factors are strived to be optimal in an activity called Student Creativity Program (PKM).

PKM was launched by the Directorate General of Higher Education in 2001, which is an integration and metamorphosis of various types of student competitions in the field of reasoning or scientific work existed at the time.

PKM consists of 2 major categories, namely:

The first category, proposal-based PKM, consists of 5 PKM:

1. PKM-Research (PKM-P),
2. PKM-Entrepreneurship (PKM-K),
3. PKM-Community Service (PKM-M),
4. PKM- Technology Application (PKM-T), and
5. PKM-Karsa Cipta (PKM-KC).

The second category, scientific articles-based PKM, namely:

1. PKM-Scientific Articles (PKM-AI) and
2. PKM- Written Ideas (PKM-GT).

Introduced in 2016, PKM is managed under the Directorate General of Learning and Student Affairs.

1. Objectives of PKM

PKM generally aims to:

- a. Improve a creative, innovative, visionary, solutive and independent academic climate.
- b. Improve the quality of students in Higher Education so that they are able to be community members with academic and / or professional abilities that can implement, develop and disseminate science, technology and / or arts, and enrich the national culture in the future.

PKM covers 7 (seven) areas, and each of them has a specific purpose.

2. General Characteristics of PKM Area

Each type of PKM activity has a different mission and technical guidance implementation. The difference is shown through the characteristics of each PKM as presented in Table 6.1.

Table 6.1. General Characteristics of each PKM Area

PKM Type	General Explanation
PKM-P	<p>Is a research program intended to be able to answer a variety of scientific problems. This program is categorized into research in the field of Exact science (PKM-PE) and Social Humanities (PKM-SH).</p> <p>PKM-PE is a research program intended to be able to answer a variety of problems related to the current issues in the exact sciences, such as identifying the determining factors of product quality, inventory or exploration of resources, modification of products, identification and testing the efficacy of natural materials chemical compounds.</p> <p>PKM-SH is a research program to solve social humanities problems, including street children's health surveys, regional literacy learning methods of the elementary school students, learning methods development, the economic growth rate in the craft centers, psychological, culture, and art problems that color the community</p>
PKM-K	<p>It is a program of student skills development in entrepreneurship and is profit-oriented. The resulting business commodity can be in the form of goods or services which become the basic capital of entrepreneurial students and entering the market. Therefore, the main entrepreneurial actors in this case are students, not the community, or other partners.</p>
PKM-M	<p>It is a program of science, technology and art implementation in an effort to improve performance, build business skills, conduct structuring and improvement of the environment, strengthen the community institutions, do a socialization of rational drug use, provide introduction and understanding of customary law aspects, to cure illiteracy and others for the community both formal and non-formal, which is currently considered less productive. A written commitment to cooperate with the community component that will be assisted / become a target audience is required in this program proposal. PKM-M partners are non-profit</p>

PKM-T	<p>Is a technology assistance program (quality of raw materials, prototypes, models, equipment or production processes, waste treatment, quality assurance systems, packaging and others) or management (quality improvement of human resources performance, marketing, bookkeeping, business status, IPR and others) or others for micro or small scale (home industry, small traders or cooperatives), medium or even large-scale industries, which concerns the public interests in accordance with the needs of prospective program partners. The program partners referred to in this case are profit-oriented community groups, for example: merchants, maternity clinics, service providers and so on.</p> <p>PKM-T requires students to exchange ideas with partners beforehand, since PKM-T products are solution to the priority problem of the partner.</p>
PKM-KC	<p>Is a creation program based on student initiatives and reasoning, is constructive and produces a system, design, model / goods or prototypes and the like. The copyrighted work may not yet provide direct usefulness value for other parties.</p>
PKM-AI	<p>Is a scientific article writing program that is sourced from the results of student group activities in the field of education, research or community service (e.g., case studies, field practice, KKN, PKM, internship).</p>
PKM-GT	<p>Is ideas or visionary ideas writing program of student groups, in the form of a concept that contains a solutive strategy on a regional or even national issue. The ideas written can refer to the actual issues that exist in society and require long-term systemic solutions based on the work of intelligent and implementative thinking.</p>

All of the above programs require students' creative ideas as one of the main assessment elements.

3. PKM Activity Flow

In summary, the initial flow of the 7 (seven) areas of PKM and its output can be seen in Figure 6.4.

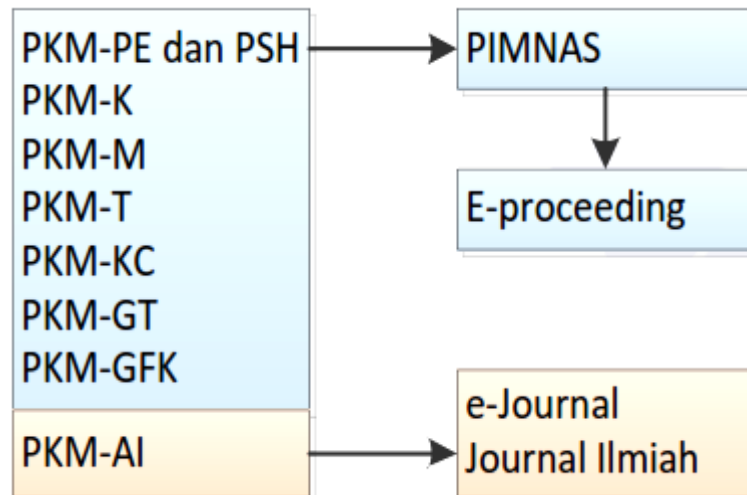


Figure 6.4. PKM Areas and Output of the Activities

All areas of PKM boil down to the National Student Scientific Week (Pimnas), except PKM-AI, because PKM-AI has been in the form of scientific articles, so it is less relevant to be discussed in Pimnas.

4. Stages of PKM Activities

The stages of five areas of PKM (PKM-P, PKM-K, PKM-M, PKM-T, PKM-KC) are divided into five stages, namely:

- A. Submission of Proposal;
- B. Desk evaluation and determination of funded proposals,
- C. Implementation and reporting;
- D. Monitoring and evaluation; and
- E. PIMNAS (National Student Scientific Week).

While the stages of PKMKT (PKM-AI and PKM-GT) are divided into two stages, namely:

- A. Proposal submission and pre-evaluation of the proposed College.
- B. Desk evaluation and determination of incentive proposals

5. Evaluation of Proposals and Determination of Funded Proposals

PKM proposal evaluation is conducted in three stages, namely pre-evaluation, phase I evaluation, and phase II evaluation.

A. Pre-Evaluation

Pre-evaluation is conducted by the internal reviewer of the proposing universities by focusing on the following aspects:

- 1) Conformity of mandatory administrative requirements such as: the date-month-year of the proposal, the signature of the proposing students- academic supervisor-chief signature and the institution stamp, the signed biodata, the total and number of pages, the statement letter of the chief executive or partner for PKM-T and PKM-M, and others.
- 2) Conformity of proposal format and writing with the applicable PKM Guidelines.
- 3) Conformity of the proposed program with the selected PKM area.

Any proposal that passes the pre-evaluation must proceed to be uploaded to SIM Belmawa and will be further evaluated by the national reviewer. Universities are responsible for the correctness of data sent to the Directorate. Therefore, Universities (through Pre-Evaluation) must ensure that the data sent to the Directorate is correct and does not violate the regulations. If data discrepancies and violations of existing regulations are found, the Directorate reserves the right to cancel the proposal. Especially regarding the group membership, for example a student is found to be a chairman or member on more than two areas, then the directorate will cancel the third grant that will be received by the proposing student.

B. Phase I Evaluation

Phase I evaluation is conducted by national reviewers by focusing on the following aspects:

- 1) Conformity of mandatory administrative requirements such as: the date-month-year of the proposal, the signature of the proposing students- academic supervisor-chief signature and the institution stamp, the signed biodata, the total and number of pages, the statement letter of the chief executive or partner for PKM-T and PKM-M, and others.
- 2) Conformity of proposal format and writing with the applicable PKM Guidelines.
- 3) Conformity of the proposed program with the selected PKM area.
- 4) Proposal's creativity level which consists of aspects of the topic recurrence, and the weight of intellectual challenges.

C. Phase II Evaluation

Each proposal that passes the phase I evaluation then proceed to the phase II evaluation process. The evaluation was conducted by a national reviewer team focusing on the substance or creativity of the proposal. PKM proposals for the five

areas worthy of funding (incentives for PKMKT applicants) will be announced at SIM Belmawa and www.belmawa.ristekdikti.go.id. The determination of the funded proposal is done on the basis of the average score ranking from the two assessors.

6. Implementation and Reporting of the Activity Progress

Each team of the five PKM areas that are declared worthy of funding can immediately carry out their activities. The implementation of PKM activities must be recorded and uploaded to SIMBelmawa which at the same time can be used as a means of reporting activities. Activities that must be uploaded include *logbooks*, progress reports supplemented by the use of funds, supporting evidence of PKM implementation results (photos, videos, or other documentation). Progress reports will be assessed and become one of the assessment components of Pimnas participants.

7. Assessment of the Activities Implementation

To ensure the quality of the five areas PKM implementation, the Directorate of Student Affairs conducts an assessment of the activities implementation through monitoring and evaluation (monev). Each PKM title is assessed by 2 (two) national reviewers. In this activity assessment, each PKM team will be asked to present the progress of PKM implementation. Before the assessment, each PKM team must upload a progress report online so that it can be downloaded and assessed by the reviewers before the assessment process begins. The results of this assessment will be used as one of the bases for determining Pimnas participants. Monev organizer Universities are obliged to make a written report (form prepared by the Directorate General of Belmawa) about the implementation of the assessment (Monev) and submit it to the Directorate General of Belmawa.

8. Final Report of the Activities

Each 5-area PKM team is required to write a final report of activities and upload it. The final report of the activity is a requirement for the final disbursement of the funds and becomes one of the class assessment components in Pimnas. Teams that do not upload final reports until the due date are not considered Pimnas participants.

6.2 SUB-DIVISION OF INTEREST AND TALENT

At the university and faculty level, there are various Student Activity Units (UKK/UKM) that generally accommodate and develop organizational, spiritual, sports, martial arts, arts, green peace, Scouts, Red Cross, Menwa, and scientific/research activities (areas of interest).

At the faculty level, there are 2 student associations, namely the Student Executive Board (BEM) and the Student Senate (SM), and the UKK in the Faculty of Fisheries

and Marine Sciences. The names of student associations at the faculty and department level in the Faculty of Fisheries and Marine are presented in Table 6.2.

Table 6.2. The name of the student associations in the Faculty of Fisheries and Marine Sciences, Universitas Diponegoro.

No.	Association/UKK	Level
1	Student Senate	faculty
2	Bem	faculty
3	Ncr	faculty
4	Mifres	faculty
5	Al-Bahrain	faculty
6	Manfish	faculty
7	PMKK	faculty
8	PRMK	faculty
9	register	faculty
10	Seaweed	faculty
11	UUHP	faculty
12	FARMASea	faculty
13	LPM Warta Mahaprika	faculty
14	Palaka	faculty
15	KeSEMaT	faculty
16	VOPI	faculty
17	ISMAPI	faculty
18	Basketball	faculty
19	HMD	a. HMIK b. Himaose c. Himasaka d. Himadepta e. Himakua f. Himatekpi
20	Study Group	a. SeaCrest b. Mdc c. Fish d. Kecebonk e. KSP f. Redfish g. KSA h. Iwakkali i. Karagenan

At the department level, there is a Departmental Student Association (HMD), so that there are 6 (six) department-level associations. In each department, there are study groups focusing on activities to improve the competence of students in accordance with their courses. In preparing student cadres to be able to carry out the activities, run the organization wheel of or even interact with national and international institutions, LKMM training is prepared for the students. LKMM (Student Management Skills Training) aims to make the students:

1. Possess management skill that is commensurate with their respective level of responsibility.
2. Possess a sense of responsibility, self-reliance and entrepreneurship as a result of the ability to organize.
3. Possess and be able to develop an achievement-oriented attitude.
4. Be able to apply and develop their abilities to think scientifically in organizational practice.
5. Be able to implement their awareness of the state and their love for the nation and the country and in the organization.

LKMM is divided into 4 (four) stages / levels as presented in Table 6.3.

Table 6.3. Levels in Student Management Skills Training

No	Level	Nature/Participant	Goal	Qty Hours
1	Pre-Basic	All of the Freshmen	Development of insights and scientific properties Personal management	14
2	Basic	Optional (II) (Dept, Fac)	Activity Management	20
3	Medium	Optional (IV) (Univ, Reg)	Organization Management	32
4	Advanced	Optional (VI) (Reg, Nas)	Public Opinion Management	36

Students of Faculty of Fisheries and Marine Science have been actively involved in various activities, both national and international scale activities. Some of the achievements that have been achieved by fisheries and marine science students are presented in Table 6.4.

Table 6.4. Some Achievements of FPIK Students at international level

No.	Activities	Countries
1	International Student Festival In Thronheim	Norwegian
2	Join Research with Boston Univ	USA- INDONESIA
3	Coral Reef Training, Great Barrier Reef-Brisbane	Australia
4	Join Research with Int. Company Autore (In corporation amongs AUST-Germany-USA)	INA

5	Indonesian International Work Camp Netherland	INA
6	1 st Winner of Asia Pacific Alltech Young Scientist	Conducted at Thailand
7	Indonesian International Work Camp Netherland	INA
8	Indonesia 1 st Univ Lecture Tour 2008, Dr. Keith Filler (about 200 students joined with this;lecture:is simply commonsense at it best	INA Conducted at FPIK
9	Presentation of 1 st Winner of Asia Pacific Alltech Young Scientist2nd→ winner of the world at Kentucky	USA
10	Young Bayer Envoy Germany	INA
11	International Workshop on Mangrove for the Future (attended 15 countries)-Student Committee	INA
12	International 1 st Winner of Children's Calender Art MAP	USA
13	Traditional pharmacology – International Association for Agriculture Associate Science	INA - THAILAND
14	World Ocean Conference	INA
15	2010 Natural pigments Conference for SEA, Machung Research Centre for Photo (regulation) Pigments, Univ.of Machung-Malang	INA
16	Indonesia International Work Camp	Karimunjava INA
17	The Best of Awarding Night TAYO ASEAN AWARD 2016	Conducted at Cambodia
18	The Best of Presentations on Asia Future Conference	Conducted at Japan
19	Accepted Oral Presenter on International Conference On Coastal Region and Eco-Development (ICTCTRED)	INA

6.3 SUB DIVISION OF STUDENT WELFARE

National education aims to educate the nation's life and develop the whole Indonesian people. Therefore, in this sub-division, in addition to physical welfare, the spiritual welfare is also included, such as the activities in religious UKM.

Education is not only the right of the rich, but also the right of every citizen who is able to meet the academic requirements. In fact, not all parents/guardians are able to afford the higher education. Therefore, as one of the actualizations of equitable education, there is an effort to provide the granting of scholarships and waivers / exemption of tuition fees for outstanding students and scholarships for students from families with limited socioeconomic conditions.

1. Scholarship

Students of the Faculty of Fisheries and Marine Sciences who need a scholarship can apply to the Sub-Division of Student Affairs of FPIK UNDIP, by attaching the required requirements. Scholarship application can be submitted at any time without waiting for the announcement / scholarship offers, because scholarship offers usually only last a maximum of 7 (seven) days. The validity period of the scholarship varies according to the provisions of the donor party (>30 donor institutions). Generally, the registration period is valid for one semester with the possibility of being extended as long as the applicant still meets all the specified requirements.

Scholarships are generally awarded after the students have taken more than 3 (three) semesters. However, there are certain scholarships that help first-semester (freshmen) students, such as the Bidik Misi Scholarship, which is a scholarship for freshmen with high academic ability, coming from economically disadvantaged families. The requirements for the scholarship are listed as follows:

General Requirements:

1. Active student, not on academic leave or on academic suspension;
2. Not applying for or receiving scholarships from other sources;
3. Coming from economically disadvantaged families;
4. Submit a written application to the Rector through the Faculty Leader or, fill out the form provided by the donor (if any);
5. Submit a photocopy of ID Card, Student Card, Study Result Card from the first to the latest semester, the latest family card legalized by the relevant institution;
6. Legalization of Parents Income Certificate that is valid for 1 (one) semester, if the scholarship application is granted. After that period, the legalization of the letters must be renewed. Authorized institutions that are required to legalize include:
 - a. Civil Servants: photocopy of salary list in the month the scholarship application is submitted, legalized by the Head of the Office.
 - b. Pensioner: Original sheet (returned to the applicant) and a copy of the pension collection slip in the month the scholarship application is submitted.
 - c. Private employees: photocopy of the salary book in the month the scholarship application is submitted, legalized by the Chairman of the Company.
 - d. Self-employed are legalized by *Camat* (Head of District).
 - e. Certificate of incapability: Legalized by *Camat*.
- b. These requirements need to be updated every semester or when the applicant becomes a prospective recipient of a scholarship.
- c. In addition to these general requirements, certain scholarship sources require special academic achievement and other supporting documents that usually include:
 - 1) Grade Point Average of minimum 2.80

- 2) Health Certificate
- 3) Photo (color/black and white)
- 4) Certificate of Good Conduct (SKKB)
- 5) Recommendations from Faculty Leaders
- 6) Short papers related to the donor institutions; these papers may need to be written in the language of the donor institution's home country.
- 7) Pass the interview tests or psychotests held by the donor institutions.
- 8) Possess specific foreign language skills.

6.4 STUDENT CODE OF CONDUCT

1. Student Obligations

Students of Marine Science Study Program of FPIK are required to:

- a. Re-register and pay the required tuition fees, at the beginning of each semester according to the determined schedule (no tolerance for the late);
- b. Attending the lectures regularly and on time;
- c. Look neat and clean when it comes to dressing and hair styling;
- d. Be polite;
- e. Comply with the regulations and maintain the order and cleanliness of the Faculty's environment;
- f. Participate in at least one student activity (co-curricular); and
- g. Responsible for the safeguarding of faculty wares and facilities from the damage and loss.

2. Student Rights

Students of Marine Science Study Program of FPIK have the right to:

- a. Use academic freedom responsibly to learn a knowledge, in accordance with the applicable norms and morals in the academic environment;
- b. Obtain the best teaching and academic services according to their interests, talents, passions and abilities;
- c. Utilize the facilities and infrastructure in the Faculty to support the learning process;
- d. Receive supervision from the lecturers responsible for the Study Program they enrolled in the process of completing their studies;
- e. Obtain information services related to the Study Program and their learning outcomes;
- f. Obtain welfare, health and/or scholarship services in accordance with the applicable regulations;
- g. Utilize the faculty resources through student organizations to take care of welfare, interests, talents and community living systems within the campus

environment;

- h. Participate in student organization activities within the Faculty and/or University;
- i. Obtain guidance and counseling services owned by the Faculty and or University;
- j. Receive awards and or prizes for achievements, services and activities of student activities in accordance with the applicable regulations;
- k. Transfer to other universities after meeting the applicable requirements;
- l. Leave (regulated in the university academic leave rules); and
- m. Perform self-defense and receive a defense at the termination hearing if they are subject to sanctions from the Faculty / University.

3. Student Prohibition

Students of Marine Science Study Program of FPIK, both inside and outside the campus environment, are prohibited to:

- a. Commit both civil and criminal crimes;
- b. Commit an academic fraud;
- c. Carry weapons or explosives of any kind;
- d. Drink alcohol, abuse illegal drugs and do everything that concerns pornography;
- e. Gamble;
- f. Commit acts of physical or verbal violence, and commit immorality or other despicable acts;
- g. Take action and or assist in the riots;
- h. Falsify and abuse official papers;
- i. Misuse the names, emblems, and all attributes of the Faculty and University for personal and or group purposes;
- j. Use environmental facilities, faculties and universities for personal benefit without authorized permission;
- k. Tattooed, wear attributes and piercing out of the ordinary as a Central Java community;
- l. Wear sandals, slippers or sandals that resemble shoes;
- m. Wear a shirt without a collar and or sleeveless in a campus environment
- n. Be disrespectful either on or off campus;
- o. The sanction against violations of prohibition is determined by a special board formed by the Faculty and determined by the University.

4. Permitted Absence

Because students must attend a minimum of 75% at all lectures and other academic activities, the permitted absences include the following conditions:

- a. If the students do not present on campus due to planned important needs and very urgent condition;
- b. If the students do not present for one day or less, the permit is submitted to the lecturer in charge at the time of the permit by filling in the Absent Permit Form;
- c. If the students do not present due to unforeseen/sudden matters, then within three days they must submit a written notice to the Head of the Study Program or the appointed officer to handle the permit; and upon re-attendance must bring a letter from the parent/guardian stating the reason for the absence;
- d. If the students are unable to attend the course due to illness, it must be proven by a certificate of illness from the hospital doctor, submitted to the Head of the Study Program or the appointed officer, no later than one day after the re-attendance;
- e. For some reason students can apply for leave by making a written application in accordance with the applicable academic requirements;
- f. Absent from attending lectures, practicum and other academic activities due to assignments from the Faculty / University can not be categorized absent.

5. Student accountability for damage and lost of Materials, Equipment, Facilities and Infrastructure used by students

- a. Each student, individually or in groups, is responsible for the faculty's facilities and infrastructure;
- b. Each student, individually or in groups, is responsible for the materials and equipment entrusted to him;
- c. If the student receives damaged or incomplete materials/equipment, he/she is required to report immediately to the officer or lecturer concerned;
- d. Students must report immediately to the officer or lecturer concerned if he eliminates or damages the physical or function of any materials, equipment, facilities or infrastructure they used; and
- e. Students who lost or damage materials, equipment, facilities and infrastructure used are required to replace with the same specification as those they broke/lose.

6.5 Student Association Activities

Student activities that include reasoning and scientific activities, talent interests, participating in other activities of institutions outside of the faculty or university or as a delegation of faculties, universities, cities, youth, provinces or as state delegates are required to report to the faculty / university by submitting activity proposals (and reporting the results of the activities).