



FACULTY OF FISHERIES AND MARINE SCIENCE

AQUACULTURE UNDERGRADUATE PROGRAM



Module Handbook Aquaculture

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Module Handbook Introduction of Fisheries and Marine Sciences

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Introduction of Fisheries and Marine Sciences
Module level, if applicable	1 nd years
Code, if applicable	IPK21-301
Subtitle, if applicable	-
Courses, if applicable	Indonesia
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Prof. Dr. Ir Johanes Hutabarat M. Sc.
Lecturer	1. Dr. Muhammad Helmi, S.Si. M. Si. 2. Dr. Ir. Haeruddin, M.S
Language	Indonesia
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Lecturing in class, assignment, discussion, problem based learning
Workload	The total workload is 50 minute lecturing, discussion in classical class, and 50 minute load with assignment. For every semester totally 14 times x 100 minute for attendance for those activities.
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge : The students understand the concepts and components of fisheries sciences for water resource management, aquaculture, capture fisheries and fishery products technology. - Skill : The students can analyze the case study of water resource management, aquaculture, capture fisheries and fishery products technology. - Competence : The students are able to understand the component of fisheries science and use it to comprehensively analyze.
Content	The concepts of fisheries sciences in the form of water resource management, aquaculture, capture fisheries and the use of fishery products.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for

	giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ol style="list-style-type: none"> 1. Yarwood.I.O, Nelly I. Kadagi, D. Belhabib, H. Edward., Allison. 2022. Survival Of The Richest, Not The Fittest: How Attempts To Improve Governance Impact African Small-Scale Marine Fisheries. Marine Policy.135 (104847) https://doi.org/10.1016/j.marpol.2021.104847 2. Kulla. O. L. S., E. Yuliana2., E. Supriyono. 2020. Analisis Kualitas Air Dan Kualitas Lingkungan Untuk Budidaya Ikan Di Danau Laimadat, Nusa Tenggara Timur. Jurnal IPTEK Terapan Perikanan dan Kelautan. 1 (3) : 135-144 3. Hermawan. A., S. Amanah., A. Fatchiya. 2017. Partisipasi Pembudidaya Ikan dalam Kelompok Usaha Akuakultur di Kabupaten Tasikmalaya, Jawa Barat. Jurnal Penyuluhan. 13 (1) 4. Saifudin., Aristi, D. P. F., Sardiyatmo. 2014. Aplikasi Sistem Informasi Geografis (Gis) dalam Penentuan Daerah Penangkapan Ikan Teri (Stolephorus Spp) di Perairan Pematang Jawa Tengah. Journal of Fisheries Resources Utilization Management and Technology. 3(4): 66-75 5. Suhana, M. P., Putra, R. D., Shafitri, L. F., Muliadi, M., Khairunnisa, K., Nurjaya, I. W., & Natih, N. M. N. (2021). Tingkat Kerentanan Pesisir Di Utara Dan Timur Pulau Bintan Provinsi Kepulauan Riau Tahun 2020. Jurnal Teknologi Perikanan Dan Kelautan, 11(1), 11-27. https://doi.org/10.24319/jtpk.11.11-27

Module Handbook English

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	English
Module level, if applicable	1 nd years
Code, if applicable	UNW00-006
Subtitle, if applicable	
Courses, if applicable	English
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr. Ir. Tita Elfita Sari M. Sc.
Lecturer	1. Dr. Ir. Tita Elfita Sari M. Sc. 2. Seto Windarto, S.Pi., M.Sc.,M.P.
Language	English
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Students are divided into 9 groups to present their project according to the given topic for 20 minutes each group along with class discussion. Each group presented about any subject or issues related to marine and fisheries science according to the students' department using English (TM: 13, 14, 15) (project-based learning).
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: Students understand the grammar, structure, and make a complex sentence that can be used for reporting case and idea, writing academic reports. - Skill : Students understand and be able to understand the reading material, listening, and fluent in speaking for academic presentation and have good writing skill - Competence : Students understand and are able to do the TOEFL test (as one of the prerequisites for graduation), make simple, compound and complex sentences; able to write reports/papers/abstracts/research results related to Marine and Fishery Sciences in English; and able to present reports/papers/abstracts/research results using English.
Content	This Course Learn about how to make a sentence, noun and article, adjective and adverb, parallel structure, simple sentence, parallel structure, subject verb agreement, degree of comparison. Toefl simulation test, Write a scientific paper, present a paper
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ol style="list-style-type: none"> 1. Alexopoulos,C.J and Mims,C.W. 1979. Introductory Mycology, 3rd Edition. John-wiley and Sons. New York. 2. Cappuccino, J.G. and N. Sherman, 1987. Microbiology a Laboratory Manual; 2 th ED., California. The Benjamins Columning Publishing Company. 3. Hadioetomo RS.1993. Mikrobiologi Dasar dalam Praktek: Teknik dan Prosedur Dasar Laboratorium. Jakarta: Gramedia Utama. 4. Madigan et al. 2017. Brock Biologi Mikroorganisme. 14th edition. Penerbit Buku kedokteran EGC. 5. Madigan, M.T., Martinko, J.M., Parker, J. 1997. Biology of Microorganisms. Ed ke-8. New Jersey: Prentice-Hall. 6. Pelczar MJJr, Chan ECS. 1986. Dasar-dasar Mikrobiologi. Volume 1. Hadioetomo RS, Imas T, Tjitrosomo SS, Angka SL, penerjemah; Jakarta: UIPress. Terjemahan dari: Elements of Microbiology.

	<p>7. Setiabudy R, Kunardi L. 2003. Golongan tetrasiklin dan kloramfenikol. Di dalam: Ganiswarna SG, editor. Farmakologi dan Terapan. Ed ke-4. Jakarta: Gaya Baru. hlm 657-659.</p> <p>8. Yuwono, T. 2005. Biologi Molekular. Erlangga: Laboratorium Mikrobiologi, Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta.</p>
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Module Handbook Bahasa Indonesia

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Bahasa Indonesia
Module level, if applicable	1 nd years
Code, if applicable	UNW00004
Subtitle, if applicable	
Courses, if applicable	Indonesia
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dra. Mirya Anggrahini Nimpuno, M.Hum.
Lecturer	Dra. Mirya Anggrahini Nimpuno, M.Hum.
Language	Indonesia
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Lecturing in class, assignment, discussion, problem based learning
Workload	The total workload is 50 minute lecturing, discussion in classical class, and 50 minute load with assignment. For every semester totally 14 times x 100 minute for attendance for those activities.
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	- Students practice making good and correct Indonesian, spelling and grammar, effective sentences, paragraphs and academic writing, proposal writing and scientific presentations
Content	Students learn grammar, academic writing, effective spelling and sentences, paragraph writing, making bibliography, reviewing material and writing academic papers
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.

Reading List	<ol style="list-style-type: none">1. Arifin, Zainal. 2005. Dasar-dasar Penulisan Karya Ilmiah. Jakarta: PT Grasindo.2. Belt, P. Mottenen M. & Harkonen J. 2011. Tips For Writing Scienific Journal Articles. Finlandia: Universitas of Oulu.3. Tarigan, Henry Guntur. 2008. Menulis Sebagai Suatu Keterampilan Berbahasa. Bandung: Angkasa.4. Widyamartaya, A. 1992. Seni Menuangkan Gagasan. Yogyakarta: Kanisius.5. Wijayanti, Sri Hapsari dkk. 2013. Bahasa Indonesia Penulisan dan Penyajian Karya Ilmiah. Jakarta: PT Raja Grafindo Persada.
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Module Handbook Biology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Biology
Module level, if applicable	1 nd years
Code, if applicable	IPK21-005
Subtitle, if applicable	
Courses, if applicable	Biology
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr. Ir. Fajar Basuki, MS.
Lecturer	Dr. Ir. Fajar Basuki, MS. Dr. Ir. Diana Rachmawati, M.Si. Tristiana Yuniarti, S.Pi.M.Si. Dewi Nurhayati, S.Pi.,M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)14 x 100 minutes (including midterm and final exams), online-learning 1. Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion 2. Practical: 3 hours (170 minutes) per week 3. Self learning: 3 hours per week 4. Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

<p>Module objectives/intended learning outcomes</p>	<ul style="list-style-type: none"> - Knowledge: understand the organization of living life which is supported by its constituent macromolecules, the importance of cell function in the survival of life, the meaning of bioenergetics in animals, the importance of cell function in maintaining the homeostasis of an organism, and the genetic inheritance system in organisms. - Skill : Students are able to explain the organization of living life which is supported by its constituent macromolecules, the importance of cell function in the survival of life, the meaning of bioenergetics in animals, the importance of cell function in maintaining the homeostasis of an organism, and the genetic inheritance system in organisms. - Competence : At the end of this course, students can explain the differences in structure, function, and the genetic inheritance system in plants and animals. Students are able to provide conclusions about the basics of life science from the structure, function, to the genetic inheritance system.
<p>Content</p>	<p>This Course Learns the organization of living life which is supported by its constituent macromolecules, the importance of cell function in the survival of life, the meaning of bioenergetics in animals, the importance of cell function in maintaining the homeostasis of an organism, and the genetic inheritance system in organisms.</p>
<p>Study and examination requirements and forms of examination</p>	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.</p>
<p>Media employed</p>	<p>Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.</p>
<p>Reading List</p>	<ul style="list-style-type: none"> ● Campbell, N.A., Reece, J.B., Mitcell, L.B. 2002. Biologi: Jilid 1. Edisi ke-5. Jakarta: Erlangga. ● Campbell, N.A., Reece, J.B., Mitcell, L.B. 2002. Biologi: Jilid 2. Edisi ke-5. Jakarta: Erlangga. ● Campbell, N.A., Reece, J.B., Mitcell, L.B. 2002. Biologi: Jilid 3. Edisi ke-5. Jakarta: Erlangga. ● Yuwono, T. 2005. Biologi Molekular. Erlangga: Laboratorium Mikrobiologi, Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta.

Module Handbook Pancasila

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Pancasila
Module level, if applicable	1 nd years
Code, if applicable	UNW00-006
Subtitle, if applicable	
Courses, if applicable	English
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr.Drs. Agus Saron, M.H.
Lecturer	Dr.Drs. Agus Saron, M.H.
Language	Indonesia
Relation to curriculum	Compulsory course
Type of teaching, contact hours	
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: Students understand and be able to apply the Concepts and objectives of Pancasila and Citizenship. - Skill : Students conduct analysis related to Pancasila and citizenship issues. Students are able to actively discuss, and are able to provide solutions to these problems. Case discussions can be taken from books, journals, and cases published in online/print media (Case method). - Competence : Students competence to analyse regarding Pancasila and citizenship on various topics that have been studied
Content	<ul style="list-style-type: none"> - Pancasila values from kingdoms era until present - Philosophy of Pancasila - Pancasila as the nation's ideology - Implementation of Pancasila as the Ideology of the Nation - Ideological comparison - UUD 1945 - The progress of democracy in Indonesia

	<ul style="list-style-type: none"> - Human rights - Geopolitics and Archipelago Insight - Discussion of Pancasila case studies (case method)
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ol style="list-style-type: none"> 1. Anwar M.K. 2. Muhibbin S. 2016. Psikologi Pendidikan. Bandung : PT. Remaja Rosada Karya 2. Sutrisno. 2018. Peran Pendidikan Kewarganegaraan Dalam Membangun Warga Negara Global. Jurnal Pancasila dan Kewarganegaran. 6 (1) 2. Yudi L. 2018. Wawaan Pancasila. Jakarta: Mizan <p>UUD 45</p>

Module Handbook Biochemistry

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Biochemistry
Module level, if applicable	1 st years
Code, if applicable	IBP21-300
Subtitle, if applicable	
Courses, if applicable	Biochemistry
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr. Ir. Diana Rachmawati, M.Si.
Lecturer	Dr. Ir. Diana Rachmawati, M.Si. Dr. Ir. Subandiono, M.App.Sc Tristiana Yuniarti S.Pi., M.Si. Seto Windarto, S.Pi., M.Sc., M.P.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM) 16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> • Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion • Practical: 3 hours (170 minutes) per week • Self learning: 3 hours per week • Case studies: 1 hour per week; • Forms of active participation: Case studies and structured report writing
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: understand about the concepts and processes of anabolism and catabolism; anabolism and catabolism in aquatic organisms, as well as the processes of anabolism and catabolism that occur in the culture environment. - Skill : students can analyze the nutritional content including protein, fat, carbohydrates, vitamins and minerals contained in food ingredients, and the nutritional sources of plants and animals - Competence : At the end of this course, students can analyze the concepts and processes of anabolism and catabolism; anabolism and catabolism in aquatic organisms, as well as the processes of anabolism and catabolism that occur in the culture environment.
Content	This Course Learns about the concepts and processes of anabolism and catabolism; anabolism and catabolism in aquatic organisms, as well as the processes of anabolism and catabolism that occur in the culture environment.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ul style="list-style-type: none"> ● Colby. 1992. Ringkasan Biokimia Harper, Alih Bahasa: Adjie Dharma, Jakarta: EGC. ● Harper, H.A., Rodwell, V.W., Mayes, P.A. 1977. Review of Physiological Chemistry. Los Altos: Lange Medical Publications. ● Harjasmita.1996. Ikhtisar Biokimia Dasar B. Jakarta:FKUI. ● Poedjadi, S. 2007. Dasar-Dasar Biokimia. Bandung: UI Press. ● Toha. 2001. Biokimia, Metabolisme Biomolekul. Bandung: Alfabeta. ● Wirahadikusumah. 1985. Metabolisme Energi, karbohidrat, dan lipid. Bandung: Institut Teknologi Bandung.

Module Handbook Fundamentals of Capture Fisheries Management

A **Module Handbook** or collection of module descriptions that is also available for **students to consult** should contain the following information about the individual modules:

Module designation	Fundamentals of Capture Fisheries Management
Module level, if applicable	1 nd years
Code, if applicable	IPP21-303
Subtitle, if applicable	
Courses, if applicable	Fundamentals of Capture Fisheries Management
Semester(s) in which the module is taught	2 nd semesters
Person responsible for the module	Bogi Budi Jayanto, S.Pi.,M.Si.
Lecturer	Bogi Budi Jayanto, S.Pi.,M.Si. Faik Kurohman, S.Pi.,M.Si. Dr. Dian Wijayanto, S.Pi., M.M., M.S.E. Ir. Imam Triarso, M.S.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)14 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Self learning: 3 hours per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: understand about fundamentals of capture fisheries technology and management and its relationship with other courses in each study program, such as fishing methods, fishing areas, fishing technology, fish behavior, handling of fishery products. - Skill : students can explain about fundamentals of capture fisheries technology and management and its relationship with other courses in each study program, such as fishing methods, fishing areas, fishing technology, fish behavior, handling of fishery products. - Competence : At the end of this course, students can analyze the basic concepts of capture fisheries management that can be used for efforts to increase the utilization of fishery resources which include; knowledge of fish resources, fishing gear, floating facilities, use of acoustic technology and environmentally friendly capture fisheries management.
Content	This Course studies about the basic concepts of capture fisheries management that can be used for efforts to increase the utilization of fishery resources which include; knowledge of fish resources, fishing gear, floating facilities, use of acoustic technology and environmentally friendly capture fisheries management.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ul style="list-style-type: none"> ● Ayodhya, A.U. 1981. Metode Penangkapan Ikan. Bogor: Yayasan Dewi Sri. Brandt, A.V. 1984. Fish Catching Methods of the World. England: Fishing News Books Ltd. ● BPPI. 2009. Klasifikasi Alat Penangkap Ikan. Jakarta: Dirjen Perikanan Tangkap, Departemen Kelautan dan Perikanan Republik Indonesia. ● DKP. 2004. Statistik Perikanan Tangkap. Nomura, M., dan T. Yamazaki. 1975. "Fishing Techniques," Compilation of Transcripts of Lecturer Presented at the Training Department SEAFDEC. Tokyo: Japan International Cooperation Agency. ● Sudirman. 2013. Mengenal Alat dan Metode Penangkapan Ikan. Jakarta: Penerbit Rineka Cipta.

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| | <ul style="list-style-type: none">• Sudirman dan A. Mallawa. 2012. Teknik Penangkapan Ikan. Edisi revisi. Jakarta: Penerbit Rineka Cipta. |
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Module Handbook Aquatic Ecology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Aquatic Ecology
Module level, if applicable	1 nd years
Code, if applicable	IPK21-004
Subtitle, if applicable	
Courses, if applicable	Aquatic Ecology
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr. Ir. Suminto, M.Sc
Lecturer	Dr. Ir. Suminto, M.Sc Dr. Vivi Endar Herawati, S.Pi.,M.Si. Dicky Harwanto, S.Pi.,M.Sc. Ph.D. Rosa Amalia, S.Pi.,M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Self learning: 3 hours per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Knowledge: students are able to understand the meaning of aquatic ecosystem (ecosystem) ecology and terminology (scope) within ecosystem boundaries: stagnant waters (lakes/reservoirs/ponds), watersheds, estuaries, mangroves and the sea.</p> <p>Skill : students can explain and know about the meaning of aquatic ecosystem ecology and terminology (scope) within ecosystem boundaries:</p>

	<p>stagnant waters (lakes/reservoirs/ponds), watersheds, estuaries, mangroves and the sea.</p> <p>Competence : At the end of this course, students are able to understand, explain and know about the meaning of aquatic ecosystem ecology, abiotic and biotic factors and the zoning of aquatic environments, species, populations, communities, energy flows, biogeochemical cycles, structures and roles of ecosystems and their interactions.</p>
Content	This course studies abiotic and biotic factors and the zoning of aquatic environments, species, populations, communities, energy flows, biogeochemical cycles, structures and roles of ecosystems and their interactions.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ol style="list-style-type: none"> 1. Lactuconsina, H. 2020. Ekologi Perairan Tropis: Prinsip Dasar Pengelolaan Sumber Daya Hayati Perairan. Edisi Ketiga. Yogyakarta: Gadjah Mada University Press. 284p. 2. Rosmawati. 2011. Ekologi Perairan. Edisi kesatu. Jakarta: Hilliana Press. 113p. 3. Romimohtarto, K dan Sri Juwana., 2005. Biologi Laut. Ilmu Pengetahuan Tentang Biota Laut. Jakarta: Djambatan. 4. Nybakken, J. W., 1988. Biologi Laut Suatu Pendekatan Ekologis (Penerjemah M. Eidmen dan Koesoebiono). Jakarta: PT. Gramedia.

Module Handbook Introduction to Aquaculture

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Introduction to Aquaculture
Module level, if applicable	1 st year
Code, if applicable	IBP21-301
Subtitle, if applicable	The principle of aquaculture
Courses, if applicable	Introduction to aquaculture
Semester(s) in which the module is taught	3 rd semesters
Person responsible for the module	Prof. Dr. Ir. Sri Rejeki, MSc
Lecturer	Prof. Dr. Ir. Johanes Hutabarat, M.Sc Prof. Dr. Ir. Budi Prayitno, M.Sc Dr. Ir. Sarjito, M.App.Sc
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> • Lecture and seminars: 100 minutes per week; Forms of active participation: lecture and discussion • Self learning: 3 hours per week • Case studies: 1 hour per week; • Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	Students are able various types of aquatic ecosystems for aquaculture activities, good and best aquaculture procedures, seed selection, cultivation, applied manipulations to increase production.
Content	<ul style="list-style-type: none"> - Definition and limitation regarding water quality management and its importance towards aquaculture. - The relationship between the physical, chemical, and biological quality of an aquatic ecosystem in producing biomass

	<ul style="list-style-type: none"> - The dynamics control on water ecosystem in physical, chemical, and biological aspects - Mitigate the various pollution such as heavy metal and pesticide in a water quality for aquaculture
Study and examination requirements and forms of examination	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.</p> <p>Requirements: attendance $\geq 75\%$</p> <p>Grading:</p> <p>Assignments: 50%</p> <p>Mid-semester exam: 25%</p> <p>Final exam: 25%</p>
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<ol style="list-style-type: none"> 1. Fajar Basuki 2018 Pengantar Kuliah Manajemen Panti benih. https://budidayaikan1957.blogspot.com/2018/03/blog-post.html 2. Fajar Basuki 2018 Perencanaan Produksi Benih. https://budidayaikan1957.blogspot.com/2018/03/perencanaan-produksi-benih.html 3. Fajar Basuki 2018 Mekanisme Ovulasi pada Ikan. http://budidayaikan1957.blogspot.com/2018/10/materi-1-mk-froa-dan-mk-fri.html 4. Fajar Basuki 2018. Cara membuat laporan singkat. https://budidayaikan1957.blogspot.com/2018/03/cara-membuat-laporan-singkat-praktikum.html 5. Fajar Basuki 2018. Teknik dan manajemen TPI. https://budidayaikan1957.blogspot.com/2018/08/pelatihan-teknis-pengelolaan-budidaya.html 6. Reynaldo Patiño¹ & Craig V. Sullivan², 2002. Ovarian follicle growth, maturation, and ovulation in teleost fish <i>Fish Physiology and Biochemistry</i> 26: 57– 70, 2002 7. Ahmet Regaib Oğuz*¹ and Güler Ünal. 2012. The Effects of 17β –Estradiol on Vitellogenin, Total Protein, Histochemical, and Some Morphological Indices on <i>Chalcalburnus tarichi</i> Indices on <i>Chalcalburnus tarichi</i> 8. Alberto Huberman. 2000. Shrimp endocrinology. A review. <i>Aquaculture</i> 191 2000 191-208

Module Handbook Ichthyology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Ichthyology
Module level, if applicable	1 st years
Code, if applicable	PIBP6-002
Subtitle, if applicable	
Courses, if applicable	Ichthyology
Semester(s) in which the module is taught	1 st semesters
Person responsible for the module	Dr. Ir. Basuki Fajar, M.S.
Lecturer	Dr. Ir. Basuki Fajar, M.S. Tita Elfitasari, S.Pi., M.Sc., Ph.D. Rosa Amalia, S.Pi., M.Si. Dewi Nurayati, S.Pi., M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM) 14 x 100 minutes (including midterm and final exams), online-learning <ol style="list-style-type: none"> 1. Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion 2. Practical: 3 hours (170 minutes) per week 3. Self learning: 3 hours per week 4. Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Knowledge: understand the classification, structure and function of organs, reproductive processes, behavior, distribution and growth of fish.</p> <p>Skill : students can analyze various applications of ichthyology in fish systematics, fish reproduction, and fish physiology</p> <p>Competence : At the end of this course, students can explain the concept of fish systematics and the role of</p>

	fish systematians; describe several types of fish that live in Indonesian waters; explain the macro functions of the ten organ systems of the fish body with the modifications that occur in these organ systems
Content	This course studies the classification, structure and function of organs, reproductive processes, behavior, distribution and growth of fish.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through the hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.

Module Handbook Statistic

A Module Handbook or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Statistic
Module level, if applicable	2 th years
Code, if applicable	MPK 207
Subtitle, if applicable	This course
Courses, if applicable	This course equips students to know the basic principles of statistics for conduct the aquaculture experiment
Semester(s) in which the module is taught	4 th semesters
Person responsible for the module	Dr. Ir. Sri Hastuti, Msi.,
Lecturer	1. Dr. Ir. Sri Hastuti, Msi., 2. Dr. Ir. Istiyanto S., MS., 3. Dr.Ir. Pinandoyo, MS., 4. Dr.Ir. Titik Susilowati, MS.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Lecturing in class, assignment, discussion, problem based learning
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 80%: 12 attendance from total 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	After completing this course students will be able to solve various problems related to statistics, the use of formulas, counting regression, mamp guess the proportions and opportunities, permutations, be able to compile statistical hypotheses, and be able to use Table Z and Table T. Able to calculate the normality of data
Content	This course discusses the definition of statistics, usefulness, definition, use of rumus, opportunity, factorial understanding, permutations and combinations, understanding events, samples and events, Probability, average, standardization deviation, variants, Normal distribution, tables Z and t, estimation, lapse of trust, guessing, proportions, hypotheses, regression
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provides by lectures for

	giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<ol style="list-style-type: none"> 1. Gomez, K. A. And A. A. Gomez. 1976. Statistical Procedure for Agricultural Research. With emphasis on rice. IRRI. Los Banos, Philippines. 2. Steel, Robert G.D. and James H.Torrie. 1980. Statistical Principles and Procedures (Translation). Mc Graw – Hill, Inc. 3. Sudjana, 1994. Statistical Methods. Transito, Bandung. 4. Boediono, 2008. Theory and Application of Statistics and Probability, PT Remaja Rosdakarya Bandung

Module Handbook Aquaculture Engineering

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Aquaculture Engineering
Module level, if applicable	2 th years
Code, if applicable	IBP21304
Subtitle, if applicable	
Courses, if applicable	Aquaculture Engineering
Semester(s) in which the module is taught	3 th semesters
Person responsible for the module	Dicky Harwanto, S.Pi., M. Sc. PhD
Lecturer	Dicky Harwanto, S.Pi., M. Sc. PhD Ristiawan Agung Nugroho, S.Pi, M. Si, Dr. Ir. Sri Hastuti, M.S Prof. Dr. Ir. Sri Rejeki, MSc
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Self learning: 3 hours per week ● Practical: 3 hours (170 minutes) per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion in the class with 14 times 100 minute, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Basic of Aquaculture, 2. Marine Ecology, 3. Marine Chemical and Physical
Module objectives/intended learning outcomes	- Knowledge : understand in General concept of Aquaculture Engineering; design concept of Marine Recirculation Aquaculture System (RAS) construction plan, and the production capacity - Skill : technical design of aquaculture engineering,

	<p>marine recirculation construction plan, and the production capacity</p> <p>- Competence : At the end of this course, students can design concept and production capacity of freshwater pond construction plan, aquaculture construction plan coastal, and capacity of pond construction plan</p>
Content	<p>Course of Aquaculture Engineering provides and/or equips the students with the knowledge about various designs of aquaculture container construction designs including: pond, pool, KJA, RAS in accordance with the texture and hydro topographic; and calculate the production capacity of an aquaculture container as well as the apparatus for supporting the carrying capacity of the aquaculture container, such as pump, pipe and aeration system.</p>
Study and examination requirements and forms of examination	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.</p>
Media employed	<p>Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.</p>
Reading list	<ul style="list-style-type: none"> ● Stickney, R.R. 1994. Principles of Aquaculture. John Wiley and Sons, New York. ● Barrington, K., Chopin, T. and Robinson, S. 2009. Integrated multi-trophic aquaculture (IMTA) in marine temperate waters. In D. Soto (ed.). Integrated mariculture: a global review. FAO Fisheries and Aquaculture Technical Paper. No. 529 . Rome, FAO. pp. 7-46. ● Beveridge, M.C.M. 1996. Cage Aquaculture. 2nd Edition. Fishing News Books, Oxford. ● Ohno, M. and Critchley, 1997. Seaweed Cultivation and Marine Ranching. The Japan International Cooperation Agency. ● Lawson, T.B. 1995. Fundamental of Aquaculture Engineering. Chapman and Hall, New York. ● Shumway, S. 2011. Shellfish Aquaculture and the Environment. John Wiley & Sons, Inc. UK ● Zeeman, S. 2015. The Future of Aquaculture: IMTA Workshop of Aquaculture. Fisheries and Marine Science. Diponegoro University. ● Nugroho, R.A., Pambudi, L.T., Chilmawati, D., Haditomo, A.H.C. 2012. Aplikasi Teknologi Aquaponic Pada Budidaya Ikan Air Tawar Untuk Optimalisasi Kapasitas Produksi. Jurnal Saintek Perikanan Vol. 8. No. 1.

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- Ardi, I. 2013. Budidaya Ikan Sistem Keramba Jaring Apung Guna Menjaga Keberlanjutan Lingkungan Perairan Waduk Cirata. Media Akuakultur Volume 8 Nomor 1.
 - WWF Indonesia, I. 2011. Better Management Practices- Panduan Budidaya Ikan Nila Sistem karamba Jaring Apung. Versi 1. ISBN No 978 -979- 1461-16-0. WWF-Indonesia.
 - Stickney, R.R. 2000. Encyclopedia of Aquaculture. John Wiley and Sons, New York.
 - Howerton, R. 2001. Best Management Practices for Hawaiian Aquaculture. Center for Tropical and Subtropical Aquaculture. Publication No.148.

Module Handbook The Physiology of Fish Reproduction

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	The Physiology of Fish Reproduction
Module level, if applicable	2 th years
Code, if applicable	IBP21-306
Subtitle, if applicable	The concept of physiology of reproduction
Courses, if applicable	The Physiology of Fish Reproduction
Semester(s) in which the module is taught	3 th semesters
Person responsible for the module	Dr. Ir. Fajar Basuki MS
Lecturer	Dr. Ir. Fajar Basuki MS Dr. Ir. Titik Susilowati MSi.. Tristianan Yuniarti SPi., MSi. Ristiawan Agung Nugroho, S.Pi., M. Sc.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning <ul style="list-style-type: none"> • Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion • Self learning: 3 hours per week • Practical: 3 hours (170 minutes) per week • Case studies: 1 hour per week; • Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Biology 2. Basic of aquaculture 3. Ichthyology
Module objectives/intended learning outcomes	- Knowledge : understand in basic concepts of physiology of reproduction crustaceans and mollusca, and other aquatic organisms - Skill : Technical of the mechanism in the development of the gonads (sperms and eggs), the mechanism in the spawning, spermiation and ovulation, the

	<p>mechanism of the follicle rupture, the oocyte excretion, the factors affecting fish ovulation, application reproduction hormone in the culture, rGH insertions</p> <p>- Competence : At the end of this course, Students are able to understand the definition of basic concepts of physiology of fish reproduction, study the endocrine and exocrine glands, hormone and reproductive mechanism in fish , crustaceans and mollusca, as well as hormone application on the cultured organisms.</p>
Content	Course of basic concepts of physiology of fish reproduction, study the endocrine and exocrine glands, hormone and reproductive mechanism in fish , crustaceans and mollusca, as well as hormone application on the cultured organisms.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.

Module Handbook Histology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Histology
Module level, if applicable	2 nd year
Code, if applicable	IBP21307
Subtitle, if applicable	
Courses, if applicable	Histology
Semester(s) in which the module is taught	3 rd semesters
Person responsible for the module	Dr. Ir. Desrina, M. Sc
Lecturer	Prof. DR. IR. S. Budi Prayitno, M. Sc (Budi) Dr. Ir. Sarjito, M. AppSc (Jito) A H Condro Haditomo, S.Pi, M.Si (Condro)
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Self learning: 3 hours per week ● Practical: 3 hours (170 minutes) per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Basic of Aquaculture, 2. Biology
Module objectives/intended learning outcomes	After completing histology course students will be able to distinguish about the structure and description of various normal tissues in fish cultivation
Content	This course covers the Basic recognize cells and tissue pieces, gill tissue structure, structure of skin tissue, movement organs (motile organs) and bones, structure of the type of cells composing the gastrointestinal tract, structure of the type of cells constituent digestive auxiliary

	organs, Circulation system, Endocrine organ tissue, Sensory organ tissue
Study and examination requirements and forms of examination	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.</p> <p>Requirements: attendance $\geq 75\%$</p> <p>Grading:</p> <p>Practicum and Assignments: 50%</p> <p>Mid-semester exam: 25%</p> <p>Final exam: 25%</p>
Media employed	Classical class with LCD projector, or online teaching by online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<ol style="list-style-type: none"> 1. Grizzle J.A. 1990. Histology of channel catfish. Auburn University 2. Mumford et al., 2007. Fish histology and histopathology. US Fish and Wildlife Service, 2007; available online for download 3. at: http://training.fws.gov/EC/Resources/Fish_Histology/histology.html. 4. Purushothaman et al. (2016), Morpho-histological characterisation of the alimentary canal of an important food 5. fish, Asian seabass (<i>Lates calcarifer</i>). PeerJ 4:e2377; DOI 10.7717/peerj.2377. 6. Other relevant materials (video, paper)

Module Handbook Basics of Aquatic Microbiology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Basics of Aquatic Microbiology
Module level, if applicable	2 nd years
Code, if applicable	IBP21-308
Subtitle, if applicable	
Courses, if applicable	Basics of Aquatic Microbiology
Semester(s) in which the module is taught	3 rd semesters
Person responsible for the module	Prof. Ir. Slamet Budi Prayitno, M.Sc., Ph.D.
Lecturer	Prof. Ir. Slamet Budi Prayitno, M.Sc., Ph.D. Dr. Ir. Sarjito, M.App.Sc Dr. Ir. Desrina, M.Sc. A.H. Condro Haditomo, S.Pi.,M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Practical: 3 hours (170 minutes) per week ● Self learning: 3 hours per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: understand about taxonomy, morphology, metabolism, growth and reproduction of aquatic microorganisms (bacteria, viruses, fungi, and protozoa); isolation techniques and isolation media, as well as the role of microorganisms in the aquaculture environment and other organisms. - Skill : students can explain about taxonomy, morphology, metabolism, growth and reproduction of aquatic microorganisms (bacteria, viruses, fungi, and protozoa); isolation techniques and isolation media, as well as the role of microorganisms in the aquaculture environment and other organisms. - Competence : At the end of this course, students can analyze the basic concepts and growth of aquatic microbes which include taxonomy, morphology, metabolism, and reproduction of bacteria, viruses, fungi/fungi, and protozoa; isolation techniques and bacterial media, as well as the role of microorganisms in the environment and other organisms.
Content	This Course Learn about taxonomy, morphology, metabolism, growth and reproduction of aquatic microorganisms (bacteria, viruses, fungi, and protozoa); isolation techniques and isolation media, as well as the role of microorganisms in the aquaculture environment and other organisms.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.

Module Handbook Fish Nutrition

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Fish Nutrition
Module level, if applicable	2 nd years
Code, if applicable	IBP21-309
Subtitle, if applicable	
Courses, if applicable	Fish Nutrition
Semester(s) in which the module is taught	3 rd semesters
Person responsible for the module	Dr. Ir. Subandiyono, M.App.Sc.
Lecturer	Dr. Ir. Subandiyono, M.App.Sc. Dr. Vivi Endar Herawati, S.Pi. M.Si. Dr. Ir. Pinandoyo, M.Si. Dr. Ir. Diana Rachmawati, M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Practical: 3 hours (170 minutes) per week ● Self learning: 3 hours per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: understand about science and technology of fish nutrition (macro and micronutrient requirements, energy, and additives for cultured fish); the relationship between nutritional parameters, selection of ingredients, preparation of formulations and feed on efforts to increase the growth of aquaculture fish. - Skill : students can apply science and technology on the role and/or benefits of various nutritional and non-nutritive components and their needs for various types of fish that are important in aquaculture, both freshwater, brackish, and marine fish; as well as various factors that affect the quality of feed and their effects (either directly or indirectly, positive or negative) on the cultured organisms. Nutrient components include macronutrients and micronutrients, while non-nutritive components include non nutrients and anti-nutrients. What is meant by fish includes finfish, crustaceans, bivalves, and gastropods. - Competence : At the end of this course, students can analyze fish nutrition (macro and micronutrient requirements, energy, and additives for cultured fish); the relationship between nutritional parameters, selection of ingredients, preparation of formulations and feed on efforts to increase the growth of aquaculture fish.
Content	This Course studies about science and technology of fish nutrition (macro and micronutrient requirements, energy, and additives for cultured fish); the relationship between nutritional parameters, selection of ingredients, preparation of formulations and feed on efforts to increase the growth of aquaculture fish.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ol style="list-style-type: none"> 1. Lawrence, E. 1989. Biological Terms. 10th ed. Longman Sci. & Technical, Singapore. 645 p. 2. Lestari, S. F., S. Yuniarti, dan Z. Abidin. 2013. Pengaruh Formulasi Pakan Berbahan Baku Tepung Ikan, Tepung Jagung, Dedak Halus dan Ampas Tahu terhadap Pertumbuhan Ikan Nila (<i>Oreochromis sp.</i>). Jurnal Kelautan, 6(1):36-46. 3. Lovell, T. 1989. Nutrition and feeding of fish. Van Nostrand reinhold, New York, 260 p. 4. Parker, R. 2001. Aquaculture Science, 2nd ed. Delmar,

	Thompson Learning, USA. 621 p. 5. Subandiyono dan Hastuti, S. 2016. Buku Ajar: Nutrisi Ikan. Fakultas Perikanan dan Ilmu Kelautan, Universitas Diponegoro. 246 p.
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Module Handbook Information technology

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Information technology
Module level, if applicable	1 st years
Code, if applicable	IBP 21310
Subtitle, if applicable	Information technology
Courses, if applicable	This course aims to introduce and further apply information technology in aquaculture
Semester(s) in which the module is taught	2 nd semester
Person responsible for the module	Drs. Suhartono, M.Kom.
Lecturer	<ul style="list-style-type: none"> • Drs. Suhartono, M.Kom. • Drs. Eko Adi Sarwono, M.Kom. • Restiana Wisnu Aryati, S.Pi., M.Si. • Seto Windarto, S.Pi, M.Si., M.Sc. • Ristiawan Agung Nugroho, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	<ul style="list-style-type: none"> • Lecture and seminars: 2 x 50 minute (100 minutes) per week; Forms of active participation: lecture and discussion • Practical: 3 (170 minutes) per week • Case studies: 1 hour per week; • Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 80%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Students are able to understand on:</p> <ol style="list-style-type: none"> 1. Hardware and Software 2. Network System 3. CopyRight and Legacy in Information Technology 4. Management, Processing, Numeric/Data Processing Software 5. Presentation Technique 6. Information Technology Application in bio-informatics, Geographical Information System (GIS), Colour Management, Scientific Citation

Content	Students are able to understand about Hardware and Software, Network System, Copyright and Legacy of Information Technology, Management, Numerical/Data Processing Software, Presentation, Certain Applications and Utilization of Internet Applications to support learning and research in the field of Aquaculture, especially for Aquaculture students.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.

Module Handbook Natural feed culture

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Natural feed culture
Module level, if applicable	2 th years
Code, if applicable	IBP21-315
Subtitle, if applicable	The basic concept culture of phytoplankton, zooplankton and annellids
Courses, if applicable	Natural feed culture (Budidaya Pakan Alami)
Semester(s) in which the module is taught	3 th semesters
Person responsible for the module	Dr. Diana Chilmawati, S.Pi., M.Si.
Lecturer	Dr. Diana Chilmawati, S.Pi., M.Si. Dr. Ir. Suminto, M.Sc. Dr. Ir. Subandiyono, M.App.Sc. Dr. Vivi Endar Herawati, S.Pi., M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	<ul style="list-style-type: none"> ● Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion ● Self learning: 3 hours per week ● Practical: 3 hours (170 minutes) per week ● Case studies: 1 hour per week; ● Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 80%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Biology, 2. Aquatic ecology, 3. Basic of aquaculture management DDMBA,
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge : understand in physiological and practical processes in fitoplankton (mikroalga, rotifer), zooplankton (artemia, moina, daphnia, copepod, spat bivalves) and annelida (lumbricus, tubifex, nereis) production. - Skill : technical culture procedures of live feeds for aquaculture (fitoplankton, zooplankton and annelida).

	- Competence : At the end of this course, students can design and practice culture of plankton (phytoplankton and zooplankton) and annelids, as well as enrichment techniques for natural food on a limited scale according to standard natural feed cultivation procedures.
Content	The Natural Feed Culture Course studies natural food in aquaculture which includes; cultivation of plankton (phytoplankton and zooplankton) and annelids and their enrichment techniques on a limited scale.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<ol style="list-style-type: none"> 1. Hoff F.H and T.W.Snell. 1997. Plankton Culture Manual 4th ed. San Antonio, Florida. 141 pp 2. Fulks W. And K.L. Main (Eds). 1991. Rotifer and Microalgae Culture System, Proceedings. The Oceanic Institute, Honolulu, Hawai. 364 pp. 3. J.R.Stein L. 1973. Phycological Methods. Academic Press. Toronto. 448 pp. 4. Hagiwara, A., T.W. Snell, E. Lubzens And C.S. Tamaru (Eds.). 1997. Live Food in Aquaculture (Developments in Hydrobiology). Kluwer Academic Press Publishers. 328 pp. 5. Riquelme C.E. and Y. Ishida. 1989. Interaction Between Microalgae and Bacteria in Coastal Seawater. Kyoto Univ. Publisher. 60 pp. 5. Mc Vey J.P. And J.R. Moore. 1983. Crustacean Aquaculture (CRC Handbook of Mariculture). Vol.1. CRC Press, Inc., Florida. 341 pp 6. Saouth R.G. And A. Whittick. 1993. Introduction of Phycology. 1st ed. Blackwell Scientific Pubs. Oxford. 341 pp. 7. Suminto & K. Hirayama. 1993. Relation Between Diatom Growth and Bacterial Population in Semi Mass Culture Tanks of Diatom. Bull. Of Fac. Fish., Nagasaki Univ. Nos.74/75 :37-41 8. Suminto & K. Hirayama. 1996. Effect of Bacterial Coexistence on The Growth of a Marine diatom <i>Chaetoceros gracilis</i>. Fish Sci. 62 : 40-43.

	<p>9. Suminto. 1996. Studies on Utilization of an Environmental Bacterium for Stable Mass Culture of The Marine Microalgae. Doctor Dissertation, 101 pp.</p> <p>10. Suminto & K. Hirayama. 1997. Application of a Growth-promoting Bacteria for stable mass culture of Three Marine Microalgae. <i>Hydrobiologia</i> , 358: 223-230.</p> <p>11. Borowitzka, M.A. & L.J. Borowitzka. 1988. <i>Micro-Algal Biotechnology</i>. Cambridge Univ. Press, 477 pp</p>
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Module Handbook Management of Freshwater Cultivation

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Management of Freshwater Cultivation
Module level, if applicable	3 rd years
Code, if applicable	IBP21-318
Subtitle, if applicable	
Courses, if applicable	Management of Freshwater Cultivation
Semester(s) in which the module is taught	5 th semesters
Person responsible for the module	Prof. Dr. Ir. Sri Rejeki, M.Sc.
Lecturer	Prof. Dr. Ir. Sri Rejeki, M.Sc. Dr. Ir. Sri Hastuti, M.Si. Lestari Lakshmi Widowati, S.Pi., M.Si. Ristiawan Agung Nugroho, S.Pi., M.Si
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning <ul style="list-style-type: none"> • Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion • Practical: 3 hours (170 minutes) per week • Self learning: 3 hours per week • Case studies: 1 hour per week; • Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from total 16 times (according to UNDIP regulation).
Recommended prerequisites	- Introduction to Fisheries and Marine Sciences - Basics of Aquaculture

Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge: understand about site selection, holding systems, cultivation methods, include: water quality management; feeding and growth analysis; fish health and survival analysis; and harvesting, as well as analysis of aquaculture in freshwater ecosystems in a sustainable manner. - Skill : students can analyze the principle of site selection (location selection), governance of cultivation containers (holding system), cultivation breeding principles and techniques for freshwater aquaculture, cultivation enlargement for freshwater aquaculture, business analysis of freshwater aquaculture. - Competence : At the end of this course, students are able to understand the principle of site selection (location selection), governance of cultivation containers (holding system), cultivation breeding principles and techniques for freshwater aquaculture, cultivation enlargement for freshwater aquaculture, business analysis of freshwater aquaculture.
Content	Course management of freshwater cultivation learns about site selection, holding systems, cultivation methods, include: water quality management; feeding and growth analysis; fish health and survival analysis; and harvesting, as well as analysis of aquaculture in freshwater ecosystems in a sustainable manner.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ul style="list-style-type: none"> ● Arthur, J.R., Bondad-Reantaso, M.G., Campbell, M.L., Hewitt, C.L., Phillips, M.J. and Subasinghe, R.P. 2009. Understanding and Applying Risk Analysis In Aquaculture: A Manual For Decision-Makers. FAO Fisheries and Aquaculture Technical Paper. No. 519/1. Rome, FAO. 113p. ● Bartley, D.M., Brugère, C., Soto, D., Gerber, P. and Harvey, B. (eds). 2007. Comparative Assessment of The Environmental Costs of Aquaculture and Other Food Production Sectors: Methods For Meaningful Comparisons. FAO/WFT Expert Workshop. 24-28 April 2006, Vancouver, Canada. FAO Fisheries Proceedings. No. 10. Rome, FAO. 241p. ● Beveridge, M.C.M., 2004. Cage Aquaculture. Blackwell Publishing Ltd

	<ul style="list-style-type: none"> ● Chopin, T., 2010. Integrated Multi-Trophic Aquaculture In Advancing The Aquaculture Agenda. Workshop Proceedings. Organisation For Economic Co-Operation And Development. pp 195-214 ● COFI (Committee of Fisheries). 2010. Climate Change and Aquaculture: Opportunities and Challenges For Adaptation and Mitigation. Sub-Committee on Aquaculture: Session 5th, Phuket, Thailand, 27 September – 1 October 2010. FAO. 9p. ● Deniz, H., 2010. Turkey: Best Practices in Aquaculture Management and Sustainable Development In Advancing The Aquaculture Agenda. Workshop Proceedings. Organisation For Economic Co-Operation And Development. pp 183-190 ● FAO. 2009. Environmental Impact Assessment and Monitoring In Aquaculture. FAO Fisheries and Aquaculture Technical Paper. No. 527. Rome, FAO. 57p. ● FAO. 2012. The State of World Fisheries and Aquaculture 2012. FAO Fisheries and Aquaculture Department. FAO of the United Nations. Rome, Italy. 207p. ● Halmar Halide, David McKinnon, mark Rehbein, Lindsay Trot dan Richard Brickman, 2008. Panduan Teknis Cads-Tool. Suatu Perangkat Pendukung Keputusan Dalam Akuakultur Karamba Jaring Apung. Perangkat Lunak Untuk Pengelola Karamba Jaring Apung Di Laut Dan Air Tawar. Balai Riset Perikanan Akuakultur Air Payau. Pusat Riset Perikanan Akuakultur Badan Riset Kelautan Dan Perikanan Departemen Kelautan Dan Perikanan. 27 hal ● Midlen, A. and Redding, T.A. 1998. Environmental Management for Aquaculture. Chapman & Hall, London UK. 240p.
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Module Handbook Entrepreneurship

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Entrepreneurship
Module level, if applicable	2 th years
Code, if applicable	UNW00007
Subtitle, if applicable	
Courses, if applicable	Entrepreneurship
Semester(s) in which the module is taught	3 th semesters
Person responsible for the module	Tita Elfitasari, S.Pi., M. Sc. PhD
Lecturer	Tita Elfitasari, S.Pi., M. Sc. PhD Dr. Ir. Diana Rahmawati, M.Si. Dr. Vivi Endar Herawati, S.Pi., M.Si. Dr. Ir. Fajar Basuki, MS.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Lecturing in class, assignment, discussion, problem based learning
Workload	Total workload is 2 x 50 minutes, 14 times per semester, (14 x 100 minute for attendance in class with teaching methods such as lecture and lesson)
Credit points	2 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> - Knowledge : understand in model of entrepreneurial process, business prospect of aquaculture, creativity and innovation ideas in the business of aquaculture, the determination of the market - Skill : technical of aquaculture business plan, SWOT analysis of business - Competence : At the end of this course, students understand the concept of principles and processes of entrepreneurship, business prospects, and innovations in the field of aquaculture, as well as possess the ability to make the evaluation of the business comprehensively.

Content	Course Learn about the definition and concept of entrepreneurship, business prospects in the aquaculture of various aquaculture innovations, feasibility studies and business law.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<ul style="list-style-type: none"> • Wiratmo, M. Pengantar Kewirausahaan Kerangka Dasar Memasuki Dunia Bisnis edisi pertama. BPFE Yogyakarta. Yogyakarta. 2010 • Buchari Alma., 2005., Kewirausahaan untuk Mahasiswa dan Umum., Cetakan Kesembilan., Alfabeta, Bandung • Moko P. Astamoen., 2005., Entrepreneurship dalam Perspektif Kondisi Bangsa Indonesia.,Alfabeta, Bandung

Elective

Module Handbook Seed Production Management

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Seed Production Management
Module level, if applicable	3 th years
Code, if applicable	IBP21-331
Subtitle, if applicable	
Courses, if applicable	Seed Production Management
Semester(s) in which the module is taught	5 th semesters
Person responsible for the module	Dr. Ir. Fajar Basuki, MS.
Lecturer	Dr. Ir. Fajar Basuki, MS. Dr. Ir. Titik Susilowati M.Si. Ristiawan Agung Nugroho, S.Pi., M.Sc. Tristiana Yuniarti, S.Pi., M.Si.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion Self learning: 3 hours per week Practical: 3 hours (170 minutes) per week Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Basic of Aquaculture,

Module objectives/intended learning outcomes	<p>Knowledge : understand in General concept of seed production, the selection hatchery location</p> <p>Skill : technical designing of business nursing fish seed household scale</p> <p>Competence : At the end of this course, students can explain and conduct the need of facilities and infrastructure in the hatchery, the management of the parent in producing the eggs, the procedures for producing natural feed as larvae feed and fish seed, the management of eggs and maintenance of larvae until it becomes a seed.</p>
Content	This course covers the procedure of learning the concepts, design, facilities and infrastructure needs, the needs of broodstock, and Feed on a Hatchery.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	<p>Fajar Basuki 2018 Pengantar Kuliah Manajemen Panti benih. https://budidayaikan1957.blogspot.com/2018/03/blog-post.html</p> <p>Fajar Basuki 2018 Perencanaan Produksi Benih. https://budidayaikan1957.blogspot.com/2018/03/perencanaan-produksi-benih.html</p> <p>Fajar Basuki 2018 Mekanisme Ovulasi pada Ikan. http://budidayaikan1957.blogspot.com/2018/10/materi-1-mk-froa-dan-mk-fri.html</p> <p>Fajar Basuki 2018. Cara membuat laporan singkat. https://budidayaikan1957.blogspot.com/2018/03/cara-membuat-laporan-singkat-praktikum.html</p> <p>Fajar Basuki 2018. Teknik dan manajemen TPI. https://budidayaikan1957.blogspot.com/2018/08/pelatihan-teknis-pengelolaan-budidaya.html</p> <p>Reynaldo Patiño¹ & Craig V. Sullivan²., 2002. Ovarian follicle growth, maturation, and ovulation in teleost fish <i>Fish Physiology and Biochemistry</i> 26: 57– 70, 2002</p> <p>Ahmet Regaib Oğuz*¹ and Güler Ünal. 2012. The Effects of 17β –Estradiol on Vitellogenin, Total Protein,</p>

	<p>Histochemical, and Some Morphological Indices on Chalcalburnus tarichi Indices on <i>Chalcalburnus tarichi</i></p> <p>Alberto Huberman. 2000. Shrimp endocrinology. A review. Aquaculture 191 2000 191-208</p> <p>J.Joose 1972. Endocrinology of reproduction in mollusks. <u>General and Comparative Endocrinology. Volume 3, Supplement</u>, 1972, Pages 591-601</p>
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Module Handbook

Physiology Of The Nutrition Of The Culture Organism

Module designation	Physiology Of The Nutrition Of The Culture Organism
Module level, if applicable	4 th years
Code, if applicable	IBP21333
Subtitle, if applicable	
Courses, if applicable	Physiology Of The Nutrition Of The Culture Organism
Semester(s) in which the module is taught	7 th semesters
Person responsible for the module	Dr. Ir. Subandiyono, MAppSc.
Lecturer	Dr. Ir. Subandiyono, MAppSc. (SB) Dr. Ir. Desrina, MSc. (DS) Prof. Dr. Ir. Johannes Hutabarat, MSc. Dr. Ir. Pinandoyo, MSi.
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion Self learning: 3 hours per week Practical: 3 hours (170 minutes) per week Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	1. Basic of Aquaculture, 2. Fish Nutrition

<p>Module objectives/intended learning outcomes</p>	<p>Knowledge : understand the basic concepts of various processes, mechanisms, and systems of physiological changes over nutrition in various crucial organisms in the aquaculture, both freshwater and marine fish; and various factors affecting the level of feed nutrients utilization, the association with physiological characteristics of the culture organism.</p> <p>Skill : technical mechanisms of increasing feed nutrient utilization in fish of aquaculture</p> <p>Competence : At the end of this course, students are expected to be able to explain and implement the basic concepts of various processes, mechanisms, and systems of physiological changes over nutrition in various crucial organisms in the aquaculture, both freshwater and marine fish; and various factors affecting the level of feed nutrients utilization, the association with physiological characteristics of the culture organism.</p>
<p>Content</p>	<p>Course in the Physiology of Nutrition of the Culture Organism (FNOB) provides and/or equips the students with the knowledge about the basic concepts of various processes, mechanisms, and systems of physiological changes over nutrition in various crucial organisms in the aquaculture, both freshwater and marine fish; and various factors affecting the level of feed nutrients utilization, the association with physiological characteristics of the culture organism. The scope of the study was initiated ahead of the retrieval of the feed, ingestion of feed, the bio-physiological utilization process of feed nutrients in the fish body, until the excretion came out of the body. As a model fish focuses on the types of <i>finfish</i> and <i>crustaceans</i> with various <i>feeding habits</i> and <i>feeding behaviour</i>.</p>
<p>Study and examination requirements and forms of examination</p>	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.</p>
<p>Media employed</p>	<p>Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.</p>
<p>Reading list</p>	<ul style="list-style-type: none"> ● Ronald W. Hardy, Sadasivam J. Kaushik, Fish Nutrition, 4th Edition - October 19, 2021. eBook ISBN: 9780128231593 ● JVS Rauthan, 2021, Introduction to Fish Nutrition

Module Handbook Geographic Information System

Module designation	Geographic Information System
Module level, if applicable	2 th years
Code, if applicable	IBP21-336
Subtitle, if applicable	System for Information Geographies and Remote Sensing
Courses, if applicable	Geographic Information System
Semester(s) in which the module is taught	6 th semesters
Person responsible for the module	Prof. Dr. Ir. S. Budi Prayitno, MSc
Lecturer	Dr. Muhammad Helmi, S.Si., M.Si Lestari Lakhsmi W, MSi Restiana Wisnu A, MSi Dr. Vivi Endar H, MSi
Language	Indonesian
Relation to curriculum	Compulsory course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion Self learning: 3 hours per week Practical: 3 hours (150 minutes) per week Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	Water Quality Management Basics of Aquaculture
Module objectives/intended learning outcomes	Students are able to understand: basic concepts of GIS, spatial data used and applying GIS methods for planning, monitoring and management of aquaculture areas by integrating appropriate parameters

Content	GIS Aquaculture is an advanced science for aquaculture students, which relates to knowledge and application of GIS methods to support planning, monitoring and management of aquaculture activities
Study and examination requirements and forms of examination	<p>The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical methods provided by lectures for giving some questions and students are required to answer it through handwriting or test with kulon.</p> <p>Requirements: attendance $\geq 75\%$</p> <p>Grading:</p> <p>Practicum and Assignments: 50%</p> <p>Mid-semester exam: 25%</p> <p>Final exam: 25%</p>
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<ul style="list-style-type: none"> • Meaden G.J., Aguilar-Manjarrez J. (Eds.), 2013. Advances in geographic information systems and remote sensing for fisheries and aquaculture, Food and Agricultural Organization (United Nations) Technical Paper, ISSN 2070-701. • Widowati L.L., Ariyati W.R., Diana C., 2013b. Brackish water pond's suitability in Pati District according the primary productivity analysis by geostatistical method. Indonesian. BULOMA (Buletin Oseanografi Marina) 2: 36-44. • Silva C., Ferreira J.G., Bricker S.B., 2011. Site selection for shellfish aquaculture by means of GIS and Farm Scale models, with an emphasis on Data-Poor Environments. Journal of Aquaculture 318: 444-457. • Cal J.I., Fernández-Reiriz M.-J., Robinson S., Cranford P., Labarta U., 2013. Absorption efficiency of mussels <i>Mytilus edulis</i> and <i>Mytilus galloprovincialis</i> cultured under Integrated Multi-Trophic Aquaculture conditions in the Bay of Fundy (Canada) and Ria Ares-Betanzos (Spain). Aquaculture. In Press. 10.1016/j.aquaculture.2013.01.034.

Module Handbook Management of Aquaculture Product

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Management of Aquaculture Product
Module level, if applicable	4 th years
Code, if applicable	IBP21337
Subtitle, if applicable	The concept of the management of aquaculture products
Courses, if applicable	Management of Aquaculture Product
Semester(s) in which the module is taught	7 th semesters
Person responsible for the module	Tita Elfitasari, S.Pi., M.Sc., PhD.
Lecturer	Tita Elfitasari, S.Pi., M.Sc., PhD. Dr. Ir. Fajar Basuki, MS. AH Condro Haditomo, S.Pi.,M.Si. Seto Windarto, S.Pi., MP. M.Sc.
Language	Indonesian
Relation to curriculum	Elective course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), with practicum (online), online-learning Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion Self learning: 3 hours per week Practical: 3 hours (170 minutes) per week Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is learning and discussion and assignment in a class with 14 x 100 minutes, and of 14 times x 170 minutes practicum activities per semester
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).
Recommended prerequisites	
Module objectives/intended learning outcomes	Knowledge : Students are expected to understand various techniques of the management of aquaculture species ranging from the broodstock to post-harvesting

	<p>Skill : technical management of aquaculture species ranging from the broodstock to post-harvesting</p> <p>Competence : At the end of this course, students can design concept various techniques of the management of aquaculture species ranging from the broodstock to post-harvesting</p>
Content	This course provides knowledge regarding the management of aquaculture products. Including the management of the broodstock, management and transportation of the broodstock, management of eggs and seeds, management and transportation of ornamental fish, and the post-harvesting management.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lectures for giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by , online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading list	

Module Handbook Fish Quarantine

A **Module Handbook** or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module designation	Fish Quarantine
Module level, if applicable	2 nd years
Code, if applicable	IBP21-341
Subtitle, if applicable	
Courses, if applicable	Fish Quarantine
Semester(s) in which the module is taught	3 rd semesters
Person responsible for the module	Prof. Dr. Ir. Slamert Budi Prayitno, M.Sc.
Lecturer	Prof. Dr. Ir. Slamert Budi Prayitno, M.Sc. Dr. Ir. Sarjito, M.App.Sc Dr. Ir. Desrina, M.Sc. Rosa Amalia, S.Pi.,M.Si.
Language	Indonesian
Relation to curriculum	Elective course
Type of teaching, contact hours	Face-to-face (TM)16 x 100 minutes (including midterm and final exams), online-learning Lecture and seminars: 2 hours (100 minutes) per week; Forms of active participation: lecture and discussion Practical: 3 hours (170 minutes) per week Self learning: 3 hours per week Case studies: 1 hour per week; Forms of active participation: Case studies and structured report writing
Workload	Total workload is 14 x 100 minute per semester, which consists of 100 x 170 minutes structured activities in a corporation per weeks
Credit points	3 CU
Requirements according to the examination regulations	Minimum attendance at lectures is 75%: 12 attendance from 16 times (according to UNDIP regulation).

Recommended prerequisites	-
Module objectives/intended learning outcomes	<p>Knowledge: understand basic theories and concepts of fish, regulations on fish quarantine in Indonesia and other countries, fish installations, and management of invasive species.</p> <p>Skill : students can explain about various diseases of fish in the fish and their impact on fish production, local species/ingenous species. Students can explain Ministerial Decrees related to invasive foreign species, comparing them with invasive foreign species from several countries in Asia, Africa and Europe.</p> <p>Competence : At the end of this course, students can learn basic theories and concepts of fish, regulations on fish quarantine in Indonesia and other countries, fish installations, and management of invasive species.</p>
Content	This Course studies basic theories and concepts of fish regulations on fish quarantine in Indonesia and other countries, fish installations, and management of invasive species.
Study and examination requirements and forms of examination	The exams are designed based on learning outcomes by several methods such as quizzes, seminars and presentations. Classical method provided by lecturers by giving some questions and students are required to answer it through hand writing or google classroom.
Media employed	Classical class with LCD projector, or online teaching by online class (kulon), Zoom meeting or Microsoft Teams during this Pandemi Covid-19.
Reading List	<p>Pusat Karantina Ikan: Badan Karantina Ikan, Pengendalian Mutu dan Keamanan Hasil Perikanan. 2014. <i>Pedoman cara karantina ikan yang baik</i>. Jakarta: Kementerian Kelautan dan Perikanan. Hlm. 41.</p> <p>Hartman K, Petty D, Brown CM, Lehotia CJ. 2006. <i>Aquaculture: Emergency Management and Quarantine of Aquaculture Facilities</i>. Florida Department of Agriculture and Consumer Services.</p> <p>Ristiyawan B, Anggoro S, Yulianti B. 2013. Peranan Implementasi Kebijakan Karantina Ikan dalam Pembangunan Perikanan Berkelanjutan. Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam dan Lingkungan.</p> <p>Indonesia Marine and Fisheries Book. 2017. Ministry of Marine and Affairs and Fisheries.</p>

