



DOKUMEN OF

MODULE HANDBOOK

AQUACULTURE STUDY P

1st Semester

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Mandatory courses</i>						
1.	KI 1121	English	1	1	2(2-0)	3.2
2.	KI 1134	Mathematics	1	1	3(3-0)	4.8
3.	MKU 1224	Pancasila education	1	1	2(2-0)	3.2
4.	KIBDP 1132	Water chemistry and physics	1	1	3(2-1)	4.8
5.	KIBDP 1133	Principles of processing fishery products	1	1	3(2-1)	4.8
6.	KIBDP 1334	Principles of aquatic Microbiology	1	1	3(2-1)	4.8
7.	MKU 1224	Indonesian	1	1	2(2-0)	3.2
8.	KI 1239	Principles of aquaculture	1	1	3(2-1)	4.8

MODULE HANDBOOK

Module designation	Indonesian
Semester(s) in which the module is taught	1 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	1. Small Group Discussion 2. Role-Play and Simulation
Workload (incl. Contact hours, self-study hours)	Theory (2 credits) 1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes 3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Program Learning Outcomes (PLO): PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines Course Learning Outcomes (CLO): CLO-1: Respect the diversity of cultures, views, religions, beliefs, and other original opinions or findings through aspects of language aspects and language skills CLO-1: Able to write scientific papers by applying good and correct Indonesian rules according to spelling guidelines Indonesian
Content	1. Position and Function of Indonesian 2. Variety of Languages 3. Diction 4. Effective Sentences 5. Paragraph 6. Microtext and Macro Text 7. Scientific Papers
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Akgift, Sabarti, Maedar G. Arsjad , Sakura H. Ridwan. 1994. Writing Skills Development Indonesian. Jakarta: Erlangga Publishers. 2. Arifin, E. Zaenal and S. Amran Tasai. 1989. Carefully Speaking Indonesian for Higher Education . Jakarta: PT Mediatama Sarana Perkasa. 3. Darmadi, Kaswan. 1996. Improving Writing: A Guide for College and Prospective College Students. Yogyakarta: Andi. 4. Razak, Abdul. 1990. Effective Sentences, Structure, Style, and Variety. Jakarta: PT Gramedia. 5. Suryawinata, Zuchrudin. and Imam Suyitno. 1991. Indonesian for Science & Technology. Poor: YA3. pp. 39--73. 6. Widyamartaya, A.. 1990. The Art of Brainstorming. Yogyakarta: Canisius. pp. 7--76.

MODULE HANDBOOK

Module designation	English
Semester(s) in which the module is taught	1 / First year
Person responsible for the module	English lecturer team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	1. Small Group Discussion 2. Role-Play and Simulation 3. Self-Directed Learning
Workload (incl. Contact hours, self-study hours)	Theory (2 credits) 1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes 3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to demonstrate introduction (Job interview)</p> <p>CLO-2: Able to demonstrate descriptive text through posters</p> <p>CLO-3: Mampu menganalisis present tense, present continuous, past tense dan past continuous tense</p> <p>CLO-4: Able to create and demonstrate Text procedures well</p> <p>CLO-5: Able to delegate conversations containing commands and requests</p> <p>CLO-6: Able to make Text recount well</p>
Content	1. Introduction 2. Descriptive text 3. Simple present, present continuous tense, present perfect tense 4. Procedure text 5. Command and request 6. Recount text 7. Simple past dan, past continuous tense, past perfect tense 8. Narrative text
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Atcheson H. (2001) English for design, art and multimedia 2. Betty S. (2009) Understanding and using English Grammar 4th edition. 3. Anderson, M. & Anderson, K. 1998. Text Types in English South Yarra: Macmillan Education Australia PTY Ltd. 4. Murdibjono & Murdibjono, A. 2008. Understand English. Hapless. UM Press.

MODULE HANDBOOK

Module designation	Principles of processing fishery products
Semester(s) in which the module is taught	1 / first year
Person responsible for the module	Dr. Ir. Nicodemus Dahoklory, M.Si
Lecturer	<ol style="list-style-type: none"> 1. Dr. Ir. Nicodemus Dahoklory, M.Si 2. Ir. Ridwan Tobuku, M.Si 3. Asriati Djonu, S.Pi., MP 4. Immaria Fransira, M.P
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, group presentation, project
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <ol style="list-style-type: none"> 1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes 3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes <p>Practicum (1 credit)</p> <ol style="list-style-type: none"> 1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes 2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand the concept of handling fishery products (CPL1)</p> <p>CLO-2: Able to plan and carry out activities to handle capture and aquaculture products and process fishery products (CPL2)</p>

Content	<ol style="list-style-type: none">1. Principles of handling fresh fish2. Factors affecting the quality of fresh fish3. Description of the characteristics of fresh fish4. Fresh fish handling5. Processing of fishery products6. Preservation of fishery products7. Fishery product observation techniques8. Housekeeping techniques
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Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Agustini, T. W., Fahmi, A.S., dan U. Amalia. 2009. Diversivication Fisheries Products. Badan Penerbit Universitas Diponegoro. Semarang. 2. Hadiwiyoto, S. 1993. Teknologi Pengolahan Hasil Perikanan Jilid 1. Liberty. Yogyakarta. 3. Zailanie, K. 2015. Fish Handling. Universiitas Brawiaya Press. Malang. 4. Djonu, A., Nursyam, H., & Boikh, I. L. (2021). Profil Nutrisi dan Analilis Usaha Produk Nugget Ikan Lele (<i>Clarias gariepenus</i>) pada UKM Rukun 201. Jurnal Bahari Papadak, 2(2), 212–216. 5. Djonu, A., Nursyam, H., & Yahya. (2022). Penambahan Isolat Protein Kedelai (ISP) untuk Meningkatkan Nutrisi Kamaboko Ikan Lele (<i>Clarias gariepenus</i>). Jurnal Bahari Papadak 3(1), 231–235. 6. Djonu, A., & Suleman. (2022). Karakteristik Organoleptik Kamaboko Ikan Lele (<i>Clarias gariepenus</i>) dengan Penambahan Isolat Protein Kedelai (ISP). Jurnal Bahari Papadak, 3(2), 154–157.

MODULE HANDBOOK

Module designation	Principles of aquaculture
Semester(s) in which the module is taught	1 / first year
Person responsible for the module	Dr. Ir. Yudiana Jasmanindar, M.Sc
Lecturer	Dr. Ir. Yudiana Jasmanindar, M.Sc Dr. Ir. Agnette Tjendanawangi, M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, group presentation, project
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Understand the meaning, scope, history and role of aquaculture</p> <p>CLO-2: Able to compare types of aquaculture technology and systems</p>
Content	<ol style="list-style-type: none"> 1. Definition of aquaculture, aquaculture ligkup space, and the role of aquaculture 2. History of aquaculture and future prospects of aquaculture 3. Aquatic ecosystems and aquaculture site selection 4. Biology and physiology of aquaculture species and Selection of aquaculture species 5. Cultivation system Floating nets and tancap nets 6. System oval long line and raft 7. Cultivation system of calm water ponds and rushing water pools 8. System of the integrity of the embankment and paddy fields (mina padi) 9. Fish seeding 10. Fish Enlargement

	<p>11. Water Quality and water quality management</p> <p>12. Fish pest and disease control</p>
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Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Jahncke, M. L., Spencer, E., Reilly, G. A., Martin, R. E., and Cole, E. 2002. Public, Animal, and Environmental Aquaculture Health Issues 1st ed. Wiley-onerscience. 204 p. 2. Landau, M. 1991. Introduction to Aquaculture. 1st edition. John Wiley & Sons. 464 p. 3. Lucas, J. S., Southgate, P. C., and Tucker, C. S. (Eds). 2018. Aquaculture: Farming Aquatic Animals and Plants 3rd Ed. Wiley-Blackwell. 664 p. 4. Mukti, A., T., Arief, M., and Hastuti, W. H., 2019. Textbook on principles of aquaculture. Airlangga University Press, Surabaya. 5. Pillay T.V.R. 2004. Aquaculture and Environment. 2nd ed. Wiley-Blackwell. 208 p. 6. Pillay, T.V.R. and Kutty, M.N. 2005. Aquaculture, Principles and practices. 2nd ed. Wiley-Blackwell. 640 p. 7. Schmittou, H.R., Jian, Z., and Cremer, M. C. 2004. Principles and Practicals of Pond Aquaculture Using 80:20 System. American Soybean Association.

MODULE HANDBOOK

Module designation	Water chemistry and physics
Semester(s) in which the module is taught	1 / first year
Person responsible for the module	Ir. Felix Rebhung, M.Agr., Ph.D
Lecturer	Ir. Felix Rebhung, M.Agr., Ph.D Welem Turupadang, S.Pi., M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture and concept explanation Experimental demonstration group discussion Project
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	1. Basic Aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture,</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to show and decipher the physical factors of aquatic chemistry</p> <p>CLO-2: Able to analyze, analyze physical factors of aquatic chemistry related to aquaculture</p> <p>CLO-3: Able to manage aquatic chemical physics factors to support aquatic productivity</p>

Content	<ol style="list-style-type: none"> 1. Scope of aquatic chemical physics 2. The effect of temperature on the solubility of chemical substances 3. Physical and chemical factors affecting water quality 4. Analysis of temperature, dissolved oxygen, salinity, pH, ammonia, nitrate, phosphate for aquaculture purposes 5. Water quality manipulation for pollution control 6. Eutrophication and how to control it
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Alabaster & Lloyd. 1986. Water Quality Criteria for Freshwater Fish 2. Boyd, CE. 1982. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publishing Company, 3. Odum, E.P. 1993. Fundamentals of Ecology Translator: Tjahjono Samingan. Gadjah Mada University Press. 4. Tandjung, D.S. 1995. Ecology and Environmental Sciences. Environmental Science Study Program Graduate Program Universitas Gadjah Mada Yogyakarta

MODULE HANDBOOK

Module designation	Mathematics
Semester(s) in which the module is taught	1 / First year
Person responsible for the module	Dr. Priyo Santoso, S.Pi., MP
Lecturer	Dr. Priyo Santoso, S.Pi., MP Wesly Pasaribu, S.Pi., M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	1. Small Group Discussion 2. Self-Directed Learning 3. Case study
Workload (incl. Contact hours, self-study hours)	Theory (3 credits) 1. Lecture in class 3 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 3 credits x 60 minutes x 14 meetings = 1,680 minutes 3. Self Study 3 credits x 60 minutes x 14 meetings = 1,680 minutes
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture, and provide alternative solutions when required</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to calculate aquatic mathematical number operations and solve aquatic mathematical problem solving</p> <p>CLO-2: Able to calculate area, volume, equations and inequalities in the field of aquatic mathematics</p>

Content	<ol style="list-style-type: none"> 1. Real Numeral System; Rational and irrational numbers; Operations on real numbers; Characteristic of Field 2. Inequality; Absolute value; Square Root; Square 3. Quadrilateral Coordinate System, Point Distance, Straight Line, slope of line 4. The point of intersection of the curve; Draw an equation graph 5. Definition of Function; Drawing function; Sum operation and Multiplication, Composition of Functions and Trigonometric Functions 6. Definition of Limit; Limit Theorem; Continuity of function 7. Definition of Derivative Through Limit; derivative search rules; Sinus and Cosinus derivative 8. Linear of Equations System; Form Matrix from Linear System of equations; Solution System Linear of Equations; Sigma notation Σ
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Eddy Supramono, et al., 2000, Basic Mathematics, State University MALANG - JICA Project. 2. Taufik Raman R., 2004. Basic Mathematics Revised Edition, Bandung: Imstep Jica. 3. Afidah Khairunnisa, 2014, Basic Mathematics for University, Ministry of National Education -Dikti

MODULE HANDBOOK

Module designation	Principles of aquatic microbiology
Semester(s) in which the module is taught	1 / first year
Person responsible for the module	Dr. Ir. Nicodemus Dahoklory, M.Si
Lecturer	Dr. Ir. Nicodemus Dahoklory, M.Sc Dr. Yudiana Jasmanindar, S.Pi., MP
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	1. Small Group Discussion 2. Discovery Learning 3. Self-Directed Learning 4. Case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the classification of aquatic microbes, their importance and application in everyday life</p> <p>CLO-2: Able to analyze microbial genetics and genetic engineering</p> <p>CLO-3: Able to demonstrate sterilization methods, bacterial isolation, microbial culture, microbial identification</p> <p>CLO-4: Able to design microorganism applications in the cultivation environment</p>

Content	<ol style="list-style-type: none">1. Learning contracts, Benefits of studying microbiology.2. The history of the development of microbiology.3. Groups of aquatic microorganisms4. Metabolism of microorganisms, dissimilation reactions, assimilation reactions, enzymes and microbial products5. Sterilization methods, bacterial isolation, microbial culture, microbial identification6. Pathogenic microorganisms and contaminants in fishery products and aquaculture environments7. Microorganisms as bioindicators of the quality of the aquatic environment
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Dr. Rahmi, S.Pi.,M.Si. 2021. Mikrobiologi Akuatik. Penerbit Nas Media Pustaka. Yogyakarta. 2. Burhanudin Ihsan, 2021. Fundamentals of Microbiology. Independent Scholar Human Interpreter. West Sumatra. 3. Harahap et al. 2021. Fundamentals of Microbiology and Its Application. Publisher Widina Bhakti Persada. Bandung. 4. Dr. P. Gunasekaran, 2005. Laboratory Manual in Microbiology. Department of Biology Science. Madurai Kamaraj University. Kamurai.

MODULE HANDBOOK

Module designation	Pancasila Education
Semester(s) in which the module is taught	1 / year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	1. Small Group Discussion 2. Role-Play and Simulation
Workload (incl. Contact hours, self-study hours)	Theory (2 credits) 1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes 3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Program Learning Outcomes (PLO): PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines Course Learning Outcomes (CLO): CLO-1: Understand the basic concept of Pancasila as the ideology of the Indonesian state CLO-2: Explain the role of Pancasila in shaping the character and identity of the Indonesian nation.
Content	1. Definition of Pancasila, Revitalization, Pancasila in the Study History of the Indonesian Nation 2. Pancasila in the study of the nation's history 3. Pancasila as the basis of the state 4. Pancasila as a state ideology 5. Pancasila as a philosophical system 6. Pancasila as an ethical system 7. Pancasila as a basis for the development of science
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)
Study and examination requirements	If students attend lectures (including not present due to illness or permission) >= 80% so they can join the exam Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.

Reading List	<ol style="list-style-type: none"> 1. Latif, Y. 2009. Plenary State, Actuality and Historicity of Pancasila. Gramedia, Jakarta. 2. Wisudo, B., Subkhan, E., Paat, L.F., Paat, J.P., Haryanto, Y., Djiwa, V.D. 2012. Pancasila which educated the critical literacy module for Pancasila education. Tifa Foundation, Jakarta. 3. Latif, Y. 2014. Exemplary Springs, Pancasila in Action. Mizan, Bandung. 4. Hidayat, F. 2017. Pancasila: Perspective of the Founder of the Republic of Indonesia and its Problematic. Personal Archives Publisher. 5. Sutrisno, S. 2006. PhPLOsophy and Ideology of Pancasila. AndiPublisher, Yogyakarta. 6. UIN Jakarta ICCE Team. 2003. Democracy, Human Rights and Civil Society. Prenada Media, Jakarta. 7. The 1945 Constitution results of amendments. 8. Director General of Higher Education. 2006. Pancasila Course Module Book Dirjen Dikti, Jakarta.
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2nd Semester

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Mandatory courses</i>						
1.	MKU 1223	Religious education	1	2	2(2-0)	3.2
2.	MKU 1121	Indonesia civic education	1	2	2(2-0)	3.2
3.	KI 1238	Principles of fishery	1	2	3(2-1)	4.8
4.	KIBDP 1233	Oceanography	1	2	3(2-1)	4.8
5.	KIBDP 1234	Fishery socio-economic	1	2	3(2-1)	4.8
6.	KIBDP 1235	Principles of fish genetics	1	2	3(2-1)	4.8
7.	MKP 1221	Archipelagic dry land cultivation	1	2	2(2-0)	3.2
8.	KIBDP 1439	Parasites and fish diseases	1	2	3(2-1)	4.8

MODULE HANDBOOK

Module designation	Buddhist Religious Education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Mastering the theoretical concepts of Religion and formulating in Higher Education</p> <p>CLO-2: Able to show an attitude of religious implementation independently, quality and measurable.</p>
Content	<p>1. Confidence in God Almighty</p> <p>2. The noble properties of God</p> <p>3. Values of morality and humanity</p> <p>4. Loyalty to the nation and state and support world peace, tolerance to others social and academic relations.</p>
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
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Reading List	<p>1. Directorate General of Learning and Student Affairs. 2016. Buddhist Religious Education Textbook for Higher Education. Directorate General of Learning and Student Affairs of the Ministry of Research, Technology and Higher Education, Jakarta. 260 p.</p>
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MODULE HANDBOOK

Module designation	Hindu Religious Education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Mastering the theoretical concepts of Religion and formulating in Higher Education</p> <p>CLO-2: Able to show an attitude of religious implementation independently, quality and measurable.</p>
Content	<p>1. God's teachings</p> <p>2. Morality</p> <p>3. The universe</p> <p>4. Motivation to have noble character, based on Universal Hindu values, teach work ethics, concepts Clear thinking, commitment, and integrity.</p>
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>

Reading List	<ol style="list-style-type: none">1. Directorate General of Learning and Student Affairs. 2016. Hindu Religious Education Textbook for Higher Education. Directorate General of Learning and Student Affairs of the Ministry of Research, Technology and Higher Education, Jakarta. 302 p.2. Directorate General of Hindu Community Guidance Ministry of Religion of the Republic of Indonesia. 2012. Wariga Main Material. Module 1-6, Jakarta.
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MODULE HANDBOOK

Module designation	Islamic education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain theoretical concepts about PAI (CPL4);</p> <p>CLO-2: Able to analyze PAI material and solve PAI questions in College (CPL4);</p> <p>CLO-3: Able to understand PAI material independently, quality and measurable (CPL1)</p> <p>CLO-4: Able to show the attitude of PAI implementation in accordance with Islamic teachings properly and correctly (CPL1);</p>
Content	<ol style="list-style-type: none"> 1. Islamic Concept in Higher Education 2. How man has God 3. How religion guarantees happiness 4. Faith, Islam and Ihsan 5. Paradigm Quran 6. Grounding Islam in Indonesia 7. Building unity in diversity 8. Islam faces modernization challenges 9. The contribution of Islam in world civilization 10. Roles and functions of campus mosques
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Anis, M. 2013. Islam and Democracy, Regional Perspective Al-Faqih. Mizan Publisher, Bandung. 2. Shihab, Q. 2014. Miracles of the Qur'an. Mizan Publisher, Bandung. 3. The Ministry of Religion's Author Team. 2009. Development The personality of Islamic religious education at the college General high. Director General of Islamic Higher Education, Jakarta. 4. Salahudin, A. 2013. Character Education, Based Education Religion and culture. Pustaka Setia, Bandung. 5. Congratulations, K. 2012. Morals of Sufism, Efforts to Achieve The smoothness of mind and divine closeness. Kalam noble, Jakarta.

MODULE HANDBOOK

Module designation	Catholic Christian Religious Education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain theoretical concepts about PAI (CPL4);</p> <p>CLO-2: Able to analyze PAI material and solve PAI questions in College (CPL4);</p> <p>CLO-3: Able to understand PAI material independently, quality and measurable (CPL1)</p> <p>CLO-4: Able to show the attitude of PAI implementation in accordance with Islamic teachings properly and correctly (CPL1);</p>
Content	<ol style="list-style-type: none"> 1. Human Nature and Dimensions 2. God Almighty 3. Jesus Christ always accountable his faith in church life and society 4. Ability to act in accordance with the morals of Catholic religion as well as having the ability to apply science, mathematics and technology to solve problems according to the rules scientific and morality.
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	1. Ende. Vatican Council Document II. Nusa Indah, Jakarta.

MODULE HANDBOOK

Module designation	Protestant Christian Religious Education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Mastering the theoretical concepts of Religion and formulating in Higher Education</p> <p>CLO-2: Able to show an attitude of religious implementation independently, quality and measurable.</p>
Content	<p>This course explains how to make religion as a source of values and guidelines in the development of Christian personality that upholds human dignity and ranking. This course is presented based on the KBK (Competency Based Curriculum) component, which consists of competencies, substance of study, substances and the entire learning process including methodology and evaluation. The substance of the study is a topic that has been determined by the Directorate General (Ditjen) of Higher Education through Decree No.38/Dikti/Kep/2002.</p>
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	1. Lai. 1990. Bible New Translation, Al-Kitab Institution.

MODULE HANDBOOK

Module designation	Archipelagic dry land cultivation
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Dr. Priyo Santoso, S.Pi., M.P
Lecture	Dr. Priyo Santoso, S.Pi., M.P Ir Ridwan Tobuku, M.Sc
Language	Indonesian
Relation to curriculum	University study course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to show the condition and potential of the archipelago's dryland areas</p> <p>CLO-2: Able to display community culture and the wealth of dryland resources of the archipelago</p> <p>CLO-3: Able to analyze technology for the development of archipelagic dryland areas</p> <p>CLO-4: Able to show quality and measurable independent performance in the application of marine and fisheries-based industry and tourism</p>

Content	<ol style="list-style-type: none"> 1. Definition, Scope and Characteristics of Dry Land Areas Island; 2. Culture of the Community in the Dry Land Areas 3. Potential resources of the islands dry land area 4. Ecological and Economic Role of Land Resources dry islands 5. Advantages of Kompatarif Islands Dry Land Areas 6. Islands dry land resource management technology 7. Development of the Fisheries and Maritime Industry in the Region Islands dry land 8. Development of ecotourism and agro -tourism in land areasdry islands
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Benu FL and Mudita IW, 2013. Revisitation of Dry Land. Light discussion about dry land and land agriculture Dry. JP II Publishing House, Jakarta. 2. Christanty L, Moosa MK, Soekarno and Abrar M, 2008. Coastal and marine ecosystems: Potential and friendly use Environment. Coremap LIPI, Jakarta. 3. Bustami DA, Christanty L and Imron M, 2008. Ecosystem Coastal and sea: threats, disasters and management. Coremap LIPI, Jakarta 4. Sallata MK, Nugroho Hysk. 2019. Management of Dry Land. Andi Publisher. 5. KKP, 2019. Future Sea of the Nation: Sovereignty, Sustainability, prosperity. KKP RI, Jakarta

MODULE HANDBOOK

Module designation	Principles of fish genetics
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Sc
Lecturer	Dr. Ir. Yulianus Linggi, M.Si Asriati Djonu, S.Pi., MP
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, group discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to decipher the basics of fish farming genetics;</p> <p>CLO-2: Able to analyze basic concepts and apply genetic techniques and fish breeding in aquaculture activities</p>

Content	<ol style="list-style-type: none">1. The scope of the basics of fish genetics2. DNA and genes3. DNA replication and gene expression4. Mendel Law in Fish Genetics5. DNA isolation6. Chromosomes7. Cell division8. Gametogenesis9. Fertilization10. Main selection application11. Case Study of Fish Genetics
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Genetika Dan Reproduksi Ikan oleh Dr. Ir. Gusrina, M.Si 2. Biotechnology and Genetics in Fisheries and Aquaculture oleh A.R. Beaumont and K. Hoare 3. Nugroho, E. 2018. Aplikasi Ilmu Genetika Dalam Program Pemuliaan Di Perikanan Air Tawar. Jakarta. KKP-BRSDM 4. Purdom, C. E. 1993. Genetic and Fish Breeding. Chapman & Hall 2-6 Boundary Row. London 5. Marks, K. K., Rathipriya, A and A. K. Pandian. 2021. Fish genetic and breeding. Delhi. Narendra

MODULE HANDBOOK

Module designation	Indonesia civic education
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	University compulsory course team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment and group presentation
Workload (incl. Contact hours, self-study hours)	Lecture in class 100 minutes, 14 times in class /semester
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to analyze contextual problems Civic Education develops a positive attitude, and displays behavior that supports insight and spirit of nationhood, love of the motherland, democracy, legal awareness, respect for religion and participation in building the nation based on Pancasila and the Constitution of the Republic of Indonesia Year 1945</p>
Content	<ol style="list-style-type: none"> 1. Scope of Citizenship Education 2. National Identity 3. State and Constitution 4. Relations between citizens and countries 5. Democration in Indonesia 6. State and Human Law 7. Geopolitics of Indonesia 8. Geostrategic Indonesia 9. National Integration
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission)> = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>

Reading List	<ol style="list-style-type: none">1. Adib, M., Santoso, L., and Triharso, A. 2013. Pancasila and Citizenship Education: An Introduction Building Nation Character. Airlangga University Press, Surabaya.2. Kaelan and Ahmad, Z. 2010. Citizenship Education for Higher Education. Paradigm, Yogyakarta.3. Sumarsono. 2005. Citizenship Education. Gramedia Pustaka, Indonesia.4. Srijanti, A. R. 2009. Citizenship Education in Higher Education Develops State Certificate Ethics. Salemba Empat, Jakarta.5. Subhan, S. 2011. Civil Education (Civil Education) Political Education, Nationalism and Democracy. Focus Media, Bandung.6. Winarno. 2013. New Paradigm of Citizenship Education Guidelines for Lecture at the third edition of Higher Education. Bumi Aksara, Surakarta.
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MODULE HANDBOOK

Module designation	Oceanography
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si
Lecturer	Prof. Dr. Ir. Marcelien DJ. RATOE OEDJOE, M.Sc Welem Turupadang, S.Pi., M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, group presentation, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <ol style="list-style-type: none"> 1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes 3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes <p>Practicum (1 credit)</p> <ol style="list-style-type: none"> 1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes 2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the physical properties of seawater, energy transfer in the sea, the properties of waves and tides, marine biological components (plankton, benthos, nekton and microbes), primary productivity, food chains, symbiosis and adaptation as well as marine ecosystems.</p>

Content	<ol style="list-style-type: none"> 1. The main nature and complexity of the sea and the Indonesian sea area 2. Sea physical properties 3. Topography 4. Tidal 5. Current 6. waves 7. brightness 8. Temperature 9. Salinity 10. Nitrogen 11. dissolved oxygen 12. Carbondioxide 13. Phosphate 14. Ph 15. Alkalinity 16. Organic material 17. Sea Pollution and Oceanographic Relations in the Field Aquaculture, arrest and processing.
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Dijkstra, H. A. 2008. Dynamical Oceanography. (1st ed.). S Pinger. 407 p. 2. Garrison, T. and Ellis, R. 2015. Oceanography: An Invitation to Marine Science. Brooks Cole Publ. 640 p. 3. Gibson, R. N., Atkinson, R.J.A., and Gordon, J.D.M. (Eds). 2006. Oceanography and Marine Biology: An Annual Review. Vol. 44. (1st ed.). CRC Press. 536 p. 4. Hutabarat, S. and Evans, S.M. 1985. Introduction to Oceanography. UI Press, Jakarta. 159 p. 5. Miller, C.B. and P. A. Wheeler. 2004. Biological Oceanography. (2nd ed.). Wiley-Blackwell Publ. USA. 474 p. 6. Stewart, R. H. 2008. Introduction to Physical Oceanography. Department of Oceanography Texas A&M University. 351 p. 7. Thurman H. V., and Trujillo, A.P. 2003. Introductory Oceanography. (10th ed.). Person Prentice Hall. 624 p.

MODULE HANDBOOK

Module designation	Parasites and fish disease
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Dr. Yudiana Jasmanindar, S.Pi.,M.Si
Lecturer	Dr. Yudiana Jasmanindar, S.Pi.,M.Si Wesly Pasaribu, S.Pi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Basics of Aquatic Microbiology
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand the concepts and problems of diseases in fish</p> <p>CLO-2: Able to diagnose diseases that attack fish with the correct stages</p> <p>CLO-3: Able to treat fish attacked by disease</p>

Content	<ol style="list-style-type: none"> 1. Disease Problems in Fish Farming, 2. Immune System in Fish 3. parasitic diseases of fish, 4. Fungal disease, 5. Bacterial diseases, 6. Viral diseases, 7. Environmental diseases of Fish, 8. Diseases due to nutrition in Fish, 9. Diagnose disease Fish, 10. Principles of treatment of fish diseases. 11. Fish disease control with Medicinal plants
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Akbar J and S. Fran. 2013. Fish Health Management. P3AI, Lambung Mangkurat University, Banjarmasin. 2. Beverley-Burton M. 1994. Monogenean Diseases. Departement of Zoology College of Biological Science University of Guelph. Guelph, Ontario N1G 2W1 Canada. 1-12 3. Bielecki A., S. Cios, J.M. Cichocka and J. Pakulnicka. 2012. <i>Piscicola siddalli</i> sp., a leech Species from the United Kingdom (Clitellata: Hirudinida: Piscicolidae). Comparative Parasitology, 79(2):219-230. 4. Cruz-Lacierda, E. R. (2010). Parasitic diseases and pests. In G. D. Lio-Po & Y. Inui (Eds.), Health Management in Aquaculture (2nd ed., pp. 10-38). Tigbauan, PLOPLO, Philippines: Aquaculture Department, Southeast Asian Fisheries Development Center. 5. Conroy D.A and R.I. Herman. Textbook of Fish Diseases. Published by Gustav Fischer verlag, Jena, DDR. 6. Everst L.A. M. 2010. Aspect of the Reproductive Biology of <i>Argulus japonicus</i> and Morfology of <i>Argulus caregoni</i> from Malaysia, University of Johanneburg South Africa. 7. Gong J and W. Song. Descriptiopl n of a new marine Cyrtophorid ciliata, <i>Brooklynella sinensis</i> n. sp. From the China Sea with defenition of the genus <i>Brooklynella</i> (Protozoa, Ciliophora, Cyrtophorida). Zootaxa 1113:31-49. 8. Grabda, J. 1991. Marine Fish parasitology. VCH, New York. 9. Handajani, H and S.Samsundari. 2005. Fish Parasites and Diseases. Publisher University of Muhammadiyah, Malang. 10. Hardy, H. E. 2015. Parasit Biota Akuatik. Mulawarman University Press. 11. Ihwan, M.Z., Shuhaimi, A.D., Ambak, M.A., Wahidah, W., Surzanne, A. Fakhrudin, M.I., Syahnom, M., Azmie, G. and Marina, H. 2016. Report on Marine Capsalid Monogenean parasites in Cage cultured of crimson Snapper, <i>Lutjanus erythropterus</i> at johore Malaysia. Research Journal of Fisheries and HydroBiology vol 11 no 8 : 1-7 12. Kabata. 1979. Parasitic Copepoda of British Fishes. Ray Society. London. 13. Kurniawan, A. 2012. Aquatic Diseases. UBB Press Publisher, Pangkalpinang 14. Koesharyani, I., D. Roza, K.Mahardika, F.J. Zafran. 2001. Manual for fish disease Diagnosis, Mareni Fish and Crustacean disesases in Indonesia. Gondol Research Institut for mariculture and Japan

	<p>Internasional Conperation Agency.</p> <p>15. Lewisch, E., H. Sollman, P. Schmid, M. El-Malbouli. 2015. Morfological and moleculer characterization of <i>Thelohanellus hoffmanni</i> sp. nov. (Myxozoa) Infecting Goldfish <i>Carassius auratus auratus</i>. <i>Diseases of Aquatic Organisme</i>, Vol 115:37-46, 2015.</p> <p>16. Martins M. L., L. Cardoso, N. Marchiori and A. B. De Padua. 2015. Protozoan Infections in farmed fish from Brazil : Diagnosa and Pathogenesis</p>
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MODULE HANDBOOK

Module designation	Principles of fishery
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Dr. Sunadji, MP
Lecturer	Dr. Sunadji, MP Dr. Yudiana Jasmanindar, M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, assessment, group presentation, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to classify fishing gear</p> <p>CLO-2: Able to formulate the scope of capture fisheries and apply capture fisheries in aquaculture</p>
Content	<ol style="list-style-type: none"> 1. Basis of Maritime Affairs and Fisheries 2. Panca/Sapta Fisheries Business 3. Commerce/Fisheries Business Management 4. Fishing tools and methods 5. Commerce/Fisheries Business Management 6. Important Role of Fisheries, Environmental Preservation and ecotourism 7. Freshwater Cultivation, Brackish Water Cultivation, Cultivation sea water 8. Traditional Processing Methods 9. Modern Processing Methods (Food) 10. Modern Processing Methods (Non -Food)

Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)
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Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. FAO. (2012). Code of Conduct for Responsible Fisheries. Food and Agriculture Organization of the United Nations. 2. Dykstra, C. R. (2016). Fisheries Ecology and Management. Oxford University Press. 3. Caddy, J. F. (1999). Marine catchment basin effects versus impacts of fisheries on semi-enclosed seas. Reviews in Fish Biology and Fisheries, 9(3), 311-356. 4. Husain, H., & Samidjan, I. (2012). Catch Fishing at Sea. Deepublish Publishers. 5. Harahap, A. H., & Ambo-Rappe, R. (2016). Basic fishing. Bumi Aksara Publishers.

MODULE HANDBOOK

Module designation	Fishery socio-economic
Semester(s) in which the module is taught	2 / first year
Person responsible for the module	Dr. Ir. Sunadji, MP
Lecturer	Dr. Ir. Sunadji, MP Dr. Francy Ch. Liufeto, S.Pi.,M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discovery learning, group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture, and provide alternative solutions when required</p> <p>PLO-2: Graduates should have an excellent communication and interpersonal skills that enable them to collaborate effectively with people from diverse backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to formulate the concept of the social policy of fishery economy</p> <p>CLO-2: Able to analyze and apply socio-economic science in fisheries activities</p>

Content	<ol style="list-style-type: none"> 1. Understanding Economics, and Economics 2. Scope of Economics 3. Consumer Behavior Theory 4. Demand theory 5. The theory of supply 6. Price balance 7. Elasticity of demand and supply 8. Producer behavior 9. Production theory in company activities 10. Aggregate Demand 11. Aggregate Demand 12. Consumption, Savings
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 70% (including 25% soft skills, 15% assignment, 30% mid-test and 30% final test) and 30% practicum. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Ekonomi Perikanan: Teori, Kebijakan dan Peneglolaan (Akhmad Fauzi) 2. Ekonomi Peikanan: Kajian Pemberdayaan Masyarakat Pesisir Berbasis Teknologi Tepat Guna

3rd Semester

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Mandatory courses</i>						
1.	KIBDP 1232	Biochemistry	2	3	3(2-1)	4.8
2.	KIBDP 15314	Fish health management	2	3	3(2-1)	4.8
3.	KI 13314	Ichthyology	2	3	3(2-1)	4.8
4.	KI 13315	Aquatic ecology	2	3	3(2-1)	4.8
5.	KIBDP 1333	Physiology of aquatic organisms	2	3	3(2-1)	4.8
6.	KIBDP 1335	Aquaculture data and information processing	2	3	3(2-1)	4.8
7.	KIBDP 15312	Water quality management	2	3	3(2-1)	4.8

MODULE HANDBOOK

Module designation	Biochemistry
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si
Lecturer	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si Ir. Felix Rebhung, M.Agr.,Ph.D
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand biochemical processes in the body and its metabolism</p> <p>CLO-2: Able to determine nutritional needs based on commodities, life cycle and habitat</p>

Content	<ol style="list-style-type: none">1. The role of biochemistry in the life of living things2. The role of carbohydrates, lipids, proteins, nucleic acids, enzymes, coenzymes, cell structure and function3. Carbohydrate metabolism4. Lipid metabolism5. Metabolism of protein and amino acids6. Hormone metabolism7. Carbohydrate anabolism8. Protein Anabolism9. Lipid anabolism.
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Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 70% (including 25% soft skills, 15% assignment, 30% mid-test and 30% final test) and 30% practicum. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Garret, R.H., and Grisham, C.M. 1999. Biochemistry (2 ed). Cengage Publ. 2. Murray, R. K., Bender, D.A., Botham, K.M., Kennelly, P. J., Rodwell, V. W., and Weil, P. A. 2008. Harper's Illustrated Biochemistry. 28th ed. McGraw Hill Med. 704 p. 3. Nelson, D. L., and Michael M. Cox, M. M. 2004. Lehniger's Principles of Biochemistry (7th ed.) W.H Freeman PUBL. 1312 p. 4. Pratt C. W and Cornely, K. 2017. Essential BioChemistry. 4th ed. Wiley-Blackwell Publ. 744 p. 5. Seager, S.L. and Slabaugh, M.R. 2014. Chemistry for Today: General, organic, and biochemistry (8th ed). Brooks/Cole, USA.

MODULE HANDBOOK

Module designation	Aquatic ecology
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Dr. Ir. Nicodemus Dahoklory, M.Si
Lecturer	Dr. Ir. Nicodemus Dahoklory, M.Si Dr. Yudiana Jasmindar, S.Pi., M.Si Welem L. Turupadang, S.Pi.,G.Dip.Sc., M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, group presentation, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain about marine ecosystems, estuaries, rivers and lakes. The interaction between abiotic and biotic factors in ecosystems, limiting factors, and the impact of human activities.</p> <p>CLO-2: Provide arguments for flooded aquatic ecosystems including introduction, purpose, benefits, station determination</p>

Content	<ol style="list-style-type: none">1. The reciprocal relationship between living things and biotic and abiotic environment2. Principle and Definition of Ecology3. Ecosystem concept4. Limiting factors5. energy flow6. Biogeochemical cycle7. Energy Dynamics8. Changes in the population and community of freshwater, estuaries and Sea.
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Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Barnes, R. S. K (Ed). 2009. Fundamentals of Aquatic Ecology. 2nd ed. Wiley-Blackwell Publ. 280 p. 2. Costa-Pierce (Ed). 2008. Ecological Acuaculture: The Evolution of the Blue Revolution. Wiley-Blackwell Publ. 400 p. 3. Hall, C.A.S and Day, J.W. 1997. Ecosystem modeling in Theory and Practice; An Introduction with Case Histories. John Wiley and Sons, New York. 4. Maitland, P. S., and Morgan, N. C. 1997. Conservation Management of Freshwater Habitats: Lakes, River, and Wetlands. (1st ed). Springer Netherlands. 5. Smith, R. L. 1990. Ecology and Field Biology. Harper Collin Publisher. New York.

MODULE HANDBOOK

Module designation	Physiology of aquatic organisms
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Dr. Ir. Agnette Tjendanawangi, M.Si
Lecturer	Dr. Ir. Agnette Tjendanawangi, M.Si Dr. Priyo Santoso, S.Pi, MP
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, Discussions and Case Study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the physiological system of fish</p> <p>CLO-2: Able to display and analyze the mechanism of action of physiological organs of aquatic organisms</p>
Content	<p>1. Concept of Aquatic Animal Physiology;</p> <p>2. Sensing system and nervousness;</p> <p>3. Endocrine system;</p> <p>4. Osmoregulation and blood circulation system;</p> <p>5. Respiratory and digestive system;</p> <p>6. Metabolic system;</p> <p>7. Reproductive system.</p>
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Evans, D. H., and Klaiborne, J.B. 2006. The Physiology of Fishes. (3rd ed). CRC Press. USA. 2. Evans, D.H., Klaiborne, J. B., and Currie, S. 2014. The Physiology of Fishes Founts Fourth Edition. Taylor and Francis Group London. New York. 482 p. 3. Farrell, A. P. 2006. The Physiology of Tropical Fishes. Elsevier London. New York. 642 p. 4. Fujaya, Y. 2004. Fish Physiology (Basic Technical Development Fishery). Rineka Cipta, Jakarta 5. Hoar, W. S. and Randall, D. J. 1988. Fish Physiology. Academic Press Inc., London.

MODULE HANDBOOK

Module designation	Ichtiology
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Ir. Ridwan Tobuku, M.Sc
Lecturer	Ir. Ridwan Tobuku, M.Si Asriati Djonu, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, group presentation, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Modul objectives /intended learning Outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to decompose morphology, integumentary system, veins, skeleton, digestion, respiratory, blood circulation, reproduction, nerves and hormones in fish</p> <p>CLO-2: Able to identify fish based on morphology, integumentary system, meat veins, skeleton, digestion, respiratory, circulatory, reproductive, nervous and hormonal</p>
Content	<p>1. Introduction</p> <p>2. Fish classification</p> <p>3. Integument system</p> <p>4. Muscularis system</p> <p>5. Skletal system</p> <p>6. Respiratory System</p> <p>7. Genital System.</p>

Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Allen, C.J. 2005. Grilk's Student Animal Life Resource: Fishes. Thomson Gale. Farmington Hills, Bernhard, Canada. 2. Baldiseroto, B., Mancera, J.M., and Kapoor, B. G. 2007. Fish Osmoregulation. Science Publisher, New Hampshire, USA. 3. Bone, Q. and Moore, R. Biology of Fishes. 2008. 3th ed. Taylor and Francis Group, New York. 497 p. 4. Vans, D.H., Klaiborne, J. B. and Currie, S. (Eds). 2013. The Physiology of Fishes. 4th ed. CRC Press. 491 p. 5. Asin, M. 1992. Vertebrate Zoolology. Wijaya Sinar Publisher, Surabaya. 6. Lagler, K. F., Bardach, J. E., Miller, R. R., and May Passino, D. R. 2011. Ichthyology. 2nd ed. Wiley India PVT. Ltd. 7. Moyle, P.B. and Cech, J.J. 2004. Fishes: An Introduction to Ichthyology. Pearson Benjamin Cummings, San Francisco. 745 p. 8. Piska R. S. and Naik J. K. 2006. Introduction to Fish Biology and Ecology. Osmania University. 353 p. 9. Saanin, H. 1995. Taxonomy and Key to Identify Fish (1 and 2). Binacipta, Jakarta. 10. Sjafai, D. S., Rahardjo, M. F., Affandi, R., Brojo, M. and Sulistiono. 1992. Fish Physiology II. Fish reproduction. Postgraduate IPB, Bogor. 11. Triastuti, J. and L. Sulmartiwi, L. 2012. ICHTYOLOGY Textbook: External anatomy. PT. Revka Petra Media, Surabaya. 76 p. 12. Triastuti, J. and Sulmartiwi, L. 2013. Ichtyology Textbook: Internal anatomy. PT. Revka Petra Media, Surabaya. 155 p.

MODULE HANDBOOK

Module designation	Fish health management
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Dr. Yuliana Salosso, S.Pi.MP
Lecturer	Dr. Yuliana Salosso, S.Pi.MP Dr. Yuudiana Jasmanindar, S.Pi.M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, group discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	<p>1. Parasites and Fish Diseases</p> <p>2. Fundamentals of Aquatic Microbiology</p>
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the importance of Fish Health management and able to apply the correct Fish Farming Techniques so that disease events can be avoided</p> <p>CLO-2: Able to improve Fish Health so that it is not susceptible to disease</p> <p>CLO-3: Able to create aquatic environmental conditions that suit the needs of fish</p> <p>CLO-4: Able to suppress the growth of pathogens so as not to cause sick fish</p>

Content	<ol style="list-style-type: none">1. Fish Health Management Principles2. Application of the right fish farming technique3. Provision of proper feeding4. Giving immunostimulants5. Provision of vaccines6. Giving probiotics7. Water quality management8. Bioremediation9. Biosecurity10. Fish Carantine11. fish health monitoring
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Salosso Y. 2022. Bahan Ajar Manajemen Kesehatan Ikan. Fakultas Kelautan dan Perikanan Undana 2. Anonimous. 2002. Pengelolaan kesehatan Ikan Budidaya Laut. Balai Budidaya Laut lampung, Direktorat jendral Perikanan dan Budidaya, Departemen kelautan dan Perikanan. Lampung. 3. Conroy D.A and R.I. Herman. Textbook of Fish Diseases. Published by Gustav Fischer verlag, Jena, DDR. 4. Handajani, H dan S.Samsundari. 2005. Parasit dan Penyakit Ikan. Penerbit Universitas Muhammadiyah, Malang. 5. Moller, H and K. Andreas. 1986. Diseases and Parasites of Marine fishes. Verlag Moller Sternwartenweg 32. D-2300 Keil, FRG. 365 6. Noga, E.J. Fish Disease, Diagnosis and Treatment. Second edition. Wiley-Blackwell, A John Wiley & Sons, inc, Publication. New York, London Toronto Sydney, Tokyo, Singapore. 7. Schaperclaus, W. H. 1992. Fish Diseases. Volume I, A.A. Balkema/ Rotterdam. Schaperclaus, W. H Editor Kulow, and K. Schreckenbach. 8. Schaperclaus, W. H. 1992. Fish Diseases. Volume II, A.A. Balkema/ Rotterdam. Schaperclaus, W. H Editor Kulow, and K. Schreckenbach. 9. Stoskopf, M.K. 1993. Fish Medicine. W.B. Saunders Company, Harcourt Brace Jovanovich, Inc, Philadelphia, London, Tomato, Montreal, Sydney Tokyo. 10. Zonneveld, N. E.A. Huisman and J.H. Boon. 1992. Prinsip-Prinsip Budidaya Ikan. Penerbit PT Gramedia Pustaka Utama. Jakarta 11. Salosso, Y. 2021. Parasit dan penyakit Ikan Teleostei. Penerbit Deepublis.

MODULE HANDBOOK

Module designation	Water quality management
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Dr. Priyo Santoso, S.Pi, MP
Lecturer	Dr. Priyo Santoso, S.Pi, MP Dr. Ade Y.H. Lukas, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <ol style="list-style-type: none"> 1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes 3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes <p>Practicum (1 credit)</p> <ol style="list-style-type: none"> 1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes 2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Principles of aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to design the management of physical, chemical and biological parameters in aquaculture.</p>

Content	<ol style="list-style-type: none"> 1. Definition of water as a medium for aquaculture and The Importance of Water Quality Management 2. Water Physical Parameters: Light intensity, brightness, temperature, smell, and taste 3. Chemical nature of water: salinity, nitrogen, oxygen dissolved, CO₂, pH, phosphate, alkalinity, salinity, organic material, BOD, COD, PO₄, NO₂, NO₃, NH₄, NH₃, Fe, Pb, S, Mn, CL, and Potassium 4. Biological Parameters: The types of plankton beneficial and control 5. Water quality management in public waters, including: Reservoir, watershed and estuarine 6. Drying, including: Definition, Composition and Function of ponds, ponds, soil types for ponds and ponds as well drying 7. Calcification: Definition and purpose, type of lime, effect enforcement of water quality 8. Fertilization: type of fertilizer, determining the dose of fertilizer, the effect of fertilizer rights to water quality 9. Aeration: aerator, oxygenation satay, oxygen transfer and Determination of the number of aerators 10. Filter and Recirculation: Various Filters (Physics, Chemistry, and biology) and recirculation methods in cultivation sea, fresh and brackish. 11. Water Quality Project
Examination forms	<p>Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities</p>
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) >= 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>

Reading List	<ol style="list-style-type: none"> 1. Jahncke, M. L., Spencer, E., Reilly, G. A., Martin, R. E., and Cole, E. 2002. Public, Animal, and Environmental Aquaculture Health Issues 1st ed. Wiley-onerscience. 204 p. 2. Landau, M. 1991. Introduction to Aquaculture. 1st edition. John Wiley & Sons. 464 p. 3. Lucas, J. S., Southgate, P. C., and Tucker, C. S. (Eds). 2018. Aquaculture: Farming Aquatic Animals and Plants 3rd Ed. Wiley-Blackwell. 664 p. 4. Mukti, A., T., Arief, M., and Hastuti, W. H., 2019. Textbook on principles of aquaculture. Airlangga University Press, Surabaya. 5. Pillay T.V.R. 2004. Aquaculture and Environment. 2nd Ed. Wiley-Blackwell. 208 p. 6. Pillay, T.V.R. and Kutty, M.N. 2005. Aquaculture, Principles and practices. 2nd ed. Wiley-Blackwell. 640 p. 7. Schmittou, H.R., Jian, Z., and Cremer, M. C. 2004. Principles and Practicals of Pond Aquaculture Using 80:20 System. American Soybean Association.
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MODULE HANDBOOK

Module designation	Aquaculture data and information processing
Semester(s) in which the module is taught	3 / second year
Person responsible for the module	Dr. Ir. Sunadji, MP
Lecturer	Dr. Ir. Sunadji, MP Suleman, S.S.T.Pi., M.P
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, discovery learning, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Experimental design
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture, and provide alternative solutions when required</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to process fisheries data; explain and convey fisheries information data</p> <p>CLO-2: Able to utilize information technology in fisheries data management</p>

Content	<ol style="list-style-type: none">1. Selection of Cultivation Types for Aquaculture Industry2. Assessment of an industry with SWOT analysis3. Sources of capital and business analysis4. Types of Education Flow5. Input technology in the scope of aquaculture industry6. Management of Aquaculture Industrial Financial Management7. Finding and analyzing problems in development aquaculture industry8. Risk management9. Financial Management Management10.case Study Fisheries Data Processing
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Muhammad Yusuf dan Lukman D. 2019. Analisis Data Penelitian, Teori dan aplikasi dalam bidang perikanan. IPB Press. Bogor 2. Abu Bakar S., Aida Sartimbul., Defri Yona., Feni Irawati., Ledhyane., Hariyan., Nurin Hidayati., Syarifah, H.J. S., M. Arif Z.F dan M.Arif R. 2020. Aplikasi Sistem Informasi Geografis dalam Bidang Perikanan. UB Press. Malang 3. Johar Arifin. 2019. Menguasai Microsof Excel 2019. PT. Elex Media Komputindo. Jakarta 4. Yudhy Wicaksono dan Solusi Kantor. 2021. Mengolah Data Statistik dengan MS Excel. PT. Elex Media Komputindo. Jakarta

4th Semester

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Mandatory courses</i>						
1.	KIBDP 1436	Aquaculture engineering	2	4	3(2-1)	4.8
2.	KIBDP 1437	Fish nutrition	2	4	3(2-1)	4.8
3.	KIBDP 14310	Natural feed culture	2	4	3(2-1)	4.8
4.	KIBDP 14312	Fish reproductive physiology	2	4	3(2-1)	4.8
5.	KI 16317	Scientific method	2	4	3(2-1)	4.8
6.	MKP 1612	Anti-corruption education	2	4	1(1-0)	1.6
7.	KIBDP 14313	Ornamental fish and aquascape	2	4	3(2-1)	4.8
8.	KIBDP 14314	Fresh, brackish, and marine aquaculture management	2	4	3(2-1)	4.8

MODULE HANDBOOK

Module designation	Anti-corruption education
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Ir. Sunadji, MP
Lecturer	Dr. Ir. Sunadji, MP Dr. Francy Ch. Liufeto, S.Pi.,M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture and discussion
Workload (incl. Contact hours, self-study hours)	Theory (1 SKS) 1. Lecture in class 1 SKS x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 1 SKS x 60 Minutes x 14 Meetings = 1,680 minutes 3. Self Study 1 SKS x 60 Minutes x 14 Meetings = 1,680 minutes
Credit points	1 CU = 1.6 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Program Learning Outcomes (PLO): PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines Course Learning Outcomes (CLO): CLO-1: Anti-corruption principles and their duties CLO-2: Building a generation of integration and anti-corruption CLO-3: Corruption countermeasures and obstacles to corruption countermeasures
Content	1. Definition and Understanding of Corruption 2. The impact of corruption on society 3. Principles and Ethical Values 4. Individual roles and responsibilities 5. Transparency and Accountability
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	If students attend lectures (including not present due to illness or permission) >= 80% so they can join the exam Assessment of competency achievement using the theoretical value 25% soft skills, 15% assignment, 30% mid-test and 30% final test. Students pass competence if they get a minimum point 60.

Reading List	1. Prof. Dr. H. Muh. Arifin, M.Pd. 2018. Pendidikan Anti-Korupsi: Teori, Strategi, dan Implementasi. Penerbit PT Remaja Rosdakarya.
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MODULE HANDBOOK

Module designation	Fish reproductive physiology
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Si
Lecturer	Dr. Ir. Yulianus Linggi, M.Si Dr. Ir. Agnette Tjendanawangi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, assignments, project-base learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to evaluate the process of gonad maturity and spawning in fish</p> <p>CLO-2: Able to analyze and solve problems that affect fish reproductive performance</p>

Content	<ol style="list-style-type: none">1. Fish Reproduction Cycle2. Reproductive Structure3. Reproductive hormone4. Fertilization5. Spawning6. External fertilization vs. Internal7. Incubation period9. Morphological changes during reproduction9. Reproductive strategy
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Drawbridge, M., & Okihiro, M. (2007). Comprehensive Produksi benih ikan Plan. California: Californian Departement of Fish and Game Oceanside Fis Pathology Laboratory. 2. Jayakumar, R., & Nazar, A. (2013). Marine Fish Produksi benih ikan Concept, Design and Construction. Tamil: Central Marine Fisheries Research Institute, Cochin (CMFRI) . 3. Ueberscar, B. (2019). Instruction Manual for Solar Powered Produksi benih ikan Operation. Bunda Campus Farm: Gesellschaft fur Marine Aquaculture. 4. William S. Hoar dan David J. Randall. 1983. Fish Physiology, Volume IX - Reproduction, Part A: Endocrine Tissues and Hormones. Academic Press.

MODULE HANDBOOK

Module designation	Ornamental fish and aquascape
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Franchy Ch. Liufeto, S.Pi, M.Si
Lecturer	Dr. Franchy Ch. Liufeto, S.Pi, M.Si Immaria Fransira, M.P
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, group discussion, discovery learning, project Based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Principles of Aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to describe the basic problems of ornamental fish farming and breed them</p> <p>CLO-2: Able to design and create ecosystems in aquaculture according to applicable rules</p>

Content	<ol style="list-style-type: none">1. Freshwater ornamental fish2. Sea water ornamental fish3. Ornamental plants4. Substrate on Akuaskap5. Akuaskap facilities and infrastructure6. Breeding and hatchery of ornamental fish7. Design and manufacture of containers8. Design and layout of aquaskap9. Feed and feeding10. Health management11. Management of water quality
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Farmer, G. 2020. Aquascaping: A Step-By-Step Guide to Planting, Styling, and Maintaining Beautiful Aquariums. Skyhorse Publishing. 321 pages 2. Walstad, D. 2013. Ecology of the Planted Aquarium: A Practical Manual and Scientific Treatise for the Home Aquarist. Echinodorus Publishing. 193 pages 3. Alderton, D. 2019. Encyclopedia of Aquarium and Pond Fish. DK Publishing. 402 pages 4. Tullock, J. 2007. Freshwater Aquarium Models: Recipes for Creating Beautiful Aquariums That Thrive. Wiley Publishing Inc. 307 pages 5.- 2007. Saltwater Aquarium Models: Recipes for Creating Beautiful Aquariums That Thrive. Wiley Publishing Inc. 289 pages 6. Jennings, G. 2018. 500 Freshwater Aquarium Fish: A Visual Reference to the Most Popular Species. Firefly Books. 528 pages 7. Hiscock, P. 2003. Encyclopedia of Aquarium Plants. Interpet Publishing. 201 pages 8. Jim, M. O. 2014. Aquarium Making: Fishkeeping and Maintenance. 30 pages 9. Gay, J. 2005. The Perfect Aquarium: The Complete Guide to Setting Up and Maintaining an Aquarium. Octopus Publishing Group Ltd. 552 pages 10. Skomal, G. 2006. Saltwater Aquarium 2nd Edition. Wiley Publishing Inc. 129 pages

MODULE HANDBOOK

Module designation	Fresh, brackish, and marine aquaculture management
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Yuliana Salosso, S.Pi., M.P
Lecturer	Dr. Priyo Santoso, S.Pi., M.P Dr. Yuliana Salosso, S.Pi., M.P
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8. ECTS
Required and recommended prerequisites for joining the module	Principles of aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-2: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-3: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to discuss and elaborate the boundaries of freshwater aquaculture as well as principles and development Eco-friendly freshwater aquaculture</p> <p>CLO-2: Able to select and evaluate the feasibility of non-fish freshwater aquaculture sites and appropriate technology systems</p> <p>CLO-3: Able to regulate freshwater aquaculture systems and environmentally friendly technology</p> <p>CLO-4: Able to compile an analysis of freshwater aquaculture business and countermeasures against media pollution and disease on freshwater aquaculture</p>

Content	<ol style="list-style-type: none"> 1. Freshwater aquaculture planning and site selection 2. Construction of ponds/freshwater aquaculture media 3. Seed handling and maintenance management 4. Feeding management 5. Water quality and health/disease management 6. Harvest management and marketing 7. Problems in Goldfish Farm management 8. Problems in the management of Patin Fish Farming 9. Management analysis of Gurame Fish Farming 10. Management analysis of Pomfret Fish Farming 11. Problem solving in eel fish farming management 12. Problem solving in Catfish Farming management 13. Problem solving in Tilapia Farm management
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Freshwater Aquaculture, 2013. Ahilan B. Daya Publishing House, India 2. Budidaya Ikan, 2013. Amalia R, Marsi, Ferdinand HT. Agromedia, Jakarta. 3. Prinsip-prinsip Budidaya Ikan, 1991, Zonneveld N, Huisman EA, Boon JH. Gramedia Pustaka Utama, Jakarta.

MODULE HANDBOOK

Module designation	Scientific method
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Yudiana Jasmanindar, S.Pi.,M.Si
Lecturer	Dr. Yudiana Jasmanindar, S.Pi.,M.Si Dr. Yuliana Salosso, S.Pi.,MP
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture, and provide alternative solutions when required</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain and use concepts, scientific way of thinking, scientific thinking results, and elements of scientific thinking in the writing of scientific works/studies or scientific writings.</p> <p>CLO-2: Able to explain and compile research reports, make summaries and abstracts in writing scientific papers / studies or scientific writings (articles, papers, journals, literature studies, and theses), and able to explain through the presentation of scientific papers.</p>

Content	<ol style="list-style-type: none">1. Scientific concepts and ways of thinking2. Scientific activity3. Ethics and science4. Characteristics, forms and types of scientific writing5. Scientific writing process6. Compile a literature review (state of the art)7. Library resource molding and reference8. Compile Bibliography, Footnotes/Ends, and Paraphrasing9. Presentation of data and information10. Preparation of research reports, summaries and abstracts11. Compiling presentation materials for scientific papers.
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Pohan, A.E. 2019. The concept of online learning based on a scientific approach. CV. Sarnu Profit. 2. Burhanudin N. 2018. PhPLOsophy of Science. Fifth Edition. Prenadamedia Group. 3. Dalman, 2015. Writing skills. Fifth printing. PT. RajaGrafindo Persada. Depok. 4. Sulianti, A. & Harahap, N. 2019. Strategies and techniques for writing scientific papers and publications. Deepublish. 5. Wiradi G. 1996. Ethics of writing Scientific Papers. Bandung [ID]: Akatiga. 50 p.

MODULE HANDBOOK

Module designation	Fish nutrition
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Ir. Agnette Tjendanawangi, M.Sc
Lecturer	Dr. Ir. Agnette Tjendanawangi, M.Sc Ir. Felix Rebhung, M.Agr., Ph.D
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Biochemistry
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to master the theoretical concepts of Aquaculture especially in the field of mariculture</p> <p>CLO-2: Able to apply science and technology to increase aquaculture productivity</p> <p>CLO-3: Able to evaluate and provide solutions for the sustainability of aquaculture production</p>

Content	<ol style="list-style-type: none">1. Nutritional value2. Carbohydrate metabolism3. Lipida metabolism4. Metabolism of Animo Acid5. Metabolism of vitamins and minerals6. Feed ingredients7. Probiotics8. Anti Nutrition9. Antioxide10. Nutritional defense11. Bioenergy and digestibility to support aquaculture.
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Craig, S., Helfrich, L.A., Kuhn, D., and Schwarz, M.H. 2009. Understanding Fish Nutrition, Feeds, and Feeding. Political Science. 18 p. 2. FAO, 1980. Fish Feed Technology. United Nations Development Program Food and Agriculture Organization of the United Nations, Rome. 3. Halver, J. (ed). 2013. Fish Nutrition. Elsevier. 4. Horwitz, W., and Latimer, G.W. 2005. Official Methods of Analysis of Aoac International. 18th ed. Gaithersburg, Md.: Aoac International. 5. Lim, C. and Webster, C.D. 2001. Nutrition and Fish Health. Food Products Press, New York. 6. Merrifield, D.L. and Ringo, E. (Eds). 2014. Aquaculture Nutrition: Gut Health, Probiotics and Prebiotics. John Wiley & Sons. 7. Ramseyer, L.J. and Garling, D.L. 1997. Fish Nutrition and Aquaculture Waste Management. ILLINOIS-Indiana Sea Grant Program, Publication CES-305. 8. Tacon, A.G.J. 1990. Standard Methods for the Nutrition and Feeding of Farmed Fish and Shrimp. ARGENT PUBL. 9. Tacon, A.G. 1992. Nutritional Fish Pathology: Morphological Signs of Nutrient Deficiency and Toxicity in Farmed Fish (Vol. 85, No. 22). Food & Agriculture Org.

MODULE HANDBOOK

Module designation	Natural feed culture
Semester(s) in which the module is taught	4 / second year
Person responsible for the module	Dr. Ade H. Lukas, S.Pi, M.Sc
Lecturer	Dr. Ade H. Lukas, S.Pi, M.Sc Dr. Ir. Nicodemus Dahoklory, M.Sc Ir. Ridwan Tobuku, M.Sc
Language	Indinesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>CLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>CLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Understand the Basic Concepts of Natural Feed Cultivation</p> <p>CLO-2: Designing a Sustainable Natural Feed Cultivation System</p> <p>CLO-3: Developing Natural Feed Maintenance Techniques</p> <p>CLO-4: Evaluation and Optimization of Natural Feed Aquaculture Productivity</p>

Content	<ol style="list-style-type: none"> 1. Types of Natural Feed in Aquaculture 2. Differences between Natural Animal and Vegetable Feed 3. Calculation of Natural Feed Needs 4. Design of Ponds/Aquaculture Containers for Natural Feed 5. Maintenance and Restoration of Aquatic Ecosystems 6. Natural Feed Preservation and Breeding 7. Natural Feed Quality Monitoring 8. Measuring the quality of natural feed. 9. Performance Analysis of Natural Feed Cultivation System 10. Natural Feed Cultivation Optimization Strategy
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Chojnacka, K., Wieczorek, P.P., Schroeder G., and Michalak, I. 2018. Developments in Applied Phycology 8 Algae Biomass: Characteristics and Applications. 1st Ed. Springer International Publishing. 146 p. 2. Pereira, L. 2018. Therapeutic and nutritional uses of algae. CRC Press. 2018. 673 p. 3. Richmond, A., and Hu, Q. 2013. Handbook of Microalgal Culture. Applied Phycology and Biotechnology. Second Edition. Wiley Blackwell 4. Su, H.M. 2000. Production and utilization of live feeds in aquaculture. In Advanced Aquaculture. Taiwan Fisheries Institute. 5. Støttrup, J. G. and McEvoy, L. A. 2003. Live Feeds in Marine Aquaculture. Blackwell Science Ltd, a Blackwell Publishing Company 6. Balai Budidaya Laut Lampung. 2002. Budidaya Fitoplankton dan Zooplankton. Direktorat Jenderal Perikanan Budidaya. Departemen Kelautan Dan Perikanan. Seri Budidaya Laut No: 9. ISBN: 979-95483-9-x.

MODULE HANDBOOK

Module designation	Aquaculture engineering
Semester(s) in which the module is taught	4 / third year
Person responsible for the module	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si
Lecturer	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si Dr. Ir. Yulianus Linggi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, group presentations and project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Principles of aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-2: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-3: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand and master basic engineering techniques in the field of aquaculture</p> <p>CLO2: Able to design cultivation containers, manage water quality according to the development of science and technology and the market</p>
Content	<p>1. Problems in aquaculture, basic concepts of aquaculture engineering and understanding aquaculture</p> <p>2. Aquaculture classification, as well as future trends of aquaculture engineering</p> <p>3. Water transportation (pipe size, pump, valve, water speed, water flow speed / water discharge)</p> <p>4. Water quality & water treatment (inlets, outlets, water quality equipment)</p> <p>5. Water treatment (pH, Oxygen, particles, purification), disinfectants)</p>

	6. Design and construction of aquaculture containers (aquariums, ponds, tubs, ponds, KJA) 7. Planning Work Procedures in the care of aquariums, ponds, tubs, ponds, KJA 8. Engineering of fish feeding equipment 9. Engineering fish farming Polyculture and IMTA systems
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission)> = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Boyd CE. 1978. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publishing Company. New York. 2. Buluyut, S.A. 1984. Inland Aquaculture Engineering. Second Edition. Welley Blackwell. A.John Wiley & Sons, Ltd., Publication 3. Costa-Pierce BA, editor. 2002. The History of Aquaculture in Traditional Society. Oxford. Blackwell Science. 4. Kyung H. Yoo. Claude E, Boyd. 1994. Hydrology and water Supplyu for Pond Aquaculture- Springer US 5. Hutchinson et al. 2004. Recirculating aquaculture system: Minimum Standar for desaing, constraction and Management. Inland Aquaculture Association of South Auastralia Inc 6. Lekang, O. I. 2007. Aquaculture Engineering. Blackwell Publishing Ltd. Singapore. 340 p. 7. Wheaton, F.W., 1977. Aquacultural Engineering. John Willey & Sons. New York. 708 p. 8. Vlaar, J.C.J., and Valk-Brouwer, W.G. 1987. Aspects of Aquaculture Engineering. Agricultural University Wageningen. Wageningen. 196 p

5th Semester

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Mandatory courses</i>						
1.	KIBDP15326	Feeding technology and management	3	5	3(2-1)	4.8
2.	KIBDP16324	Aquaculture industry Development	3	5	3(2-1)	4.8
3.	KIBDP15327	Invertebrate animal cultivation technology	3	5	3(2-1)	4.8
4.	KIBDP15324	Principles of aquaculture Biotechnology	3	5	3(2-1)	4.8
5.	KIBDP15325	Management of hatchery Production	3	5	3(2-1)	4.8

MODULE HANDBOOK

Module designation	Principles of aquaculture biotechnology
Semester(s) in which the module is taught	5 / third year
Person responsible for the module	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si
Lecturer	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si Dr. Ir. Yulianus Linggi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning Outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to design biotechnology products in the field of aquaculture</p> <p>CLO-2: Able to apply biotechnology in cultivation</p>
Content	<ol style="list-style-type: none"> 1. Introduction to Aquaculture Biotechnology 2. Cell culture and tissue 3. Selective breeding 4. Hybridization and artificial insemination 5. Transgenic aquaculture 6. Aquaculture Biotechnology of the Environment 7. Use of probiotics and prebiotics

Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
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Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Manoj Sharma, Pankaj Guleria, dan Saurabh Bhatia. 2019. Bioteknologi Akuakultur: Prinsip dan Aplikasinya. Penerbit: Studium Press LLC. 2. Madhu Mrudula, Omana Joy, dan Sherly Williams E. 2016. Bioteknologi dalam Akuakultur. Penerbit: LAP Lambert Academic Publishing. 3. Adolfo Álvarez-González dan Domenico Caruso. 2018. Akuakultur Modern: Bioteknologi dan Aplikasinya. Penerbit: Wiley-Blackwell.

MODULE HANDBOOK

Module designation	Management of hatchery production
Semester(s) in which the module is taught	5 / third year
Person responsible for the module	Dr. Ir. Yulianus Linggu, M.Si
Lecturer	Dr. Ir. Yulianus Linggu, M.Si Dr. Ir. Agnette Tjendanawangi, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lecture, discussion and project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Principles of aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to analyze the factors that affect the success of fish hatcheries and solve problems at each stage of fish hatchery activities</p> <p>CLO-2: Able to evaluate and provide solutions for aquaculture sustainability</p>

Content	<ol style="list-style-type: none"> 1. Male and female reproductive organs in fish, crustaceans, mollusks, echinoderms and their functions 2. Gonad maturation and its mechanism in fish, crustaceans, molluska, and echinodermata 3. Factors that influence the process of maturation of the gonad 4. Gonad maturation stimulation techniques in fish, crustases, mollusks, and echinoderms 5. Factors that influence the spawning process 6. Spawning stimulation techniques in fish, crustaceans, Molluska, and Echinnodermata 7. Factors that influence the quality of eggs and sperm in fish 8. Development of embryos, hatching eggs, and maintenance larvae
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Tang, M. 1999. Reproduksi Ikan.. IPB Press. 2. Effendie, 1997. Biologi Perikanan. IPB Press 3.I. Effendi. 2002. Pengantar Akuakultur. Jakarta: Penebar Swadaya,

MODULE HANDBOOK

Module designation	Aquaculture industry development
Semester(s) in which the module is taught	5 / third year
Person responsible for the module	Dr. Francy Ch. Liufeto, S.Pi.,M.Si
Lecturer	Dr. Ir. Sunadji, MP Dr. Francy Ch. Liufeto, S.Pi.,M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discovery learning, group presentation, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	<p>1. Basics of Management</p> <p>2. Basics of aquaculture</p> <p>3. Fisheries and Maritime Entrepreneurship</p>
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture,</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain, analyze, and plan fisheries and marine efforts</p> <p>CLO-2: Able to analyze and solve basic problems about the development of the aquaculture industry</p>

Content	<ol style="list-style-type: none"> 1. Selection of Cultivation Types for Aquaculture Industry 2. Assessment of an industry with SWOT analysis 3. Sources of capital and business analysis 4. Types of Education Flow 5. Input technology in the scope of aquaculture industry 6. Management of Aquaculture Industrial Financial Management 7. Finding and analyzing problems in development aquaculture industry 8. Risk management 9. Financial Management Management
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Perumusan kebijakan pengembangan industri perikanan: studi kasus rumput laut oleh Satker Dewan Kdelautan KKP tahun 2010 2. Muhammad S., 2011. Kebijakan Pembangunan Perikanan & Kelautan: Pendekatan Sistem, Universitas Brawijaya Press. 3. Muh. Fihsar dan Poltak, H. 2020. Manajemen Usaha Perikanan, Ahli Media Press. 4. Herry, 2021. Manajemen Risiko Bisnis, Jakarta, Penerbit Buku Kompas. 5. Langevelt, M, J., 1971, terj., Manajemen Keuangan Dan Bisnis; Teori dan Aplikasi, Gramedia Pustaka Utama Jakarta

MODULE HANDBOOK

Module designation	Feeding technology and management
Semester(s) in which the module is taught	4 / third year
Person responsible for the module	Dr. Ir. Agnette Tjendanawangi, M.Sc
Lecturer	Dr. Ir. Agnette Tjendanawangi, M.Sc Ir. Ridwan Tobuku, M.Sc
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	<p>1. Fish nutrition</p> <p>2. Fundamentals of aquaculture</p>
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to determine nutrient needs based on commodities, life cycles and habitat</p> <p>CLO-2: Able to determine and improve the quality of fish feed raw materials</p> <p>CLO-3: Able to formulate quality feed with minimal cost (least cost formulation) and produce various forms of feed in accordance with feeding behavior</p> <p>CLO-4: Able to manage feeding properly and correctly</p>

Content	<ol style="list-style-type: none">1. Nutritional needs of fish, crustaceans and economical mollusks important2. Sources of Feed Raw Materials and Alternative Raw Materials3. Application of fermented technology4. Feed formulation5. Analysis of the efficiency of feed utilization6. Economical Analysis of Feed7. Application of feeding
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Chris Neaaves. 2002. Nutrition Module. Fish Program Training Nutrition, Feeds and Feeding. 2. Aj Tacon. 2007. Shrimp and Fish Nutrition and Feed Management. Central Institue Brackish Water Aquaculture. 3. Laurel J. Ramseyer. Fish nutrition and aquaculture waste Management. 4. Steven Graig. Understanding Fish Nutrition, Feeds, and Feeding. 5. Good Aquaculture Practices. Fish Feed Management. Agriculture, Fisheries and Conservation Management. 6 Fish Feed Technology. FAO 1980

MODULE HANDBOOK

Module designation	Invertebrate animal cultivation technology
Semester(s) in which the module is taught	5 / third year
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Si
Lecturer	Dr. Ir. Yulianus Linggi, M.Si Ir. Ridwan Tobuku, M.Si
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Principles of aquaculture
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-5: Graduates should be able to design aquaculture systems and technologies that are environmentally sustainable</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Mastering the concepts and theories of aquatic invertebrate animals ranging from classification, morphology, reproduction to their life cycle</p> <p>CLO-2: Able to design macroalgae, Bivalvia, crustacean and echinodermantara technology</p>

Content	<ol style="list-style-type: none">1. Introduction to Animal Avertebrate Water2. Biology and Morphology3. Maintenance and Management of Maintenance Media4. Selection of species5. Feed and nutrition6. Reproduction and breeding7. Disease Control and Parasites8. Environmental and Conservation Aspects9. Application of technology
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission)> = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Browne, R. A., & Sahoo, P. K. (Eds.). (2017). "Live feeds in marine aquaculture. "John Wiley & Sons. 2. Brown, M. R. (ed.). (2019). "Nutritional Marine Invertebrate Broodstock and Larval Development. "Academic Press. 3. Dhert, P., & Lavens, P. (Eds.). (2018). "Artemia: Basic and Applied Biology. "Springer. 4. Wallace, R.L. and Taylor, W. K., 2002. Invertebrate Zoology. A Laboratory Manual. Sixth Edition. Prentice Hall. Upper Saddle River. 5. Tidwell, J.H., and Coyle, S.D. (Eds.). (2016). Crustacean Aquaculture. John Wiley & Sons, Inc. 6. Lee, P.G. (2019). The significance of molluscan aquaculture in Asia. Reviews in Fisheries Science & Aquaculture, 27 (4), 417-428.

Even Semester (*Elective course*)

No.	Course Code	Course	Year	Semester	Credit	ECTS
<i>Elective Course</i>						
1.	KI 1122	Fundamentals of management	3	Even	2(2-0)	3.2
2.	KIBDP 15321	Macroalgae Cultivation Technology	3	Even	3(2-1)	4.8
3.	KI 12310	Limnology	3	Even	3(2-1)	4.8
4.	KI 13316	Fisheries and Marine Entrepreneurship	3	Even	3(2-1)	4.8
5.	KI 13211	Sociology of Coastal and Islands Communities	3	Even	2(2-0)	3.2
6.	KI 13313	Invertebrates	3	Even	3(2-1)	4.8
7.	KIBDP 1435	Fisheries Extension	3	Even	3(2-1)	4.8
8.	KIBDP 14311	Experimental design	3	Even	3(2-1)	4.8
9.	KIMSA 15318	Conservation of water resources	3	Even	3(2-1)	4.8
10.	KIBDP 16325	Pathology and toxicity	3	Even	3(2-1)	4.8
11.	KIMSA 1232	Water sports	3	Even	3(1-2)	4.8
12.	KIBDP 16326	Management of Aquatic Environment	3	Even	3(2-1)	4.8
13.	KIBDP 16327	Self-development	3	Even	2(2-0)	3.2

MODULE HANDBOOK

Module designation	Invertebrates
Semester(s) in which the module is taught	Even / year if
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Si Ir. Ridwan Tobuku, M.Si
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Mastering the concepts and theories of aquatic invertebrate animals ranging from classification, morphology, reproduction to their life cycle</p> <p>CLO-2: Able to design macroalgae, Bivalvia, crustacean and echinodermantara technology</p>
Content	<p>1. Morphology and Anatomy</p> <p>2. Physiology (movement, food and how to eat, breathing and excretion)</p> <p>3. Reproduction</p> <p>4. Classification</p> <p>5. Economic Value of Animals Avertebrate Water which includes Protozoa, Porifera, Cnidaria, Platyhelminthes, Aschelminthes, Annelida, Mollusca, Crustacea, Uniramia, and Echinodermata.</p>

Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
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Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission)> = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 70% (including 25% soft skills, 15% assignment, 30% mid-test and 30% final test) and 30% practicum. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Barnes, R.D., 1982. Invertebrate Zoology, 4 Th Ed. Saunder College, Philadelphia, Holt Saunders Japan, Tokyo. 2. Brusca, R, C, and Brusca, G.J. 2003. Invertebrates. 2nd ed. Sinauer Associates, Inc. PUBL. 903 p. 3. Dahuri, R. 2003. Sea Biodiversity. PT Gramedia Utama, Jakarta. 4. Eisle, R. 2009. Compendium of Trace Metals and Marine Biota: Vol. 1. Plants and invertebrates. Elsevier Science Publisher. 5. Gosling, E. 2003. Bivalve Molluscs. Blackwell Publ. USA. 6. Nozeires, C. 2003. Marine Species Identification. Guide for St. Lawrence. Part 2 Marine Invertebrates, Maurice Lamontagne Institue 7. Shimek, R.L. 2004. Marine Invertebrates. TFH PUBL. Neptune City. 8. Subekti, S., Kismiyati, Rosmanida, Andriyono, S. and Pursetyo, K. P. 2016. Textbooks of Air Avertebrates. Global Persada Press, Surabaya. 9. Wallace, R.L. and Taylor, W. K., 2002. Invertebrate Zoology. A Laboratory Manual. Sixth Edition. Prentice Hall. Upper Saddle River. 10. Webb, J.E, Wallwork, J.A and Ellgood, J.H, 1980. Guide to Invertebrate Animals. Second edition. The Macmillan Press Ltd., London.

MODULE HANDBOOK

Module designation	Fundamentals of management
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ir. Sunadji, M.P.
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion and group presentation
Workload (incl. Contact hours, self-study hours)	1 theory (2 credits) 1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes 3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Program Learning Outcomes (PLO): PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture, Course Learning Outcomes (CLO): CLO-1: Able to master concepts, theories, methods and philosophies in the fields of social sciences, fisheries economics CLO-2: Able to understand the science of fisheries management and entrepreneurship
Content	1. Introduction to Management 2. Planning and decision making: 3. Organizational Structure 4. Motivation theory. 5. Operational and Strategic Control 6. Business Ethics 7. Performance and compensation management 8. Operational management 9. Financial Management 10. Marketing Management: 11. Innovation and Management of Change

Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)
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Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Draft, R. L. (2018). Management (14th ed.). South-western College Pub. 2. Robbins, S. P., Coulter, M., & Decenzo, D. A. (2017). Fundamentals of Management (10th ed.). Pearson. 3. Kinicki, A., & Williams, B. K. (2018). Management: A Practical Introduction (8th ed.). McGraw-Hill Education. 4. Koontz, H., Weihrich, H., & Cannice, M. (2017). Management: A global perspective (15th ed.). McGraw-Hill Education. 5. Lussier, R. N., & Achua, C. F. (2018). Leadership: Theory, Application, & Skill Development (6th ed.). Cengage Learning.

MODULE HANDBOOK

Module designation	Fisheries and Marine Entrepreneurship
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Franchy Ch. Liufeto, S.Pi., M.Si
Lecturer	Dr. Franchy Ch. Liufeto, S.Pi., M.Si Dr.Ir. Sunadji, MP
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion and project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture,</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand basic concepts, analyze and solve basic problems about the development of the aquaculture industry</p> <p>CLO-2: Able to design and run small-scale fisheries-based entrepreneurial activities</p>
Content	<p>1. Basic Concepts of Entrepreneurship</p> <p>2. Entrepreneurial Opportunities and Challenges</p> <p>3. Business Analysis</p> <p>4. Business Plan (Business Plan)</p> <p>5. Entrepreneurial Assistance, Business Reports.</p>
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Alma, B. 2014. Entrepreneurship. Alfabeta. Bandung. 296 p. 2. Directorate General of Learning and Student Affairs. 2013. Entrepreneurship Teaching Module. Directorate General Higher Education, Ministry of Education and Culture. Jakarta. 317 p. 3. Maulidah, S. 2012. Introduction to Agribusiness Management. Universitas Brawijaya Press. 251 p. 4. Rindjin, K. 2004. Business Ethics and Its Implementation. Gramedia General Library. Jakarta. 147 p. 5. Scarborough, N. M. 2011. Essential of Entrepreneurship and Small Business Management. 6th ed. Prentice Hall. New Jersey. 305 p. 6. Wijatno, S. 2009. Introduction to Entrepreneurship. Grasindo. Jakarta. 277 p.

MODULE HANDBOOK

Module designation	Conservation of water resources
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ade Yulita Hesti Lukas, S.Pi.,M.Si ; Dr. Ir. Sunadji, MP
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lectures, discussions, group presentations, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand the basic concepts, scope, forms of management, conflicts and conservation-based solutions</p> <p>CLO-2: Able to evaluate the form of fisheries supervision and its management as the foundation of the blue economy in supporting sustainable fisheries</p> <p>CLO-3: Able to analyze forms of conservation at the population and species level, types of conservation areas, and types of fish that need to be conserved, as well as opportunities and challenges</p>

Content	<ol style="list-style-type: none"> 1. Description and scope of conservation 2. Management of Aquatic Conservation Areas 3. Conflicts in water conservation 4. Fisheries Supervision in Water Conservation Areas 5. Water conservation areas as an economic foundation Blue 6. Management of aquatic conservation areas for fisheries Sustainable 7. Conservation at species and population levels 8. Opportunities and challenges of fish resource conservation 9. Types of Conservation Areas 10. Status of Aquatic Conservation Area 11. Conservation of fish species
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Anonim, 2013. Melaksanakan Aturan dan Perundang-Undangan Perikanan. Bahan Ajar Diklat Konservasi (Perikanan Berkelanjutan). 2. http://www.bphn.go.id/data/documents/10pm030.pdf Peraturan Menteri Kelautan dan Perikanan Nomor Per.30/MEN/2010 Tentang Rencana Pengelolaan Dan Zonasi Kawasan Konservasi Perairan. Diakses pada tanggal 5 Desember 2014. 3. http://www.kkp.go.id/stp/index.php/arsip/c/834/. Sejarah Perkembangan Kawasan Konservasi Perairan Indonesia. Diakses pada tanggal 4 Desember 2014. 4. http://www.kkp.go.id/stp/index.php/arsip/c/834/. Sejarah Perkembangan Kawasan Konservasi Perairan Indonesia. 5. http://www.menlh.go.id/pendanaan-kawasan-perlindungan-di-indonesia/. Pendanaan Kawasan Perlindungan.

MODULE HANDBOOK

Module designation	Limnology
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Ir.Ridwan Tobuku, M.Si
Person responsible for the module	Ir.Ridwan Tobuku, M.Si Suleman,S.Pi.,M.Si
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-2: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to identify and explain the physical and chemical characteristics of waters</p> <p>CLO-2: Able to apply research methods in aquatic ecosystem analysis</p> <p>CLO-3: Able to analyze the impact of human activities on aquatic ecosystems</p>

Content	<ol style="list-style-type: none">1. Definition of Limnology2. Physical factors3. Chemical factors4. Biological factors5. Organic and inorganic materials in water6. Phosphorus and nitrogen7. Nitrogen, oxygen and CO₂ balance in the waters8. Classification of Lentic Waters9. Classification of Lotic Waters10. Productivity of freshwater
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Dumont, H.J. (Ed.). 2011. The Nile: Origin, Environment, limnology and human use (monographiae biologicae). Springer, USA. 2. O'Sullivan, P., and Reynolds, C. S. (Eds). 2004. The Lakes Handbook: Limnology and Limnetic Ecology. Vol. 1. Wiley-Blackwell. 708 p. 3. Piska, R. S. and Naik, J. K. 2006. Introduction to Fish Biology and ecology. Osmania University. 353 p. 4. Stewart, R.H. 2009. Introduction to Physical Oceanography. Orange Grove Texts Plus. 351 p. 5. Thornton, K.W., Kimmel, B.L. and Payne, F. E. 1990. Reservoir Limnology: Ecological Perctive. Wiley Publ. 256 p. 6. Wetzel, R. 2001. Lymnology. Lake and River Ecosystem. (3rd ed). Academic Press, USA. 1006 p.

MODULE HANDBOOK

Module designation	Macroalga Cultivation Technology
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Prof. Dr. Ir. Marcelien Dj. Ratoe Oedjoe, M.Si Dr. Yuliana Salosso, S.Pi.MP
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lectures, group discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Fundamental of aquaciltute
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to describe the Biological Aspects, benefits and management of Macroalgae cultivation</p> <p>CLO-2: Able to design macroalgae cultivation technology based on its type</p>

Content	<ol style="list-style-type: none"> 1. Introduction to knowing seaweed and history seaweed cultivation 2. Benefits of Seaweed: Phytocoloid, Primary Metabolites, secondary metabolites and benefits 4. Location selection: Ecological, technical, hygienic factors, Social, economic and legal aspects 5. Seaweed Cultivation Method:, Basic Loose Method, Floating Method (Longline), Raft Method 6. Procurement and Selection of Seeds: Asexual Seed Collection nature, seeds of cultivation, seeds of tissue culture, Seed sexual procurement. 7. Maintenance: maintenance of seaweed, maintenance facilities, predator/disease control, harvest 8. Cultivation of Gracilaria spp: Cultivation is added, cultivated in sea waters 9. Ceuler Cultivation Spp: Cultivation in Ponds, Cultivation at sea 10. Analysis of Seaweed Cultivation Business 11. Seaweed cultivation project
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission)> = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>

Reading List	<ol style="list-style-type: none"> 1. Sulistijo. 2002. Peluang Dan Tantangan pengembangan Bisnis Budidaya Rumput Laut di Indonesia. Makalah disampaikan pada seminar Nasional Bisnis Akuakultur di Indonesia pada tanggal 30 Oktober 2002 di Surabaya. 2. Winarno, F.G. 1996. Teknologi Pengolahan Rumput Laut. Pustaka Sinar Harapan. Jakarta. 111 hal. 3. Salosso, 2020. Bahan Ajar Teknologi Budidaya Makroalga. 4. Anonim. 1996. Budidaya, Pengolahan, dan Pemasaran Rumput Laut. Penebar Swadaya. Jakarta. 99 hal 5. Andarias, I. 1997. Prospek Pengembangan Budidaya Rumput Laut dalam mentongsong Era Globalisasi. Makalah disampaikan di Depan Rapat Senat Luar Biasa Universitas Hasanuddin pada Hari Senin, 14 Mei 1997. di Makassar. 21 hal. 6. Badan Koordinasi Penanaman Modal Daerah Propinsi NTT. 2004. Profil Investasi Budidaya Rumput Laut di Nusa Tenggara Timur. Badan Koordinasi Penanaman Modal Daerah Propinsi NTT. Kupang. 7. Ditjen perikanan Budidaya. 2006. Buku Petunjuk Rumput Laut 2004. Ditjen Perikanan Budidaya. Jakarta. 8. Hidayat, A. 1994. Budidaya Rumput Laut. Penerbit Usaha Nasional. Surabaya. 96 hal 9. Kadi, A dan Atmaja, W.S. 1988. Rumpit Laut (Algae), Jenis, Reproduksi, Budidaya dan Pascapanen. Penerbit Penebar Swadaya. Jakarta. 10. Mintarjo dan Minjoyo. 1992. Suatu Tinjauan tentang Teknologi Produksi Jenis Rumput Laut Tropis yang Bernilai Ekonomis. Direktorat jendral Perikanan bekerjasama dengan International Development Research Centre. Jakarta. 50 hal 11. Sediadi, A dan Budiarto, U. 1998. Rumput Laut Komoditas Unggulan. Gracindo, Jakarta. 27 hal. 12. Sulaeman dan Parenrangi, A. 2005. Pengembangan Budidaya Rumput Laut. Makalah disampaikan pada Lokakarya Pemberdayaan Masyarakat Pesisir di NTT Melalui Kegiatan Budidaya Perairan, pada Tanggal 20-21 Oktober 2005 di Kupang. 14 hal 13. Salosso dkk, 2016. Kajian Metabolit sekunder dan Metabolit Primer Makroalga di Perairan Teluk Kupang untuk Menentukan arah pemanfaatannya. Laporan Penelitian. Fakultas Perikanan dan Kelautan Undana.
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MODULE HANDBOOK

Module designation	Water sports
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Si
Lecturer	Dr. Ir. Yulianus Linggi, M.Si Welem Turupadang, S.Pi., M.Sc
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion, practicum
Workload (incl. Contact hours, self-study hours)	<p>Theory (1 SKS)</p> <p>1. Lecture in class 1 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 1 SKS x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>3. Self Study 1 SKS x 60 Minutes x 14 Meetings = 1,680 minutes</p> <p>Practicum (2 credit)</p> <p>1. Academic activities in the laboratory 2 credits x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 2 credits x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Understand and master swimming and diving techniques</p> <p>CLO-2: Able to provide a basic assessment of water conditions</p>
Content	<p>1. Introduction to Water Sports</p> <p>2. Types of Water Sports</p> <p>3. Safety and Safety aspects</p> <p>4. Techniques and Strategies in Water Sports</p>
Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using a theoretical value of 30% (including 25% soft skills, 15% assignment, 30% mid-test and 30% final test) and 70% practicum. Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Kholid, .M.M. 2017. Teknik Dasar Renang. Penerbit: Pena Karya 2. Rahardjo, E.W. 2015. Pembinaan Olahraga Air. Penerbit: Raja Grafindo Persada 3. Hardiman, S. 2017. Selamat Bebas dan Snorkeling. Penerbit: Deepublish

MODULE HANDBOOK

Module designation	Pathology and toxicity
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Ir. Felix Rebhung, M.Agr., Ph.D
Lecturer	Ir. Felix Rebhung, M.Agr., Ph.D Welem Turupadang, S.Pi., M.Sc
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	<p>1. Fundamental of aquaculture</p> <p>2. Physiology of aquatic organisms</p>
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to understand environmentally friendly cultivation, floating net cage cultivation systems and offshore cultivation</p> <p>CLO-2: Able to evaluate the application of biosecurity of the aquaculture environment, biosecurity supporting factors (physical, chemical and biological factors), as well as changes in water quality to heavy metal toxicity</p>

Content	<ol style="list-style-type: none">1. Introduction to Pathology and Toxicology2. Organ and System Pathology:3. Toxicological Mechanisms:4. Classification and type of poison:5. Environmental pathology and toxicology:6. Toxicity Test:7. Handling of Emergency Toxicology:8. Case Study and Examples of Diseases
Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Hadiwidodo, T.A., 2017. Toksikologi Lingkungan untuk Ikan dan Hewan Air. Penerbit: IPB Press. 2. Yusrizar, H. 2020. Dasar-dasar Toksikologi Lingkungan: Pencemaran dan Dampaknya pada Perairan. Penerbit: Deepublish 3. Hartoko, A. 2019. Toksikologi Lingkungan: Dasar-dasar dan Aplikasi pada Organisme Air. Penerbit: UMM Press.

MODULE HANDBOOK

Module designation	Fisheries Extension
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ir. Sunadji, MP
Lecturer	Dr. Ir. Sunadji, MP Suleman, S.S.T.Pi., M.P
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lectures, discussions, project-based learning
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Able to master the theoretical concepts of aquaculture, especially in the field of mariculture</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain, compile, implement and evaluate fisheries extension services</p>
Content	<ol style="list-style-type: none"> 1. Government counseling and policy 2. Objectives of the Counseling Organization 3. The link between research and counseling 4. Methods for influencing human behavior 5. Counseling Ethics 6. Background Use of Fisheries Counseling 7. Counseling Method 8. Extension program planning 9. Evaluation and Monitoring 10. Participate fishermen/fish farmers in the program counseling organizational organization and management counseling

Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Subagio, dkk, 2012, Modul Kewirausahaan Penyuluh Perikanan, STP Jurluhkan, Bogor 2. Kartasapoetra, A.G., 1988. Teknologi Penyuluhan Pertanian. Bumi Aksara, Jakarta 3. Mardikanto, T., 1999. Penyuluhan Pembangunan Pertanian, Universitas Sebelas Maret, Surakarta. 4. Padmowihardjo, S., 2000. Metode Penyuluhan Pertanian, Universitas Terbuka, Jakarta. 5. Samsudin, U. 1987. Dasar-dasar Penyuluhan dan Modernisasi Pertanian, Bina Cipta, Bandung. 6. Setiana, L. 2005. Teknik Penyuluhan dan Pemberdayaan Masyarakat. Ghalia, Indonesia. 7. Soedijanto, 2004. Menata Kembali Penyuluhan Pertanian di Era Agribisnis, Departemen Pertanian, Jakarta. 8. Suhardiono, 1992. Penyuluhan Petunjuk Bagi Penyuluh Pertanian. PT Erlangga. 9. Pedoman Umum Penyelenggaraan Penyuluhan Perikanan, Departemen Kelautan Dan Perikanan, 2002.

MODULE HANDBOOK

Module designation	Experimental design
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr Yudiana Jasmanindar, S.Pi., M.Si
Lecturer	Dr Yudiana Jasmanindar, S.Pi., M.Si Wesly Pasaribu, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, tutorial/simulation, small group discussion, case study
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	Scientific method
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture</p> <p>PLO-3: Graduates must possess the necessary skills to manage data, convey information in the field of aquaculture,</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the basic principles and methods of experimental design</p> <p>CLO-2: Able to design research, collect, analyze and interpret data in a study</p>

Content	<ol style="list-style-type: none">1. Statistics and scientific methods2. Basic Principles of Experiment Design3. Complete random design4. Complete group random design5. Factorial Design Experiment6. Factorial rack design experiment7. Different analysis8. Handling Problems in Various Analysis9. Application or Statistics Program Package10. Case Study
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Examination forms	Assessment covers written tests (midterm examination, semester final exams, practicum exams, quiz), assignments, project results, participatory activities
Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) $\geq 80\%$ so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 50% (including 10% quiz, 10% assignment, 15% mid-test and 15% final test) and 50% project (25% participatory activity and 25% project results). Students pass competence if they get a minimum point is 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Mattjik, A.A., Sumertajaya I.M. 2013. Perancangan Percobaan dengan Aplikasi SAS dan Minitab Jilid 1. IPB Press 2. Satstrosupadi A. 2000. Rancangan Percobaan Praktis Bidang Pertanian. Edisi Revisi. Penerbit Kanisius 3. Montgomery, D.C. 2017. Design and Analysis of Experiments, 9th edition. John Willey & Son, Inc 4. Johnson R.A., Bhattacharyya. 2010. Statistics : principles and methods. New York : John Wiley and Sons Inc

MODULE HANDBOOK

Module designation	Sociology of Coastal and Islands Communities
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ir. Sunadji, M.P.
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion and group presentation
Workload (incl. Contact hours, self-study hours)	1 theory (2 credits) 1. Lecture in class 2 Credit x 50 Minutes x 14 Meetings = 1,400 minutes 2. Structural Assignment 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes 3. Self Study 2 Credit x 60 Minutes x 14 Meetings = 1,680 minutes
Credit points	2 CU = 3.2 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Program Learning Outcomes (PLO): PLO-2: Graduates are expected to demonstrate proficiency in mastering theoretical concepts in aquaculture, specifically in the field of mariculture PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines Course Learning Outcomes (CLO): CLO-1: Able to formulate problems and compile solutions to the conditions of coastal and island communities CLO-2: Able to explain various research methods in the social field of coastal and island communities
Content	1. Introduction to the sociology of coastal communities 2. Coastal community social system 3. Culture of Coastal Community 4. Coastal community economy 5. conflict and social change 6. The role of gender in coastal communities 7. Policy and Management of Coastal Resources
Examination forms	Assessment covers written tests (middle exams and semester final exams), soft skills and group presentations (assignments)

Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using a value of 25% soft skill, 15% assignment, 30% mid -test and 30% final test. Students pass competence if they get a minimum point 60.</p>
Reading List	<ol style="list-style-type: none"> 1. Kusen, E. 2003. Local Institutional Development of Coastal Resource Management: A Social Learning Perspective. Coastal Management. 2. Mardiansyah. 2011. Sosiologi Masyarakat Pesisir. Penerbit: Pustaka Pelajar. 3. Anshori, M. 2012. Kearifan Lokal Masyarakat Pesisir: Kajian Sosiologi Pedesaan. Penerbit: CV Budi Utama.

MODULE HANDBOOK

Module designation	Management of Aquatic Environment
Semester(s) in which the module is taught	Even / third year
Person responsible for the module	Dr. Ir. Yulianus Linggi, M.Si
Lecturer	Dr. Ir. Yulianus Linggi, M.Si Dr. Yudiana Jasmindar, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Elective courses
Teaching methods	Lecture, discussion and group presentation
Workload (incl. Contact hours, self-study hours)	<p>Theory (2 credits)</p> <p>1. Lecture in class 2 SKS x 50 Minutes x 14 Meetings = 1,400 minutes</p> <p>2. Structural Assignment 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>3. Self Study 2 credits x 60 minutes x 14 meetings = 1,680 minutes</p> <p>Practicum (1 credit)</p> <p>1. Academic activities in the laboratory 1 SKS x 120 minutes x 14 meetings = 1,680 minutes</p> <p>2. Practicum Task 1 SKS x 50 minutes x 14 meetings = 700 minutes</p>
Credit points	3 CU = 4.8 ECTS
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-6: Graduates should be able to apply science and technology to enhance productivity in aquaculture</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to explain the basic concepts of aquaculture environmental management as well as external and internal factors that affect aquaculture and its relationship with the environment</p> <p>CLO-2: Able to analyze the impact of aquaculture activities on economic and ecological factors as well as the relationship between Aquaculture Ecology and Fish Stocks in Nature</p>
Content	<ol style="list-style-type: none"> 1. Interpretation of Aquatic Environmental Management 2. Aquatic environmental modeling 3. Management of aquatic ecosystems 4. Conservation and Protection of Water Resources 5. Management of fisheries resources 6. Management of freshwater and coastal resources 7. Evaluation of environmental impacts and policy application

Examination forms	Assessment covering written tests (midterm exams, final semester exams, practicum exams), soft skills and group presentations (assignments)
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Study and examination requirements	<p>If students attend lectures (including not present due to illness or permission) > = 80% so they can join the exam</p> <p>Assessment of competency achievement using the theoretical value of 70% (including 25% soft skills, 15% assignment, 30% mid-test and 30% final test) and 30% practicum. Students pass competence if they get a minimum point 60.</p>
Reading List	<p>1. Triharyono, Muhammad Iqbal, et al. 2018. Management Ecosystem -based aquatic and coastal environment. IPB Press.</p> <p>2. Suharsono, Anugrah N. P., et al. 2017. Management Aquatic environment. Publisher: Gadjah Mada University Press.</p> <p>Martin, J.F. 2019. Environmental Management of Aquatic Ecosystem. Publisher: CRC Press</p>

Odd Semester (*Final project*)

MODULE HANDBOOK

Module designation	Community Service Program
Semester(s) in which the module is taught	Odd / fourth year
Person responsible for the module	Studfield Supervisory Program Lecturer Team
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Project Base Learning
Workload (incl. Contact hours, self-study hours)	The Duration of the Community Service Program is equivalent to activities of 60 days in the location.
Credit points	4 Credits
Required and recommended prerequisites for joining the module	1. Has completed 110 credit
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to apply the knowledge and skills they have learned in practical village infrastructure development.</p>
Content	The final project aims to provide students with experience and ability in formulating a problem and its solution in the form of a student's independent scientific work that is relevant the scientific field of study and is carried out by the Aquaculture Study Program
Examination forms	Rubric
Study and examination requirements	1. Pass the Field Work Practice Examination 2. Producing the Final Report on the Research
Reading List	1. Community Service Program Handbook, Nusa Cendana University

MODULE HANDBOOK

Module designation	Internship/work practice
Semester(s) in which the module is taught	7 / fourth year
Person responsible for the module	Study Program Lecturer Team
Language	Indonesian
Relation to curriculum	Final Project Course
Teaching methods	Project Base Learning
Workload (incl. Contact hours, self-study hours)	The Duration of the Field Practice is equivalent to activities of Minimum 30 days (4 weeks) in location
Credit points	4 Credits
Required and recommended prerequisites for joining the module	1. Research Methods 2. experimental design 3. Has completed 110 credit
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to apply concepts, theories, and principles learned during lectures in fieldwork situations.</p> <p>CLO-2: Ability to understand the relationship between theory and practice in the specific context of the work placement.</p>
Content	The final project aims to provide students with experience and ability in formulating a problem and its solution in the form of a student's independent scientific work that is relevant the scientific field of study and is carried out by the Aquaculture Study Program
Examination forms	1. Oral Examination 2. Final project Report
Study and examination requirements	1. Pass the Field Work Practice Examination 2. Producing the Final Report on the Research
Reading List	1. Field Work Practice Handbook, Study Program Aquaculture 2. Reference related to the final project topic

MODULE HANDBOOK

Module designation	Thesis
Semester(s) in which the module is taught	Odd / fourth year
Person responsible for the module	Supervisor
Language	Indonesian
Relation to curriculum	Compulsory Course
Teaching methods	Project Base Learning
Workload (incl. Contact hours, self-study hours)	The duration of the Final Project is equivalent to activities of 6 mounths.
Credit points	6 Credits
Required and recommended prerequisites for joining the module	1. Research Methods 2. experimental design 3. Has completed 110 credit
Module objectives/intended learning outcomes	<p>Program Learning Outcomes (PLO):</p> <p>PLO-1: Graduates are expected to possess moral integrity, ethical conduct, strong nationalistic values, and a deep commitment to being responsible in carrying out tasks independently</p> <p>PLO-4: Able to communicate and work together, and interact with people who have different backgrounds and disciplines</p> <p>PLO-7: Graduates should be able to evaluate and provide solutions for sustainable and environmentally-friendly aquaculture production</p> <p>Course Learning Outcomes (CLO):</p> <p>CLO-1: Able to identify research problems, apply appropriate conceptual frameworks, and formulate clear research hypotheses or questions. Additionally, they should be capable of synthesizing information from various literature, data, and related research findings to support arguments and conclusions in their thesis.</p> <p>CLO-2: Able to plan appropriate research methodologies, collect data using suitable techniques, analyze data using appropriate analytical tools and techniques, and interpret research findings accurately and critically.</p>
Content	The final project aims to provide students with experience and ability in formulating a problem and its solution in the form of a student's independent scientific work that is relevant the scientific field of study and is carried out by the Aquaculture Study Program
Examination forms	1. Oral Presentation 2. Oral Examination 3. Final project Report
Study and examination requirements	1. Pass Seminar Research Results 2. Producing the Final Report on the Research
Reading List	1. Handbook for writing scientific papers, Aquaculture Study Program